FINANCE DEPARTMENT
PURCHASING DIVISION
MELISSA L. LOPEZ
PURCHASING/CONTRACTS ADMINISTRATOR
PHONE: 815-724-3925
FAX: 815-724-3929

CITY OF JOLIET

150 WEST JEFFERSON STREET
JOLIET, ILLINOIS 60432-4158

Prospective Bidders:

Enclosed are bid documents which may be of interest to your company. Please note the date and time as to when these bids will be opened. The bid documents **must** be returned intact - the same order as received.

All bids must be submitted in an opaque sealed envelope **prior** to the date and time set forth for the bid opening in the Notice to Bidders. Each bid must be addressed to:

City of Joliet
City Clerk
150 W Jefferson St
Joliet, IL 60432

The outside of the sealed envelope – face of the envelope, **must** include the following:

- Name of Bidder
- Statement that it is a sealed bid to be opened for the contract considered at the date and time set forth in the Notice to Bidders
- Acknowledgement of Addenda to the Contract

Failure to do any of the above may invalidate your proposal.

Any questions or clarifications concerning these specifications should be in writing and directed to the Purchasing Division at purchasing@joliet.gov.

Any oral or written comments received from any other person other than the Contracts Administrator will not be considered and may invalidate your proposal.

Respectfully,

MAYOR
Terry D'Arcy

COUNCIL MEMBERS
Cesar Cardenas
Joe Clement
Cesar Guerrero
Larry E. Hug
Suzanna Ibarra
Pat Mudron
Jan Hallums Quillman
Sherri Reardon

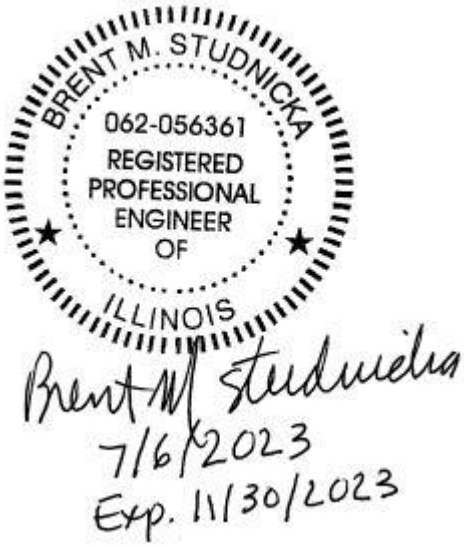
INTERIM CITY MANAGER
Rodney Tonelli

PURCHASING/CONTRACTS ADMINISTRATOR
Melissa L. Lopez

PLAN HOLDER: _____ Set No.: _____

PROJECT MANUAL

ALTERNATIVE WATER SOURCE PROGRAM
JOL0801–SCADA SYSTEM UPGRADES
CITY OF JOLIET, ILLINOIS
CONTRACT 2722-0923



Prepared by:

STRAND ASSOCIATES, INC.®
IDFPR No. 184-001273
1170 South Houbolt Road
Joliet, IL 60431
www.strand.com

Issued for Bid
July 6, 2023

STRAND ASSOCIATES®
Excellence in Engineering
Since 1946

SECTION 00 01 10

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CITY OF JOLIET, ILLINOIS
CONTRACT 2722-0923

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BIDDING AND CONTRACTING REQUIREMENTS

LEGAL NOTICE
CITY OF JOLIET
ADVERTISEMENT FOR BIDS

CONTRACT NO. 2722-0923
PROJECT NAME: ALTERNATIVE WATER SOURCE PROGRAM
JOL0801-SCADA SYSTEM UPGRADES

The City of Joliet, Illinois, does hereby invite sealed bids for the replacement of the City's water system **Alternative Water Source Program, JOL0801–SCADA System Upgrades**. The work consists of replacing existing Bristol-Babcock Controlwave Micro controllers at approximately 33 sites, including the master, with Allen Bradley controllers, replacing miscellaneous instruments at several sites, and reconfiguring the existing 4RF Aprisa SR+ licensed frequency radios from serial to Ethernet communication.

Bids will be received at the Office of the City Clerk, City of Joliet Municipal Building, 150 West Jefferson Street, Joliet, Illinois 60432-4156 until **10:00 A.M.** local time on **Thursday, August 17, 2023,** at which time they will be opened and publicly read aloud. It is highly recommended, that all bids be tabbed to mark the Bidding Schedule and Bid Bond. An electronic copy of the entire submission on a USB flash drive is also requested to be included in the bid packet.

Bid results will also be posted on the City's website, and emails sent out to individuals who have subscribed to the related RSS feed. To ensure timely delivery of emails related to this feed, please add iljoliet@public.govedelivery.com to your safe sender list.

To be considered compliant, bids/proposals should be addressed as follows:

CITY OF JOLIET - SEALED BID ENCLOSED
OFFICE OF THE CITY CLERK
150 W. JEFFERSON ST.
JOLIET, IL 60432

And must be marked clearly on the outside of the SEALED package with the **BID NUMBER AND NAME OF THE PROJECT, DATE AND TIME OF THE BID OPENING, NAME AND ADDRESS AND PHONE NUMBER OF YOUR COMPANY and RECEIPT OF ALL ADDENDA** (if applicable).

Bids must be delivered Monday to Friday 8:00 A.M. – 4:30 P.M. and not on holidays observed by the City of Joliet. The City will not be responsible for deliveries outside these hours. If you choose to hand deliver your Bid/proposal, it is to be delivered to the east or west side of City Hall, 150 West Jefferson Street, Joliet, IL 60432. Please make sure to mention you are delivering a sealed Bid/proposal, so the receiver knows to time stamp the envelope upon receipt.

Those desiring to submit a bid may examine the bid documents and detailed specifications at the City of Joliet Purchasing Division, 150 West Jefferson Street, Joliet, IL 60432 between the hours of 8:00 A.M. and 4:30 P.M., Monday through Friday. Electronic copies can be downloaded free of charge at https://www.joliet.gov/government/departments/finance/purchasing/bids-proposals/. No hard copies of the documents will be available for purchase.

All bidders will be required to submit Bid Security in the form of a Certified Check, Cashier's Check, or a Bid Bond in the amount of **Ten percent (10%) of the Base Bid**, payable to the City of Joliet.

The City of Joliet has a local qualified bidder ordinance that applies to this contract. To apply to be a local qualified bidder please go to https://www.joliet.gov/government/departments/finance/purchasing/bids-proposals/.

All Bidding Document holders should sign up for RSS feeds at https://www.joliet.gov/government/departments/finance/purchasing/bids-proposals/construction-public-utilities. and provide your first and last name and email address to automatically receive

addendums. Addendums will also be posted on the City of Joliet's website at https://www.joliet.gov/government/departments/finance/purchasing/bids-proposals/. The potential vendor/contractor remains responsible for obtaining all addenda to the original specification so they should check the specific bid page before submitting a Bid to make sure they have received all addendums to a specific contract.

Prequalification pursuant to Ordinance No. 7345 is necessary. Bidders are required to be prequalified through the Illinois Department of Transportation, the Capital Development Board, or the City of Joliet. It is the responsibility of the bidder to ensure that their prequalification information is provided to the City of Joliet Purchasing Division prior to the bid opening. If bidders are not prequalified through IDOT or Capital Development Board, then they must be prequalified with the City of Joliet. Financial prequalification forms can be obtained from the City of Joliet website at https://www.joliet.gov/government/departments/finance/purchasing/prequalification-process. This prequalification MUST be renewed yearly. To check on your current prequalification status, you can contact purchasing@joliet.gov. The current price for City of Joliet prequalification is $175, which offsets the costs for independent auditor review of the documents. Those documents are to be submitted to the Purchasing Division, City of Joliet, 150 West Jefferson Street, Joliet, IL 60432 at least 6 days prior to the bid opening.

Prospective bidders are required to complete and submit a technical prequalification questionnaire with supporting documents to the City of Joliet (see Instructions to Bidders). Technical prequalification forms will be provided with Bidding documents. Completed forms are to be submitted no later than 10:00 A.M. local time on August 3, 2023.

A mandatory Pre-Bid Conference of all prospective Bidders and/or their representatives will be held on July 19, 2023, at 10:00 A.M. at City of Joliet Westside Wastewater Treatment Plant, 23200 South Youngs Road, Channahon, Illinois 60410. Bidders are required to attend and participate in the conference.

The Strand Associates, Inc.® project manager is Brent M. Studnicka, P.E., who can be contacted at Strand Associates, Inc.®, 1170 South Houbolt Road, Joliet, IL 60431, (815) 744-4200 regarding the project.

The successful bidder will be required to post performance Security and to provide a Certificate of Insurance as set forth in the Invitation of Bid and the General Terms & Conditions.

The City of Joliet reserves the right to reject any and all bids, parts of any and all bids, or to waive technical errors or omissions in bids.

The Contract shall be subject to the provisions of the *Prevailing Wage Act* (820 ILCS 130/1 et seq.) to the extent required by law. Attention of bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wage rates to be paid under the Contract.

ALL PROPOSALS ARE SUBJECT TO THE REQUIREMENTS OF THE CITY OF JOLIET PROCUREMENT CODE (Section 2-430 - 2-453 of the Code of Ordinances)

BID DOCUMENT FEE: **Free electronic download**

Published in the Labor Record:
Thursday, July 6, 2023

Rodney Tonelli
Interim City Manager

Melissa L. Lopez
Purchasing/Contracts Administrator

SECTION 00 21 13

INSTRUCTIONS TO BIDDERS

A. These Instructions to Bidders establish requirements for Bidding and Award of Contract.

B. These articles are not necessarily numbered consecutively.

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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 the Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below which are applicable to both the singular and plural thereof:

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

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 Electronic Documents

A. When the Bidding Requirements indicate that electronic (digital) copies of the Bidding Documents are available, such documents will be made available to the Bidders as Electronic Documents in the manner specified.

1. Bidding Documents will be provided in Adobe PDF (Portable Document Format) (.pdf) that is readable by Adobe Acrobat Reader Version 6.0 or later. It is the intent of ENGINEER and OWNER that such Electronic Documents are to be exactly representative of the paper copies of the documents. However, because OWNER and ENGINEER cannot totally control the transmission and receipt of Electronic Documents nor CONTRACTOR's means of reproduction of such documents, 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 2.03.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 Prequalification pursuant to Ordinance No. 7345 is necessary. All bidders shall become prequalified in one of the following ways:

A. Bidders are required to be pre-qualified through the Illinois Department of Transportation, the Capital Development Board or the City of Joliet. It is the responsibility of the bidder to ensure that their pre-qualification information is provided to the City of Joliet Purchasing Division prior to the bid opening. If bidders are not prequalified through IDOT or Capital Development Board, then they must be prequalified with the City of Joliet. Financial prequalification forms can be obtained from the City of Joliet website at https://www.joliet.gov/government/departments/finance/purchasing/prequalification-process. This prequalification MUST be renewed yearly. To check on your current prequalification status, you can contact purchasing@joliet.gov. The current price for City of Joliet prequalification is $175, which offsets the costs for independent auditor review of the documents. Those documents are to be submitted to the Purchasing Division, City of Joliet, 150 West Jefferson Street, Joliet, IL 60432 at least 6 days prior to the bid opening.

B Bids from bidders who have not submitted required prequalification documents as required above shall not be opened.

3.02 Bidder must be prepared to submit evidence of Bidder's qualifications to do business in the state where the Project is located prior to award of the Contract.

3.03 A questionnaire will be forwarded to each Bidder requesting Bidding Documents. This questionnaire must be filed with OWNER on or before date indicated in Advertisement for Bid. If in OWNER's opinion, based on information contained in the questionnaire or derived therefrom, Bidder is not qualified to carry out the provisions of the Contract, Bidder will be notified prior to the date of Bid opening. OWNER will not open the Bid of any disqualified Bidder.

3.04 Bidder must be prepared to submit evidence of Bidder's qualifications to do business in the state where the Project is located prior to award of the Contract.

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

3.06 Bidders shall submit the documentation listed in Paragraph 7.01 of the Bid Form (Section 00 41 00).

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

3.08 Bidder is advised to carefully review those portions of the Bidding Documents requiring Bidder's representations and certifications.

ARTICLE 4–PRE-BID CONFERENCE

4.01 A mandatory Pre-Bid Conference will be held at the time, date, and place indicated in the Advertisement for Bids.

Representatives of OWNER and ENGINEER will be present to discuss the Project. Bidders are required to attend and participate in the conference. ENGINEER will transmit to all prospective Bidders of record

such Addenda as ENGINEER considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

Bids submitted by Bidders who do not attend the Pre-Bid Conference will be considered unresponsible and will not be opened.

4.02 Information presented at the Pre-Bid Conference does not alter the Contract Documents. OWNER will issue Addenda to make any changes to the Contract Documents that result from discussions at the Pre-Bid Conference. Information presented, and statements made at the Pre-Bid Conference will not be binding or legally effective unless incorporated in an Addendum.

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

5.01 Site and Other Areas

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

5.02 Existing Site Conditions

A. Subsurface and Physical Conditions; Hazardous Environmental Conditions

1. The Supplementary Conditions identify the following regarding existing conditions at or adjacent to the Site:

a. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data.

b. Those drawings known to OWNER of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data.

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

d. Technical Data contained in such reports and drawings.

2. OWNER will make copies of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

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

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

5.03 Other Site-Related Documents

A. No other Site-related documents are available.

5.04 Site Visit and Testing by Bidders

A. Bidder is required to visit the Site and conduct a thorough visual examination of the Site and adjacent areas. During the visit the Bidder must not disturb any ongoing operations at the Site.

B. Site visits are scheduled following the Pre-Bid Conference. Maps to the Site will be made available upon request.

C. Bidders visiting the Site are required to arrange their own transportation to the Site.

D. All access to the Site other than during a regularly scheduled Site visit must be coordinated through the following ENGINEER contact for visiting the Site: Brent Studnicka, P.E., (815) 744-4200 or brent.studnicka@strand.com. Bidder must conduct the required Site visit during normal working hours.

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

F. On request, and to the extent OWNER has control over the Site, and schedule permitting, 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 All questions about the meaning or intent of the Bidding Documents are to be submitted to ENGINEER in writing. Interpretations or clarifications considered necessary by ENGINEER in response to such questions will be issued by Addenda. All Bidding Document holders that sign up for the RSS feed as indicated in the Advertisement for Bids will automatically receive Addenda via email. Addenda will also be emailed to those who attend the Pre-Bid Conference and provide an email address.

7.02 All requests for interpretation must be received at least five days prior to the day set for receiving Bids. Addenda will be issued not later than three days prior to the day set for receiving Bids. Failure of any Bidder to receive any such Addendum or interpretation shall not relieve such Bidder from any obligations under the Bid as submitted. All Addenda so issued shall become part of the Contract Documents.

7.03 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.

7.04 Addenda may also be issued to clarify, correct, or change the Bidding Documents as deemed appropriate by OWNER or ENGINEER.

7.05 All addenda shall be acknowledged, not only on the Bid form, but on the outside of the sealed opaque envelope. Bids received without acknowledgement of Addenda, if any, on the outside of the sealed opaque envelope shall be returned to Bidder unopened.

7.06 Each addendum shall be acknowledged separately on the envelope (i.e. Addendum No. 1 of [DATE], Addendum No. 2 of [DATE]).

7.07 Addenda will be provided in an electronic format (.pdf format) via email. All Bidding Document holders should sign up for the RSS feeds at https://www.joliet.gov/government/departments/finance/purchasing/bids-proposals/construction-public-utilities and provide first and last name and email address to automatically receive addendums. Addendums will also be posted on the City of Joliet's website at https://www.joliet.gov/government/departments/finance/purchasing/bids-proposals/construction-public-

utilities. To ensure timely delivery of emails related to this feed, please add iljoliet@public.govedelivery.com to your safe senders list. All Bidding Document holders must provide a name, address, and e-mail address to receive electronic addenda and must reply to the e-mail to indicate receipt of the addenda.

ARTICLE 8–BID SECURITY

8.01 A Bid must be accompanied by Bid security made payable to OWNER in an amount of 10% of the Bidder's maximum Bid price and in the form of a certified check, bank money order, or a Bid Bond (on form attached) issued by a surety meeting the requirements of Paragraph 6.01 of the General Conditions.

8.02 The Bid security of the apparent Successful Bidder will be retained until OWNER awards the contract to such Bidder, and such Bidder has executed the Contract, 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 15 days after the Notice of Award, OWNER may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited, in whole in the case of a Penal Sum Bid Bond, and to the extent of OWNER's damages in the case of a damages-form bond. Such forfeiture will be OWNER's exclusive remedy if Bidder defaults.

8.03 Bid security of other Bidders will be retained unless requested to be returned, and will not be returned until after the Contract has been awarded or until the Bid acceptance period expires.

ARTICLE 9–CONTRACT TIMES

9.01 The number of days within which, or the dates by which, the Work is to be (a) substantially completed and (b) ready for final payment, and (c) Milestones (if any) are to be achieved, are set forth in the Agreement.

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

ARTICLE 10–SUBSTITUTE OR "OR EQUAL" ITEMS

10.01 The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without evaluation of Equipment Alternatives listed in the Lump Sum Base Bid, if any, and without evaluation of possible substitute or "or equal" items. Whenever it is specified or described in the Bidding Documents that an Equipment Alternative listed in the Lump Sum Base Bid or that a substitute or "or equal" item of material or equipment may be furnished or used by CONTRACTOR if acceptable to ENGINEER, application for such acceptance will not be evaluated by ENGINEER until after the Effective Date of the Contract.

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 Subsequent to the submittal of the Bid, OWNER may not require the Successful Bidder or CONTRACTOR to retain any Subcontractor, Supplier, or other individual or entity against which CONTRACTOR has reasonable objection.

11.03 The apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to OWNER a list of the Subcontractors or Suppliers proposed for the Work. If requested by OWNER, such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, or other individual or entity. If OWNER or ENGINEER, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, OWNER may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder shall submit a substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and OWNER may consider such price adjustment in evaluating Bids and making the Contract award.

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, Suppliers, or other individuals or entities. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which OWNER or ENGINEER makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to OWNER and ENGINEER subject to subsequent revocation of such acceptance as provided in Paragraph 7.07 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 shall be completed in ink and the Bid Forms shall be signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.

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

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

12.03 A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address and state of incorporation shall be shown.

12.04 A Bid by a limited liability company shall be executed in the name of the firm by a member, if the LLC is member-managed, or by a manager, if manager-managed, and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.

12.05 A Bid by an individual shall show the Bidder's name and official address.

12.06 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.

12.07 All names shall be printed below the signatures.

12.08 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which must be filled in on the Bid Form. Refer to Article 7 for other Addenda acknowledgement requirements.

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

12.10 The Bid must contain evidence of Bidder's authority to do business in the state where the Project is located, or Bidder must certify in writing that it will obtain such authority within the time for acceptance of Bids and attach such certification to the Bid.

12.11 If Bidder is required to be licensed to submit a Bid or perform the Work in the state where the Project is located, the Bid must contain evidence of Bidder's licensure, or Bidder must certify in writing that it will obtain such licensure within the time for acceptance of Bids and attach such certification to the Bid. Bidder's state contractor license number, if any, must also be shown on the Bid Form.

12.12 All Bids shall be signed in the presence of and be notarized by a Notary Public or other Officer authorized to administer oaths.

12.13 The Bid shall contain executed copies of all documents listed in Article 7 in Section 00 41 00.

ARTICLE 13–BASIS OF BID

13.01 Lump Sum

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

13.02 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. Discrepancies between words and figures will be resolved in favor of the words.

13.03 For Cash Allowances the Contract Price shall include such amounts as the Bidder deems proper for Contractor's overhead, costs, profit, and other expenses on account of Cash Allowances, if any, named in the Contract Documents as provided for in Paragraph 13.02.B of the General Conditions. The final Contract Price will be adjusted to reflect actual costs on account of Cash Allowances.

13.04 The following Cash Allowances shall be included in the Bid for Contract(s).

Telemetry Modifications Allowance	Section 26 09 00–Controls and Instrumentation

ARTICLE 14–SUBMITTAL OF BID

14.01 Bids will be received for all divisions of the Specifications and all other provisions of the Bidding Documents.

14.02 A Bid shall be submitted no later than the date and time prescribed and at the place indicated in the Advertisement for Bids and shall be enclosed in an opaque sealed envelope, plainly marked with the Bid number (Contract number); Project title; date and time of Bid opening; the name, address, and phone number of Bidder; acknowledgement of all Addenda; and shall be accompanied by the Bid security and other required documents. If the Bid is sent by mail or other delivery system,

the sealed envelope containing the Bid shall be enclosed in a separate envelope plainly marked on the outside with the notation “BID ENCLOSED.” A mailed Bid shall be addressed to place indicated in the Advertisement or Invitation to Bid. No relief will be provided for a mailed Bid not being received by the prescribed time.

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

ARTICLE 15–MODIFICATION AND WITHDRAWAL OF BIDS

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 that 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 for Bids and, unless obviously nonresponsive, read aloud publicly. Bid results will be posted on the City’s website and emails sent to individuals who have subscribed to the RSS feed for the Project.

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 In evaluating Bids, OWNER will consider whether or not the Bids comply with the prescribed requirements, and such alternatives, unit prices, and other data as may be requested in the Bid Form or prior to the Notice of Award.

18.05 In evaluating Bids, OWNER will consider the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Suppliers, and other individuals or entities proposed for those portions of the Work for which the identity of Subcontractors, Suppliers, and other individuals or entities must be submitted as provided in the Supplementary Conditions. OWNER also may consider the operating costs, maintenance requirements, performance data, and guarantees of major items of materials and equipment proposed for incorporation in the work when such data is required to be submitted prior to the Notice of Award.

18.06.1 OWNER may conduct such investigations as OWNER deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals or entities to perform the Work in accordance with the Contract Documents to OWNER's satisfaction within the prescribed time. Bidder shall furnish to OWNER all such information and data for this purpose as OWNER may request. OWNER reserves the right to reject any Bid if the evidence submitted by, or investigation of, such Bidder fails to satisfy OWNER that such Bidder is properly qualified to carry out the obligations of the Contract Documents and to complete the work contemplated therein.

18.06.2 OWNER shall be satisfied that Bidder involved (1) maintains a permanent place of business, (2) has adequate plant and equipment to do the work properly and expeditiously, (3) has a suitable financial status to meet obligations incident to the work, (4) has appropriate technical experience, and (5) can submit a satisfactory performance record.

18.07 If a Contract is to be awarded, it will be awarded to the responsible Bidder with the lowest responsive Bid whose evaluation by OWNER indicates to OWNER that the award will be in the best interests of the Project.

18.08 If a Contract is to be awarded, OWNER will give the successful Bidder a Notice of Award within 95 days after the time set for opening Bids.

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 gives a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unexecuted counterparts of the Agreement along with all other Contract Documents which are identified in the Agreement as attached thereto. Within 15 days thereafter, Successful Bidder shall execute and deliver the required number of counterparts of the Agreement and attached documents to ENGINEER with the required Bonds and insurances. Within 10 days after receipt of properly executed documents and Bonds and insurances which meet all

requirements of the Contract Documents, ENGINEER will deliver one fully signed counterpart to Successful Bidder.

ARTICLE 21–RETAINAGE

21.01 Provisions concerning retainage are set forth in the Agreement.

ARTICLE 22–WAGE RATE DETERMINATION

22.01 All applicable laws, ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the Project shall apply to the Contract throughout including the Employment of Illinois Workers on Public Works Act (30 ILCS 570), the Illinois "Prevailing Wage Act" (820 ILCS 130/1-12) as ascertained by the Illinois Department of Labor for Will County, Illinois and the Davis-Bacon Wage Act (40 USC 276a through 276a-5) as defined by the United States Department of Labor. Wage rates are inserted as part of the bidding documents and are available on the U.S. Government Printing Office web site at http://www.sam.gov/content/wage-determinations and will be on file at the office of OWNER. Bidders shall inspect the wage rate determination and shall incorporate its requirements into their Bid. See General Requirements for additional requirements.

22.02 Payment shall be made at the Illinois prevailing wage rates for Will County or at the Federal (Davis-Bacon) wage rates, whichever is higher.

22.03 See Section 01 41 00 of the General Requirements for additional information.

22.04 It will be the responsibility of CONTRACTOR to provide OWNER with certified payrolls for all work related to this project.

ARTICLE 23–TAXES

23.01 The Bid shall include all taxes in effect at the time the Bid is submitted. No charge will be allowed for taxes from which OWNER is exempt. Bidders who are uncertain as to what items are subject to tax, or who require further explanation or clarification, are requested to contact the Illinois Department of Revenue. Refer to the Supplementary Conditions SC-7.10 for additional information.

ARTICLE 24–LAWS, ORDINANCES, AND REGULATIONS

24.01 Bidder must familiarize itself with all laws, ordinances, and regulations by federal, state, city, or other governmental agency, which by reason of being neglected or violated may affect the Work contemplated and must secure and pay the fee required for any permits which may be necessary unless such fees are otherwise indicated to be paid in the Bidding Documents.

24.02 The City of Joliet has adopted the Responsible Bidder Ordinance. In addition to any other requirement, unless otherwise expressly stated in a bid solicitation or an award of contract, all bidders must comply with the following requirements in order to submit a bid or be awarded a contract and include satisfactory evidence thereof in its bid.

A. The bidder must be a duly organized legal entity in good standing with the Illinois Secretary of State and in compliance with all laws prerequisite to doing business in Illinois.

B. The bidder must have a valid Federal Employer Tax Identification Number or Social Security Number.

C. Bidder must be an equal opportunity employer and comply with Section 2000(e) of Chapter 21, Title 42 of the United States Code and Executive Order 11246.

D. Bidder shall provide certificates of insurance indicating the following coverages, if called for in the bid solicitation: General liability, workers' compensation, completed operations, automobile, hazardous occupation, and product liability.

E. A statement that all employees are (i) covered under a current workers' compensation insurance policy, and (ii) properly classified under such policy. If the Bidder is insured with a carrier, the evidence of workers' compensation insurance shall be a copy of the "Information Page," which includes the name and address of the insured, as well as class codes upon which the compensation premium is based and the total estimated remuneration per class code.

F. A statement of compliance with all provisions of the Illinois Prevailing Wage Act (820 ILCS 130), as amended, and all the rules and regulations therein, for the past five years. Such statement shall also provide that CONTRACTOR has reviewed the Prevailing Wage Act or the federal Davis-Bacon and Related Acts, has reviewed and agrees to pay the applicable prevailing wage rates attached to the Specifications, and will strictly comply with the Prevailing Wage Act or federal Davis-Bacon and Related Acts and related requirements, including wages, medical, and hospitalization insurance, and retirement for those trades covered in the Act. A contractor who has been found, by the Illinois Department of Labor, to be in violation of the Prevailing Wage Act twice within a three-year period shall be deemed to not be Responsible Bidder for two years from the date of the latest finding.

G. Certification of compliance with the Substance Abuse Prevention on Public Works Projects Act (820 ILCS 265/1, et seq.).

H. A certification that individuals who perform work on the public works project on behalf of CONTRACTOR are properly classified as either (i) an employee, or (ii) an independent contractor under all applicable state and federal laws and local ordinances.

I. Documents evidencing any professional or trade licenses required by law or local ordinance for any trade or specialty in which CONTRACTOR is seeking a Contract award. Additionally, CONTRACTOR must disclose any suspension or revocation of such license held by the company, or of any director, officer, or manager of the company.

J. For construction contracts (construction of new facilities, renovation of existing facilities, or road construction projects) or demolition contracts over $25,000, evidence of participation in apprenticeship and training programs applicable to the Work to be performed on the project, which are approved by and registered with the United States Department of Labor's Office of Apprenticeship, or its successor organization. The required evidence includes, but is not limited to, a copy of all applicable apprenticeship standards or Apprenticeship Agreement(s) for any apprentice(s) who will perform work on the public works project.

K. Disclosure of the name and address of each subcontractor from whom CONTRACTOR has accepted a bid and/or intends to hire on any part of the project. Further, each such subcontractor shall be required to adhere to the requirements set forth herein as though it were bidding directly to OWNER. Each contractor shall submit all subcontractor information and supporting documentation to OWNER prior to the subcontractor commencing work on the project.

L. Unless otherwise agreed to in a collective bargaining agreement, the Bidder shall certify that it provides, or contributes to, a health care plan for those employees working on the project and shall provide a copy of the health care plan upon request. The contributions toward a health care plan must be part of the employee's regular compensation, and not merely part of the employee's compensation during the period of time for which the employee is performing work on the project.

M. Unless otherwise agreed to in a collective bargaining agreement, the Bidder shall certify that it contributes to an employee pension or retirement program including, but not limited to, a 401k, a defined benefit plan, or a similar plan for its field employees working on the project and shall provide a copy of the plan upon request. The contributions toward a pension or retirement program must be a part of the employee's regular compensation and not merely part of the employee's compensation during the period of time for which the employee is performing work on the project.

N. Certification that the Bidder has not been subject to any determinations by a court or governmental agency for violations of federal, state, or local laws including, but not limited to, serious, willful, or repeated violations of the Occupational Safety and Health Act (OSHA), violations of contracting or antitrust laws, tax or licensing laws, environmental laws, or the federal Davis-Bacon and Related Acts.

O. Whenever practical, the Bidder should prequalify as a local bidder.

P. Any material changes to CONTRACTOR's status, at any time during the performance of the project, must be reported in writing to OWNER within 14 days of its occurrence. Failure to comply with this requirement is grounds for CONTRACTOR to be deemed a non-responsible bidder.

Q. The submission requirements of this Ordinance also apply to subcontractors, except that CONTRACTOR shall submit all subcontractor submissions to OWNER prior to the subcontractor commencing work on the project. Failure of a subcontractor to submit the required information shall not disqualify the successful bidder from performing work on the project and shall not constitute a contractual default and/or breach by the successful bidder. However, OWNER may withhold all payments otherwise due for work performed by a subcontractor until the subcontractor submits the required information and OWNER approves such information. Further, where OWNER deems necessary, OWNER may also require that the successful bidder remove the subcontractor from the project and replace it with a responsive and responsible subcontractor.

24.03 The City of Joliet has an Ethics Ordinance (Section 2-333 et seq. of the Code of Ordinances of the City of Joliet) which prohibits any appointed or elected official of the City of Joliet, or any employee of the City of Joliet from receiving or soliciting anything of value to influence that City official or employee in carrying out his or her official duties. The City of Joliet appreciates your anticipated cooperation in refraining from offering any official or employee any thing, item, service, or favor of value to influence that person's decision on any City business. With your cooperation, the City of Joliet will achieve its goal of maintaining a fair and competitive contract procedure that promotes the best interests of the citizens of the City of Joliet. You should report immediately any violation of the Ethics Ordinance to the Inspector General, including any solicitation of a thing of value by a City official or employee. A bidder or contractor's participation or encouragement in the violation of the Ethics Ordinance may result in the rejection of a bid, termination of contract, or declaration of ineligibility to bid on future contracts.

It is the duty of any bidder, proposer, consultant, subcontractor, applicant for pre-qualification for a City contract, applicant for local bidder certification, and all officers, directors, agents, partners and employees of any bidder, proposer, consultant, subcontractor, or such applicant to cooperate with the Inspector General in any investigation or hearing undertaken pursuant to City of Joliet Ordinance 2-180, et. seq. Any of the aforementioned parties understands and will abide by all provisions of the aforementioned Ordinance. All contractors must inform subcontractors of the provision and require understanding and compliance with it.

A copy of the City of Joliet Ethics Ordinance and all other City Ordinances are available in the City Clerk's office or on the City website for your review.

ARTICLE 25–WATER INFRASTRUCTURE FINANCE AND INNOVATION ACT (WIFIA)

25.01 The goods and services under this Contract are being completed with funding made available by the United States Environmental Protection Agency (USAEPA) WIFIA program. CONTRACTOR is required to comply with all applicable WIFIA statutes and regulations and any additional terms and conditions imposed by the EPA in connection with WIFIA funding for the Project.

25.02 EPA-provided compliance language "WIFIA Specification Package and Bid Contract Language" is included at the end of the Supplementary Conditions and is part of the Contract Documents. Compliance with all provisions of the WIFIA requirements is required. Some requirements will be met by following the requirements in the General Conditions, and others are not applicable to this Project.

ARTICLE 26–CERTIFICATION REGARDING COMPLIANCE WITH CRIMINAL CODE

26.01 Bidder shall complete the form inserted as part of the Bidding Documents entitled "Bidder Certification in Compliance with Article 33E to the Criminal Code of 2012" and submit it with the Bid.

ARTICLE 27–CERTIFICATION REGARDING DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS

27.01 Bidders shall read the instructions and complete the form inserted as part of the Bidding Documents entitled "Certification Regarding Debarment, Suspension, and Other Responsibility Matters." The completed form shall be submitted with the Bid.

ARTICLE 28–NON-COLLUSION AND CERTIFICATION STATEMENT

28.01 Bidders shall complete the form inserted as part of the Bidding Documents entitled "Non-Collusion and Certification Statement" and submit it with the Bid.

ARTICLE 29–CERTIFICATION OF NON-SEGREGATED FACILITIES

29.01 Bidders shall complete the form inserted as part of the Bidding Documents entitled "U.S. Environmental Protection Agency Certification of Nonsegregated Facilities" and submit it with the Bid.

ARTICLE 30–UTILIZATION OF DISADVANTAGED BUSINESS ENTERPRISE

30.01 Bidders should review the Specifications inserted with the Bidding Documents entitled "City of Joliet Specifications for Disadvantaged Business Enterprise Participation" and complete the

required forms. The required forms, certifications and other information shall be completed and submitted with the Bid as specified.

ARTICLE 31–AFFIRMATIVE ACTION TO ENSURE EQUAL OPPORTUNITY EMPLOYMENT

31.01 Bidders shall comply with the President's Executive Order No. 11246, as amended. The requirements for Bidders and Contractors under this order are explained in 41 CFR 60-4 included in the Bidding Documents. Bidder shall not discriminate on the basis of race, color, national origin or sex in the performance of this Contract. CONTRACTOR shall carry out applicable requirements of 40 CFR Part 33 in the award and administration of Contracts awarded under EPA financial assistance agreements. Failure by CONTRACTOR to carry out these requirements is a material breach of this Contract which may result in the termination of this Contract or other legally available remedies.

ARTICLE 32–DAVIS-BACON WAGE ACT CERTIFICATION

32.01 Bidders should review and comply with Davis-Bacon Wage Act Certification included with the bid. By submitting bid, CONTRACTOR certifies that neither it nor any person or firm who has an interest in CONTRACTOR's firm is a person or firm ineligible to be awarded Government contracts by virtue of Section 3(a) of Davis-Bacon Act or 29-CFR 5.12(a)(1).

ARTICLE 33–BIDDER CERTIFICATION REGARDING USE OF AMERICAN IRON AND STEEL PRODUCTS

33.01 Bidders shall comply with Section 436(a)-(f) of Consolidated Appropriations Act, 2014. Bidders shall complete form inserted as part of bidding documents entitled "Bidder Certification Regarding Use of American Iron and Steel Products."

ARTICLE 34–MINORITY EMPLOYMENT REQUIREMENTS

34.01 Bidder shall review the specifications inserted with the Bidding Documents and complete the required forms. The required forms and other information shall be completed and submitted with the Bid. The City has a requirement that any combination of minority or female participation shall equal or exceed ten percent of CONTRACTOR's aggregate workforce measured against total hours performed, including all subcontracts.

ARTICLE 35–EMPLOYMENT OF ILLINOIS WORKERS ON PUBLIC WORKS ACT, 30 ILCS 570

35.01 If at the time this Contract is executed, or if during the term of this Contract, there is excessive unemployment in Illinois as defined in the Employment of Illinois Workers on Public Works Act, 30 ILCS 570, as two consecutive months of unemployment exceeding 5%, CONTRACTOR agrees to employ a work force that consists of at least 90% Illinois laborers. An "Illinois laborer" is defined as any person who has resided in Illinois for at least 30 days and intends to become or remain an Illinois resident. The Bidder shall require all subcontractors (if any) to conform with said laws, and any rules or regulations now and thereafter issued to said laws by Bidder, his subcontractors, and/or anyone working through or on behalf of Bidder or Bidder's subcontractors.

ARTICLE 36–APPRENTICESHIP INITIATIVE

36.01 The Bidder agrees that he/she shall comply with the requirements of the IL Works Jobs Program Act (Apprenticeship Initiative), 30 ILCS 559/Art. 20. Refer to Division 01 for additional information.

END OF SECTION

SECTION 00 41 00

BID

ALTERNATIVE WATER SOURCE PROGRAM
JOL0801–SCADA SYSTEM UPGRADES
CITY OF JOLIET, ILLINOIS
CONTRACT 2722-0923

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ARTICLE 1–BID RECIPIENT

1.01 Bids to be received until 10:00 A.M. local time, August 17, 2023.

1.02 This Bid is submitted to: Office of the City Clerk
150 West Jefferson Street
Joliet, IL 60432

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

ARTICLE 2–BIDDER'S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA

2.01 Bid Acceptance Period

A. This Bid will remain subject to acceptance for 120 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of OWNER.

2.02 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.

2.03 In submitting this Bid, Bidder represents the following:

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

Date:	Addendum Number:
_____	_____
_____	_____
_____	_____

2.04 Bidder will sign and deliver the required number of counterparts of the Agreement with the bonds, insurance certificates, and other documents required by the Bidding Requirements within 15 days after the date of OWNER's Notice of Award.

ARTICLE 3–BIDDER'S REPRESENTATIONS

3.01 Bidder's Representations

A. In submitting this Bid, Bidder represents the following:

1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.

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

3. Bidder is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.

4. Bidder has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.

5. Bidder has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.

6. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, if selected as CONTRACTOR; and (c) Bidder's (CONTRACTOR's) safety precautions and programs.

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

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

9. Bidder has given ENGINEER written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR.

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

11. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4–BIDDER'S CERTIFICATIONS

4.01 Bidder certifies the following:

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

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

C. Bidder has not solicited or induced any individual or entity to refrain from Bidding.

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

1. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the Bidding process.

2. Fraudulent practice means an intentional misrepresentation of facts made (a) to influence the Bidding process to the detriment of OWNER, (b) to establish Bid prices at artificial non-competitive levels, or (c) to deprive OWNER of the benefits of free and open competition.

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

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.

E. Bidder is prequalified in accordance with Article 3 of Section 00 21 13–Instructions to Bidders.

ARTICLE 5–BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

The following abbreviations may be used in this Bid:

CIP	-	Complete in Place	LS	-	Lump Sum
CY	-	Cubic Yard	LT	-	Left
DI	-	Ductile Iron	MBF	-	Thousand Board Feet
DIA	-	Diameter	MFOB	-	Thousand Freight-On-Board
EA	-	Each	MH	-	Manhole
EST	-	Estimate(d)	RCP	-	Reinforced Concrete Pipe
EXCL	-	Excluding	RT	-	Right
FT	-	Feet	SF	-	Square Foot
GAL	-	Gallon	STA	-	Station
HERCP	-	Horizontal Elliptical RCP	SY	-	Square Yard
HRS	-	Hours	T	-	Ton
IN	-	Inch	VLF	-	Vertical Linear Foot
INCL	-	Including	W/	-	With
LBS	-	Pounds	W/O	-	Without
LF	-	Linear Foot			

BIDDERS SHOULD NOT ADD ANY CONDITIONS OR QUALIFYING STATEMENTS TO THIS BID OR THE BID MAY BE DECLARED IRREGULAR AS NOT BEING RESPONSIVE TO THE INSTRUCTIONS TO BIDDERS.

BID

ALTERNATIVE WATER SOURCE PROGRAM
JOL0801–SCADA SYSTEM UPGRADES
CITY OF JOLIET, ILLINOIS
CONTRACT 2722-0923

LUMP SUM BID:

_____ Dollars $_____
(Words) (Numbers)

See Section 01 29 00–Contract Considerations for discussion of Cash Allowances to include in the Bid.

Bidder shall circle the manufacturer's name for the following items of equipment proposed in Bidder's Lump Sum Bid.

Equipment	Equipment Base Bid Manufacturer Included in the Lump Sum Bid (Circle One)
Controls and Instrumentation (Section 26 09 00)	Toric Engineering **OR** Integrated Process Solutions **OR** Wunderlich-Malec

BID

ALTERNATIVE WATER SOURCE PROGRAM
JOL0801–SCADA SYSTEM UPGRADES
CITY OF JOLIET, ILLINOIS
CONTRACT 2722-0923

CASH ALLOWANCES

The following Cash Allowances shall be included in the Lump Sum Bid. The Cash Allowances for non-Lump Sum items shall be equal to the product of the quantity included in the Lump Sum Bid and the Unit Price. The will be adjusted in the event that estimated quantities to be included in the Lump Sum Bid are different from final measured quantities. A single Unit Price shall be bid for each item. Failure to include one or more of the following Unit Price items may result in rejection of the entire Bid as nonconforming. For items with a quantity of 1, the Cash Allowance shall be adjusted based on actual final costs.

Item Number	Description	Estimated Quantity Included in the Lump Sum Bid	Unit	Bid Unit Price	Total Bid Price Included in the Lump Sum Bid
1.	Telemetry Modifications Allowance Section 26 09 00–Controls and Instrumentation	1	LS	$125,000	$125,000

ARTICLE 6–TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete within 515 calendar days after the date when the Contract Time commences 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 545 calendar days after the date when the Contract Time commences to run.

ARTICLE 7–ATTACHMENTS TO THIS BID

7.01 The following documents are attached to and made a condition of this Bid:

A. Required Bid security in the form of _____
(Certified Check, Bank Money Order, or Bond)

B. Non-Collusion and Certifications Statement.

C. Bidder Certification Regarding The Use of American Iron and Steel Products.

D. Davis-Bacon Prevailing Wage Certification.

E. Notice of Requirement For Affirmative Action.

F. Certification of Nonsegregated Facilities.

G. Notice to Labor Unions of Other Organizations of Workers Nondiscrimination in Employment.

H. Certification Regarding Debarment, Suspension, and Other Responsibility Matters.

I. Bidder Certification In Compliance With Article 33E-11.

J. Specifications For Disadvantaged Business Enterprise Participation.

K. IEPA Disadvantaged Business Enterprise (DBE) Program Form #1, #3, and #4.

L. Notice–Responsible Bidder Ordinance.

M. Minority Employment Requirements.

N. Notice to Bidders–Ethics Ordinance and Inspector General Requirements.

O. Affidavits–Business Status of Bidder.

P. Affidavit Regarding Bidder Availability.

Q. Proposed Subcontractors Form.

ARTICLE 8–DEFINED TERMS

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

ARTICLE 9–COMMUNICATIONS

9.01 Communications concerning this Bid shall be addressed to the address of Bidder indicated below:

Name: _____

Street: _____

City, State, Zip Code: _____

Phone No.: _____ Fax No.: _____

E-mail address: _____

ARTICLE 10–BID SUBMITTAL

Submitted on _____

State Contractor License Number _____ (if applicable).

If Bidder is:

An Individual

By: _____
(Individual's signature)

Name (typed or printed): _____

Doing business as: _____
Business address: _____
_____
Phone No.: _____ Fax No.: _____

E-mail address: _____

A Partnership

Partnership Name: _____
By: _____
(Signature of general partner -- attach evidence of authority to sign)

Name (typed or printed): _____
Business address: _____
_____
Phone No.: _____ Fax No.: _____

E-mail address: _____

A Corporation

Corporation Name: _____
State of Incorporation: _____
Type (General Business, Professional, Service, Limited Liability): _____
By: _____
(Signature -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Attest _____
(Signature of Corporate Secretary)

Business address: _____
_____
Phone No.: _____ Fax No.: _____

E-mail address: _____

Date of Qualification to do business in (State where the Project is located) is _____
_____

Sworn and subscribed to before me this
_____ day of_____, _____
_____

Notary Public or Other Officer
Authorized to Administer Oaths.
My Commission expires:_____

A Limited Liability Company (Note: If member-managed, an authorized member must sign; if manager-managed, the authorized manager must sign. Attach evidence of authority to sign on behalf of LLC).

_____
(Fill in complete name of LLC)

State of Formation: _____

By: _____
(Signature)

_____, [Member] [Manager]
(Print Name)

Business Address: _____

Telephone.: _____

Email: _____

Fax: _____

A Joint Venture

Name of Joint Venture: _____

First Joint Venturer Name: _____

By: _____
(Signature of first joint venture partner -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Business address: _____

_____

Phone No.: _____ Fax No.: _____

E-mail address: _____

Second Joint Venturer Name: _____

By: _____
(Signature of second joint venture partner -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Business address: _____

_____

Phone No.: _____ Fax No.: _____

E-mail address: _____

Phone No., Fax No., and postal and E-mail address for receipt of official communications:

_____

_____

(Each joint venturer must sign. The manner of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.)

Sworn and subscribed to before me this
_____ day of_____, _____
_____

Notary Public or Other Officer
Authorized to Administer Oaths.
My Commission expires:_____

END OF SECTION

10% BID BOND

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

Bidder Name: [Full formal name of Bidder] Address *(principal place of business)*: [Address of Bidder's principal place of business]	Surety Name: [Full formal name of Surety] Address *(principal place of business)*: [Address of Surety's principal place of business]
Owner Name: [Full formal name of Owner] Address *(principal place of business)*: [Address of Owner's principal place of business]	Bid Project *(name and location)*: [Owner project/contract name, and location of the project] Bid Due Date: [Enter date bid is due]
Bond Penal Sum: [Amount] Date of Bond: [Date]	
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 *(Full formal name of Bidder)* By: _____ *(Signature)* Name: _____ *(Printed or typed)* Title: _____ Attest: _____ *(Signature)* Name: _____ *(Printed or typed)* Title:	Surety *(Full formal name of Surety) (corporate seal)* By: _____ *(Signature) (Attach Power of* Name: _____ *(Printed or typed)* Title: _____ Attest: _____ *(Signature)* Name: _____ *(Printed or typed)* Title:
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.	

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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.

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NON-COLLUSION AND CERTIFICATION STATEMENT

1. By submission of the Bid, each Bidder and, in the case of a joint Bid, each party to the joint Bid certifies as to his or her own organization, that in connection with the Bid:

a. The prices in the Bid have been arrived at independently, without consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to the prices with any other bidder or with any competitor;

b. Unless otherwise required by law, the prices quoted in the Bid have not knowingly been directly or indirectly disclosed to any other bidder or to any competitor prior to Bid opening; and

c. No attempt has been made or will be made by the Bidder to induce any other person or firm to submit or withhold a Bid for the purpose of restricting competition. Also, each Bidder shall submit a certification regarding compliance with Article 33 E-11 of the Illinois Criminal Code of 2012 [720 ILCS 5/33 E-11]; and

2. Each person signing the Bid shall certify that (check one):

--- He/she is the person in the Bidder's organization responsible for the decision as to the prices being bid and that he/she has not participated, and will not participate, in any action contrary to 1.a. through 1.c.; or

--- He/she is not the person in the Bidder's organization responsible for the decision as to the prices being bid but that he/she has been authorized to act as agent certifying that the persons determining the prices have not participated, and will not participate, in any action contrary to 1.a. through 1.c., and as their agent shall so certify. He/She shall also certify that he/she has not participated, and will not participate, in any action contrary to 1.a. through 1.c.

_____

Signature of Authorized Representative Date

_____

Typed Name and Title of Authorized Representative

Sworn and subscribed to before me this _____ day of _____

_____

Notary Public or Other Officer
Authorized to Administer Oaths.
My Commission expires: _____

Bidder Certification Regarding the Use of
American Iron and Steel Products

_____, do hereby certify that:
Name

1. I am_____(title) of the _____(company, partnership, etc.) and have authority to execute this certification on behalf of the firm.

2. This firm is aware that all iron and steel products used for this project must be produced in the United States per Section 436 (a) – (f) of the Consolidated Appropriations Act, 2014.

3. This firm is aware that the use of American iron and steel products applies to all projects for the construction, alteration, maintenance, or repair of publically owned treatment works (POTW) or public water systems.

4. This firm understands the term "iron and steel products" refers to the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

5. I am aware that this requirement applies to all portions of the project that are subcontracted.

Name of Firm_____

Signature_____

Title _____

Date _____

Corporate Seal (where appropriate)

Use of American Iron and Steel

Sec. 436. (a)(1) None of the funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j-12) shall be used for a project for the construction, alteration, maintenance, or repair of a public water system or treatment works unless all of the iron and steel products used in the project are produced in the United States.

(2) In this section, the term `iron and steel products' means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

(b) Subsection (a) shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency (in this section referred to as the `Administrator') finds that--

(1) applying subsection (a) would be inconsistent with the public interest;

(2) iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or

(3) inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

(c) If the Administrator receives a request for a waiver under this section, the Administrator shall make available to the public on an informal basis a copy of the request and information available to the Administrator concerning the request, and shall allow for informal public input on the request for at least 15 days prior to making a finding based on the request. The Administrator shall make the request and accompanying information available by electronic means, including on the official public Internet Web site of the Environmental Protection Agency.

(d) This section shall be applied in a manner consistent with United States obligations under international agreements.

(e) The Administrator may retain up to 0.25 percent of the funds appropriated in this Act for the Clean and Drinking Water State Revolving Funds for carrying out the provisions described in subsection (a)(1) for management and oversight of the requirements of this section.

(f) This section does not apply with respect to a project if a State agency approves the engineering plans and specifications for the project, in that agency's capacity to approve such plans and specifications prior to a project requesting bids, prior to the date of the enactment of this Act.

DAVIS-BACON WAGE ACT CERTIFICATION

BIDDER certifies that wages paid in connection with the PROJECT shall be paid at prevailing rates not less than those prevailing under the Davis-Bacon Wage Act. Bidder further certifies that the provisions contained in the following clauses will be exercised in the performance of any contract resulting from this BID and are made a part of the CONTRACT DOCUMENTS thereto by their inclusion in the BID as follows:

"(1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work 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 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.
Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less 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 shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in § 5.5(a)(4). 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 classification and wage rates conformed under paragraph (a)1(ii) of this section) and the Davis-Bacon poster (WH-1321) shall 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.

Sub recipients may obtain wage determinations from the U.S. Department of Labor's web site, www.wdol.gov.

(ii)(A) The sub recipient, on behalf of USEPA, shall 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 shall be classified in conformance with the wage determination. The USEPA award official shall approve an additional classification and wage rate and fringe benefits therefore 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 utilized 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) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the sub recipient agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the sub recipient to IEPA. IEPA will transmit the report, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify or disapprove every additional classification action within 30 days of receipt and so advise IEPA or will notify IEPA within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the sub recipient do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the questions, including the views of all interested parties and the recommendation of the award official, 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.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) of this section, shall 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.

(iii) 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 shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) 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, 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.

(2) Withholding, the sub recipient shall upon written request of the USEPA Award Official or an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such actions as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, 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 section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) 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 section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall 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. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the sub recipient, that is, the entity that receives the sub-grant or loan from IEPA. Such documentation shall be available on request of IEPA or USEPA. As to each payroll copy received, the sub recipient shall provide written confirmation indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly payrolls. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). Form WH-347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the sub recipient for transmission to IEPA or USEPA, if requested, for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sub recipient.

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR Part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR Part 5, and that such information is correct and complete.

(2) That each laborer and mechanic (including each helper, apprentice, and trainee) employed 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 Regulations, 29 CFR Part 3;

(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 of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of optional Form WH-347, available for this purpose from the Wage and Hour Division Web site at

http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site, shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of IEPA, USEPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency or IEPA may, after written notice to the contractor, sponsor, applicant, or owner, 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 may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees –

(i) Apprentices. Apprentices will be permitted to work at less than predetermined rate for the work they performed 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 Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall 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 the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall 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, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on

the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

(5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR Part 3, which are incorporated by reference in this contract.

(6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the USEPA determines may be appropriate, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and sub recipients, IEPA, USEPA, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) 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 section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

4. Contract Provision for Contracts in Excess of $100,000

(a) Contract Work Hours and Safety Standards Act. The sub recipient shall insert the following clauses set forth in paragraphs (a)(1), (2), (3), and (4) of the section in full in any contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by Item 3, above or 29 CFF 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

(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 therefore 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 watchmen and guards, employed in violation of the clauses set forth in paragraph (b)(1) of this section, in the sum of $10 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) of this section.

(3) Withholding for unpaid wages and liquidated damages. The sub recipient, upon written request of the USEPA Award Official or an authorized representative of the Department of Labor, shall withhold or cause to be withheld, form any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract su7bject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (b)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (4) of this section.

(b) In addition to the clauses contained in Item 3, above, in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1, the Sub recipient shall insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social

security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Sub recipient shall insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the IEPA, USEPA and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job

5. Compliance Verification

(a) The sub recipient shall periodically interview a sufficient number of employees entitled to DB prevailing wages (covered employees) to verify that contractors or subcontractors are paying the appropriate wage rates. As provided in 29 CFR 5.6(a)(6), all interviews must be conducted in confidence. The sub recipient must use Standard Form 1445 or equivalent documentation to memorialize the interviews. Copies of the SF 1445 are available from USEPA on request.

(b) The sub recipient shall establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, the sub recipient must conduct interviews with a representative group of covered employees within two weeks of each contractor or subcontractor's submission of its initial weekly payroll data and two weeks prior to the estimated completion date for the contract or subcontract. Sub recipients must conduct more frequent interviews if the initial interviews or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. Sub recipients shall immediately conduct necessary interviews in response to an alleged violation of the prevailing wage requirements. All interviews shall be conducted in confidence.

(c) The sub recipient shall periodically conduct spot checks of a representative sample of weekly payroll data to verify that contractors and subcontractors are paying the appropriate wage rates. The sub recipient shall establish and follow a spot check schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, the sub recipient must spot check payroll data within two weeks of each contractor or subcontractor's submission of its initial payroll data and two weeks prior to the completion date the contract or subcontract. Sub recipients must conduct more frequent spot checks if the initial spot check or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. In addition, during the examinations the sub recipient shall verify evidence of fringe benefit plans and payments thereunder by contractors and subcontractors who claim credit for fringe benefit contributions.

(d) The sub recipient shall periodically review contractors and subcontractors use of apprentices and trainees to verify registration and certification with respect to apprenticeship and training programs approved by either the U.S. Department of Labor or a state, as appropriate, and that contractors and subcontractors are not using disproportionate numbers of, laborers, trainees and apprentices. These reviews shall be conducted in accordance with the schedules for spot checks and interviews described in Item 5(b) and (c) above.

(e) Sub recipients must immediately report potential violations of the DB prevailing wage requirements to the USEPA DB contact listed above and to the appropriated DOL Wage and Hour District Office listed at http://www.dol.gov/esa/contacts/whd/america2.htm".

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Timetables	Goals for minority participation for each trade	Goals for female participation in each trade
	Insert goals for* each year 20.9 %	Insert goals for* each year 6.9 %

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals established for the geographical area where the contract resulting from this solicitation is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the contract is to be performed.

4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is **.

*goals and timetables published from time to time by the Director, Office of Federal Contract Compliance Programs (OFCCP)

**Insert description of the geographical areas where the contract is to be performed giving the state, county and city, if any.

CONSTRUCTION CONTRACTORS AFFIRMATIVE ACTION REQUIREMENTS
GOALS FOR MINORITY PARTICIPATION
(As published in the Friday, October 3, 1980 Federal Register)

FEMALE PARTICIPATION= 6.9% STATEWIDE

County	Percent	County	Percent	County	Percent
Adams	3.1	Jasper	11.4	Randolph	11.4
Alexander	11.4	Jefferson	11.4	Richland	11.4
Bond	11.4	Jersey	11.4	Rock Island	4.6
Boone	6.3	Jo Davis	0.5	Saline	3.5
Brown	3.1	Johnson	11.4	Sangamon	4.5
Bureau	18.4	Kane	19.6	Schuyler	3.3
Calhoun	11.4	Kankakee	9.1	Scott	4
Carroll	3.4	Kendall	18.4	Shelby	4
Cass	4	Knox	3.3	Stark	3.3
Champaign	7.8	Lake	19.6	St. Clair	14.7
Christian	4	La Salle	18.4	Stephenson	4.6
Clark	2.5	Lawrence	3.5	Tazwell	4.4
Clay	11.4	Lee	4.6	Union	11.4
Clinton	14.7	Livingston	18.4	Vermilion	4.8
Coles	4.8	Logan	4	Wabash	3.5
Cook	19.6	Macon	7.6	Warren	3.3
Crawford	2.5	Macoupin	11.4	Washington	11.4
Cumberland	4.8	Madison	14.7	Wayne	11.4
De Kalb	18.4	Marion	11.4	White	3.5
De Witt	4	Marshall	3.3	Whiteside	3.4
Douglas	4.8	Mason	3.3	Will	20.9
Du Page	19.6	Massac	5.2	Williamson	11.4
Edgar	4.8	McDonough	3.3	Winnebago	6.3
Edwards	3.5	McHenry	19.6	Woodford	4.4
Effingham	11.4	McLean	2.5		
Fayette	11.4	Menard	4.5		
Ford	4.8	Mercer	3.4		
Franklin	11.4	Monroe	14.7		
Fulton	3.3	Montgomery	11.4		
Gallatin	3.5	Morgan	4		
Greene	11.4	Moultrie	4		
Grundy	18.4	Ogle	4.6		
Hamilton	3.5	Peoria	4.4		
Hancock	3.4	Perry	11.4		
Hardin	5.2	Piatt	4.8		
Henderson	3.4	Pike	3.1		
Henry	4.6	Pope	5.2		
Iroquois	18.4	Pulaski	11.4		
Jackson	11.4	Putnam	18.4		

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60-4.1 Scope and Application.

This part applies to all contractors and subcontractors that hold any Federal or federally assisted construction contract in excess of $10,000. The regulations in this part are applicable to all of a construction contractor's or subcontractor's construction employees who are engaged in on site construction including those construction employees who work on a non-Federal or non-federally assisted construction site. This part also establishes procedures, which all Federal contracting officers and all applicants, as applicable, shall follow in soliciting for and awarding Federal or federally assisted construction contracts. Procedures also are established which administering agencies shall follow in making any grant, contract, loan, insurance, or guarantee involving federally assisted construction which is not exempt from the requirements of Executive Order 11246, as amended. In addition, this part applies to construction work performed by construction contractors and subcontractors for Federal non-construction contractors and subcontractors if the construction work is necessary in whole or in part to the performance of a non-construction contract or subcontract.

[43 FR 49254, OCT. 20, 1978; 43 FR 51404, NOV. 3, 1978]

60-4.2 Solicitations.

(a) All Federal contracting officers and all applicants shall include the notice set forth in paragraph (d) of this section and the Standard Federal Equal Employment Opportunity Construction Contract Specifications set forth in § 60-4.3 of this part in all solicitations for offers and bids on all Federal and federally assisted construction contracts or subcontracts to be performed in geographical areas designated by the Director pursuant to § 60-4.6 of the part. Administering agencies shall require the inclusion of the notice set forth in paragraph (d) of this section and the specifications set forth in § 60-4.3 of this part as a condition of any grant, contract, subcontract, loan, insurance or guarantee involving federally assisted construction covered by this Part 60-4.

(b) All non-construction contractors covered by Executive Order 11246 and the implementing regulations shall include the notice in paragraph (d) of this section in all construction agreements, which are necessary in whole or in part to the performance of the covered non-construction contract.

(c) Contracting officers, applicants and non-construction contractors shall give written notice to the Director within 10 working days of award of a contract subject to these provisions. The notification shall include the name, address, and telephone number of the contractor; employer identification number; dollar amount of the contract, estimated starting and completion dates of the contract; the contract number; and geographical area in which the contract is to be performed.

(d) The following notice shall be included in, and shall be a part of, all solicitations for offers and bids on all Federal and federally assisted construction contracts or subcontracts in excess of $10,000 to be performed in geographical areas designated by the Director pursuant to § 60-4.6 of this part (see 41 CFR 60-4.2(a)):

Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246)

1. The Offeror or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Time- tables	Goals for minority participation for each trade	Goals for female participation in each trade
	20.9%	6.9%

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and nonfederally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.

4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is (insert description of the geographical areas where the contract is to be performed giving the state, county, and city, if any).

[43 FR 49254, OCT. 20, 1978; 43 FR 51401, NOV. 3, 1978, AS AMENDED AT 45 FR 65977, OCT. 3, 1980]

60-4.3 Equal Opportunity Clauses.

(a) The equal opportunity clause published at 41 CFR 60-1.4(a) of this chapter is required to be included in, and is part of, all nonexempt Federal contracts and subcontracts, including construction contracts and subcontracts. The equal opportunity clause published at 41 CFR 60-1.4(b) is required to be included in, and is a part of, all nonexempt federally assisted construction contracts and subcontracts. In addition to the clauses described above, all Federal contracting officers, all applicants and all non-construction contractors, as applicable, shall include the specifications set forth in this section in all Federal and federally assisted construction contracts in excess of $10,000 to be performed in geographical areas designated by the Director pursuant to § 60-4.6 of this part and in construction subcontracts in excess of $10,000 necessary in whole or in part to the performance of non-construction Federal contracts and subcontracts covered under the Executive order.

Standard Federal Equal Employment Opportunity Construction Contract Specifications (Executive Order 11246)

1. As used in these specifications:

a. "Covered area," means the geographical area described in the solicitation from which this contract resulted:

b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;

c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.

d. "Minority" includes:

(i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);

(ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);

(iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and

(iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals

for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7 a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered Construction contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, nor the regulations promulgated pursuant thereto.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, the Contractor must employ such apprentices and trainees during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The Contractor shall take specific affirmative action to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The

Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason; therefore, along with whatever additional actions the Contractor may have taken.

d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.

f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written

notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a contractor’s work force.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are non-segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations, which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the

Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws, which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

(b) The notice set forth in 41 CFR 60-4.2 and the specifications set forth in 41 CFR 60-4.3 replace the New Form for Federal Equal Employment Opportunity Bid Conditions for Federal and Federally Assisted Construction published at 41 FR 32482 and commonly known as the Model Federal EEO Bid Conditions, and the New Form shall not be used after the regulations in 41 CFR Part 60-4 become effective.

[43 FR 49254, OCT. 20, 1978; 43 FR 51401, NOV. 3, 1978, AS AMENDED AT 45 FR 65978, OCT. 3, 1980]

60-4.4 Affirmative Action Requirements.

(a) To implement the affirmative action requirements of Executive Order 11246 in the construction industry, the Office of Federal Contract Compliance Programs previously has approved affirmative action programs commonly referred to as "Hometown Plans," has promulgated affirmative action plans referred to as "Imposed Plans" and has approved "Special Bid Conditions" for high impact projects constructed in areas not covered by a Hometown or an Imposed Plan. All solicitations for construction contracts made after the effective date of the regulations in this part shall include the notice specified in § 604.2 of this part and the specifications in § 60-4.3 of this part in lieu of the Hometown and Imposed Plans including the Philadelphia Plan and Special Bid Conditions. Until the Director has issued an order pursuant to § 60-4.6 of this part establishing goals and timetables for minorities in the appropriate geographical areas or for a project covered by Special Bid Conditions, the goals and timetables for minorities to be inserted in the Notice required by 41 CFR 60-4.2 shall be the goals and timetables contained in the Hometown Plan, Imposed Plan or Special Bid Conditions presently covering the respective geographical area or project involved.

(b) Signatories to a Hometown Plan (including heavy highway affirmative action plans) shall have 45 days from the effective date of the regulations in this part to submit under such a Plan (for the director's approval) goals and timetables for women and to include female representation on the Hometown Plan Administrative Committee. Such goals for female representation shall be at least as high as the goals established for female representation in the notice issued pursuant to 41 CFR 60-4.6. Failure of the signatories, within the 45-day period, to include female representation and to submit goals for women or a new plan, as appropriate, shall result in an automatic termination of the Office of Federal Contract Compliance Program's approval of the Hometown Plan. At any time, the Office of Federal Contract Compliance Programs terminates or withdraws its approval of a Hometown Plan, or when the plan expires and another plan is not approved, the contractors signatory to the plan shall be covered automatically by the specifications set forth in § 60-4.3 of this part and by the goals and timetables established for that geographical area pursuant to § 60-4.6 of this part.

60-4.5 Hometown Plans

(a) A contractor participating, either individually or through an association, in an approved Hometown Plan (including heavy highway affirmative action plans) shall comply with its affirmative action obligations under Executive Order 11246 by complying with its obligations under the plan: *Provided,* That each contractor or subcontractor participating in an approved plan is individually required to comply with the equal opportunity clause set forth in 41 CFR 60-1.4; to make a good faith effort to achieve the goals for each trade participating in the plan in which it

has employees; and that the overall good performance by other contractors or subcontractors toward a goal in an approved plan does not excuse any covered contractor's or subcontractor's failure to take good faith efforts to achieve the plan's goals and timetables. If a contractor is not participating in an approved Hometown Plan it shall comply with the specifications set forth in § 60-4.3 of this part and with the goals and timetables for the appropriate area as listed in the notice required by 41 CFR 60-4.2 about that trade. For the purposes of this part 60-4, a contractor is not participating in a Hometown Plan for a particular trade if it:

(1) Ceases to be signatory to a Hometown Plan covering that trade;

(2) Is signatory to a Hometown Plan for that trade but is not party to a collective bargaining agreement for that trade;

(3) Is signatory to a Hometown Plan for that trade but is party to a collective bargaining agreement with labor organizations, which are not or cease to be signatories to the same Hometown Plan for that trade;

(4) Is signatory to a Hometown Plan for that trade but is party to a collective bargaining agreement with a labor organization for that trade but the two have not jointly executed a specific commitment to minority and female goals and timetables and incorporated the commitment in the Hometown Plan for that trade;

(5) Is participating in a Hometown Plan for that trade which is no longer acceptable to the Office of Federal Contract Compliance Programs;

(6) Is signatory to a Hometown Plan for that trade but is party to a collective bargaining agreement with a labor organization for that trade and the labor organization and the contractor have failed to make a good faith effort to comply with their obligations under the Hometown Plan for that trade.

(b) Contractors participating in Hometown Plans must be able to demonstrate their participation and document their compliance with the provision of the Hometown Plan.

[43 FR 49254, OCT. 20, 1978; 43 FR 51401, NOV. 3, 1978]

60-4.6 Goals and Timetables.

The Director, from time to time, shall issue goals and timetables for minority and female utilization, which shall be based on appropriate workforce, demographic, or other relevant data and which shall cover construction projects or construction contracts performed in specific geographical areas. The goals, which shall be applicable to each construction trade in a covered contractor's or subcontractor's entire workforce which is working in the area covered by the goals and timetables, shall be published as notices in the Federal Register, and shall be inserted by the contracting officers and applicants, as applicable, in the Notice required by 41 CFR 60-4.2. Covered construction contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed.

[45 FR 65978, OCT. 3, 1980]

60-4.7 Effect on Other Regulations.

The regulations in this part are in addition to the regulations contained in this chapter, which apply to construction contractors and subcontractors generally. See particularly, 41 CFR 60-1.4 (a), (b), (c), (d), and (e); 60-1.5; 60-1.7; 60-1.8; 60-1.26; 60-1.29; 60-1.30; 60-1.32; 60-1.41; 60-1.42; 60-1.43; and 41 CFR Part 60-3; Part 60-20; Part 60-30; Part 60-40; and Part 60-50.

60-4.8 Show Cause Notice.

If an investigation or compliance review reveals that a construction contractor or subcontractor has violated the Executive order, any contract clause, specifications or the regulations in this chapter and if administrative enforcement is contemplated, the Director shall issue to the contractor or subcontractor a notice to show cause which shall contain the items specified in paragraphs (i) through (iv) of 41 CFR 60-2.2(c)(1). If the contractor does not show good cause within 30 days, or in the alternative, fails to enter an acceptable conciliation agreement which includes where appropriate, make up goals and timetables, back pay, and seniority relief for affected class members, the OFCCP shall follow the procedure in 41 CFR 60-1.26(b): *Provided,* That where a conciliation agreement has been violated, no show cause notice is required prior to the initiation of enforcement proceedings.

[43 FR 49254, OCT. 20, 1978; 43 FR 51401, NOV. 3, 1978]

60-4.9 Incorporation by Operation of the Order.

By operation of the order, the equal opportunity clause contained in § 60-1.4, the Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246) contained in § 60-4.2, and the Standard Federal Equal Employment Opportunity Construction Contract Specifications (Executive Order 11246) contained in § 60-4.3 shall be deemed to be a part of every solicitation or of every contract and subcontract, as appropriate, required by the order and the regulations in this chapter to include such clauses whether or not they are physically incorporated in such solicitation or contract and whether or not the contract is written.

U.S. ENVIRONMENTAL PROTECTION AGENCY

CERTIFICATION OF NONSEGREGATED FACILITIES

(Applicable to federally assisted construction contracts and related subcontracts exceeding $10,000 that are not exempt from the Equal Opportunity clause.)

The federally assisted construction contractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally assisted construction contractor certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally assisted construction contractor agrees that a breach of this certification is a violation of the Equal Opportunity clause in this contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, rest rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated based on race, creed, color, or national origin, because of habit, local custom or otherwise. The federally assisted construction contractor agrees that (except where he has obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain such certification in his files.

_____

Signature Date

_____

Name and Title of Signer (Please type)

_____

Firm Name

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

NOTICE TO LABOR UNIONS OR OTHER ORGANIZATIONS OF WORKERS

NONDISCRIMINATION IN EMPLOYMENT

To: _____
(Name of union or organization of workers)

The undersigned currently holds contract(s) with _____
(name of applicant)
involving funds or credit of the U.S. Government or (a) subcontract(s) with a prime contractor holding such contract(s).

You are advised that under the provisions of the above contracts(s) or subcontract(s) and in accordance with Executive Order 11246, as amended, dated September 24, 1965, as amended, the undersigned is obliged not to discriminate against any employee or applicant for employment because of race, color, creed or national origin. This obligation not to discriminate in employment includes, but is not limited to, the following:

HIRING, PLACEMENT, UPGRADING, TRANSFER OR DEMOTION, RECRUITMENT, ADVERTISING, OR SOLICITATION FOR EMPLOYMENT, TRAINING DURING EMPLOYMENT, RATES OF PAY OR OTHER FORMS OF COMPENSATION, SELECTION FOR TRAINING INCLUDING APPRENTICESHIP, LAYOFF OR TERMINATION.

This notice is furnished you pursuant to the provisions of the above contract(s) or subcontracts(s) and Executive Order 11246, as amended.

Copies of this notice will be posted by the undersigned in conspicuous places available to employees or applicants for employment.

_____

_____

_____

_____
(Contractor or Subcontractor)

_____
(Date)

EPA Project Control #: ___L171655___

United States Environmental Protection Agency
Washington, DC 20460

Certification Regarding Debarment, Suspension and Other Responsibility Matters

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

(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 judgment 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 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 the above statements. My explanation is attached.

EPA FORM 5700-49 (11-88)

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 sub-agreement thereunder for $25,000 or more.

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

Where to Submit

The prospective EPA grant, loan, or cooperative agreement recipient must return the signed certification or explanation with its application to the appropriate EPA Headquarters or Regional office, as required in the application instructions.

A prospective prime contractor must submit a completed certification or explanation to the individual or organization awarding the contract.

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

How to Obtain Forms:

EPA includes the certification form, instructions, and a copy of its implementing regulation (40 CFR Part 32) in each application kit. Applicants may reproduce these materials as needed and provide them to their prospective prime contractor, who, in turn, may reproduce and provide them to prospective subcontractors.

Additional copies/assistance may be requested from:

Compliance Branch
Grants Administration Division (PM-216F)
U.S. Environmental Protection Agency
401 M Street, SW
Washington DC 20460
(Telephone: 202-475-8025)

EPA Form 5700-19 (11-88)

Bidder Certification
In Compliance with Article 33E to the
"Criminal Code of 1961"

I _____, do hereby certify that:
Name

1. I am _____ of the _____
Position Firm
and have authority to execute this certification on behalf of the firm

2. This firm is not barred from bidding on this contract as a result of a violation of either Section 33E-3, Bid-rigging, or Section 33E-4, Bid Rotating, as set forth in Article 33E to the "Criminal Code of 1961."

Name of Firm _____

Signature _____

Title _____

Date _____
Corporate Seal (where appropriate)

On this _____day of _____20_____, before me appeared (Name)

_____ to me personally known, who, being duly sworn, did execute the foregoing affidavit, and did state that he or she was properly authorized by (Name of Firm) _____ to execute the affidavit and did so as his or her free act and deed.

Notary Public _____Commission Expires _____

Notary Seal

Specifications for Disadvantaged Business Enterprise Participation

(Name of Loan Recipient) City of Joliet

I. Disadvantaged Business Enterprise Policy

A. It is the policy of the State of Illinois to award a fair share of sub-agreements to disadvantaged businesses (DBEs). In complying with this requirement, contractors are required to take affirmative steps to assure that disadvantaged businesses are used when possible as sources of supplies, equipment, construction, and services as explained herein.

B. These specifications define the terms, conditions, and requirements of the State Revolving Fund Loan Program, and the (Name of Loan Recipient) _____'s policy and procedures for complying with these requirements.

C. As required by the award conditions of USEPA's Assistance Agreement with IEPA, the fair share percentages are 5% for MBEs and 12% for WBEs.

II. Pre-Contract Award Obligations

A. All bidders are required to advertise subcontracting opportunities and to negotiate with disadvantaged businesses prior to bid opening. Failure to document such affirmative efforts shall be deemed, relative to disadvantaged business compliance, non-responsive.

B. To establish a bid as responsible, the bidder will be required to document the proposed utilization of disadvantaged businesses with letters of intent signed by the bidder and by the disadvantaged business listed in the bid. The documentation requirements are outlined in Section III of this document.

C. (Name of Loan Recipient) _____'s disadvantaged business policy clearly intends for bidders to contact and encourage the participation of disadvantaged businesses prior to bid opening. Affirmative efforts (the written record of conscientious and honest communications between the bidder and disadvantaged business) must be initiated and completed by the bidder prior to bid opening. All bidders must document compliance with the requirements of the disadvantaged business policy.

III. Evaluation of Disadvantaged Business Utilization and Affirmative Efforts

A. As a prerequisite to demonstrate compliance with the (Name of Loan Recipient) _____'s disadvantaged business policy, ALL bidders shall provide the following with its bid:

1. Completed and signed certification from the bidder(s), attesting that the bidder will award no sub-agreements, including the procurement of equipment, materials, supplies and services, in the performance of this contract.

OR

2. "Certification of publication," or adequate proof of publication, including an actual copy of the newspaper advertisement from a daily newspaper. **The advertisement must run one day at least (16) days prior to bid opening.** An example advertisement follows this section.

   Bidders may publish the advertisement in an established, online bidder's clearinghouse such as the "Dodge Report (http://construction.com/dodge/)". If an online advertisement is placed with the "Dodge Report" or an equivalent website, a screenshot of the advertisement along with the webpage address, and a payment receipt is required as documentation. **The advertisement must run one day at least (16) days prior to bid opening.**

3. List of all disadvantaged business enterprise (DBE) and non-DBE's that submitted proposals to the bidder along with the date of the proposal. Names, addresses, phone number and/or e-mail are required.

4. List of disadvantaged businesses not being utilized and justification for non-utilization.

5. If DBE subcontractors will be utilized for the project, a completed and signed copy of IEPA DBE Form No. 3 (DBE Subcontractor Utilization Form) or an equivalent "Notice of Intent" is needed from each subcontractor.

6. If DBE subcontractors will be utilized for the project, a completed and signed certification from the bidder(s), attesting that the bidder has no controlling or dominating interest or conflict of interest with the disadvantaged business that will be utilized.

7. In instances where the bidder(s) does not receive any proposals from disadvantaged businesses prior to bid opening, the bidder(s) must provide a written certification attesting that no proposals were received.

Failure to submit the documentation pursuant to the requirements of A (1-7) above may cause rejection of the bid as non-responsive**.**

IV. Sanctions

A. The (Name of Loan Recipient) _____ may reject one or all bids when the information submitted by the bidder(s) fails to demonstrate compliance with the disadvantaged business requirements (i.e., the bidder fails to place their pre-bid advertisement in a daily newspaper, or approved website, at least 16 days prior to bid opening).

B. Upon finding that any Party has not complied with the requirements of these specifications, including misrepresenting a firm as a disadvantaged business, any one or a combination of the following actions may be taken.

1. Declare the bidder and/or subcontractor non-responsible and therefore, ineligible for contract award.

2. Disallow all contract costs associated with non-compliance.

3. Refer matters which may be fraudulent to the Illinois Attorney General.

V. Post-Contract Award Compliance

A. As required by the award conditions of USEPA's Assistance Agreement with IEPA, all sub-agreements of the prime contractor must identify that the fair share percentages are 5% for MBEs and 12 % for WBEs.

B. After award of the prime contract, copies of all disadvantaged business-related sub-agreements between the prime contractor and subcontractors shall be submitted to the owner.

C. After bid submission, any changes in previously reported disadvantaged businesses utilization shall be handled in accordance with 40 CFR Part 33.302(b-h). If the contractor fails to initiate such actions, the owner may withhold payments and/or institute other appropriate sanctions.

Suggested Disadvantaged Business (DBE)
Advertisement for Construction Contractors

Notice to Disadvantaged Businesses

_____, _____, _____, is
(Name of Company) (Address of Company) (Telephone)

seeking disadvantaged businesses for the_____
(Name of Loan Recipient)

Project for subcontracting opportunities in the following areas: _____, _____, _____, _____

All disadvantaged businesses should contact, IN WRITING, (certified letter, return receipt requested), _____ to discuss the subcontracting opportunities. All negotiations must
(Company Contact Person)

be completed prior to bid opening _____.
(Date of Bid Opening)

*The advertisement must clearly state the method of evaluating the proposals or quotations, and the relative importance attached to each criterion. Bidders must uniformly and objectively evaluate the proposals submitted by disadvantaged business in response to the advertisement based upon the evaluation criteria stated in the advertisement. The evaluation criteria must not be restrictive or exclusionary.

Summary Report of Disadvantaged Business Enterprise Requirements for Contractors

1) Completed and signed certification from bidder(s), attesting that the bidder will award no sub-agreements, including the procurement of equipment, materials, supplies and services in the performance of this contract (may use IEPA DBE Form #1).

OR

"Certificate of publication, or adequate evidence of proof of publication, including an actual copy of the newspaper advertisement from a daily publication. For advertisements placed in a construction project clearinghouse such as www.construction.com, a screenshot of the advertisement, link to website, and receipt is required for proof of advertising.

2) List of all disadvantaged business enterprises (DBE) and non-DBE's that submitted proposals to the bidder/prime contractor. Specify as DBE or non-DBE, type of DBE, and the other information listed below (DBE Form #4 may be used for this purpose).

Name of Company
Name of Owners
Address of Company
E-mail Address of Company
Telephone Number
Date of Proposal
Type of Business
Type of DBE
Description of work to be performed

3) List of disadvantaged businesses that submitted proposals to the bidder but will not be utilized. Justification for non-utilization must be provided (may use IEPA DBE Form #1).

4) Completed and signed copies IEPA DBE Form #3 (Subcontractor Utilization Form) or equivalent "Notice of Intent". Only applies if using DBE subcontractors.

5) Completed and signed certification from bidder(s) attesting that the bidder has no dominating or conflict of interest with the disadvantaged business to be utilized (IEPA DBE Form #1). Only applies if using DBE subcontractors.

6) In instances where the bidder(s) does not receive any proposals from disadvantaged businesses prior to bid opening, the bidder(s) must provide a written certification attesting that no proposals were received (IEPA DBE Form #1).

7) **Note:** DBE Form #2 is **not** included in this packet. It is for consultants/engineers to report DBE activity. This form may be found in IEPA's DBE Guidance Manual which is available on the Agency's website or mailed upon request by calling 217-782-2027.

IEPA Disadvantaged Business Enterprise (DBE) Program Form #1
Contractor Certification Form

(To be completed by all Prime Contractors)

Please check the appropriate boxes that apply and complete the information on the bottom of the form.

☐This firm will award no subcontracts (including in the procurement of equipment, supplies, or services), in the performance of this contract.

☐This firm advertised for DBE subcontractors according to the good faith efforts outlined in the IEPA DBE Guidance Document.

☐This firm received proposals from DBE(s) that will not be utilized. A list of the DBEs not hired, along with their address, phone number, and reason(s) for non-utilization, is below.

☐This firm did not receive any inquiries from DBEs.

I certify that the above is true. I further certify that this firm and its partners, directors, and officers do not possess a controlling interest in ownership or conflict of interest or any other authority to control the DBE to be used during the performance of the contracts.

By: _____

NAME: _____

TITLE: _____

Company: _____

Date: ___/ ___ / _____

EPA Disadvantaged Business Enterprise (DBE) Program Form #3
Subcontractor Utilization Form

(Only complete this form if DBE subcontractors or sub-consultants will be working on a project)

This form is intended to capture the DBE subcontractor's description of work to be performed and the price of the work submitted to the prime contractor. All subcontractors must complete this form, and it must be included in the prime contractor's bid package.

Subcontractor Name	Project Name
Contact Person's Name & Title	
Address	
Telephone	Email
DBE Certified By:	Select all that apply. At least one is required: **MBE WBE SBE DBE**
Prime Contractor Name	

Type of Work to be Performed	**Cost Estimate of Work**

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to using the subcontractors above. I am aware that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 C.F.R. Part 33 Section 33.302(c).

Prime Contractor Signature:	**Print Name:**
Date:	**Title:**
Subcontractor Signature:	**Print Name:**
Date:	**Title:**

IEPA Disadvantaged Business Enterprise (DBE) Program Form #4, Bidders List

(Only complete this form if subcontractors or sub-consultants will be working on a project)

Using this form/format is optional. Other formats are acceptable.

Company Name & Contact Person	Address	Phone No. w/ area code	Email	Proposed Work (supplies, paint, paint etc.)	DBE Status (MBE, WBE, DBE, SBE or Not Applicable)
					Check if Hired ☐
					Check if Hired ☐
					Check if Hired ☐
					Check if Hired ☐

NOTICE

The City of Joliet has adopted a Responsible Bidder Ordinance (2-440). In addition to any other requirement, unless otherwise expressly stated in a bid solicitation or an award of contract, or applicable state or federal law or regulation states otherwise, all bidders must comply with the following requirements in order to submit a bid or be awarded a contract.

1. The bidder must be a duly organized legal entity in good standing with the Illinois Secretary of State and in compliance with all laws prerequisite to doing business in the state and submit a copy of the Illinois Secretary of State Department of Business Services online records evidencing that the bidder has a current corporate annual report on file, if required. If the bidder is an individual, sole proprietorship, or partnership, this subsection shall not apply.

2. The bidder must have a valid Federal Tax Identification Number or Social Security Number (for individuals), documents evidencing current registration with the Illinois Department of Revenue and the Illinois Department of Employment Security (if bidder has employees).

3. The bidder must be an equal opportunity employer and comply with Section 2000(e) of Chapter 21, Title 42 of the United States Code and Executive Order 11246.

4. The bidder shall provide certificates of insurance indicating the following coverages if called for in the bid solicitation: general liability, workers compensation, completed operations, automobile, hazardous occupation, and product liability.

5. A statement that all employees are (i) covered under a current workers' compensation insurance policy, and (ii) properly classified under such policy. If the bidder is insured with a carrier, the evidence of workers' compensation insurance shall be a copy of the "Information Page" which includes the name and address of the insured, as well as class codes upon which the compensation premium is based and the total estimated remuneration per class code.

6. A statement of compliance with all provisions of the Illinois Prevailing Wage Act (820 ILCS 130), as amended, and all the rules and regulations therein, for the past five (5) years. Such statement shall also provide that the contractor has reviewed the Prevailing Wage Act or the federal Davis-Bacon

and Related Acts, has reviewed and agrees to pay the applicable prevailing wage rates attached to the bid specifications, and will strictly comply with the Prevailing Wage Act or federal Davis-Bacon and Related Acts and related requirements, including wages, medical and hospitalization insurance and retirement for those trades covered in the Act. A contractor who has been found, by the Illinois Department of Labor, to be in violation of the Prevailing Wage Act twice within a three (3) year period shall be deemed to not be Responsible Bidder for two (2) years from the date of the latest finding.

7. Certification of compliance with the Substance Abuse Prevention on Public Works Projects Act (820 ILCS 265/1, et seq.).

8. A certification that individuals who perform work on the public works project on behalf of the contractor are properly classified as either (i) an employee, or (ii) an independent contractor under all applicable state and federal laws and local ordinances.

9. Documents evidencing any professional or trade licenses required by law or local ordinance for any trade or specialty in which the contractor is seeking a contract award. Additionally, the contractor must disclose any suspension or revocation of such license held by the company, or of any director, officer, or manager of the company.

10. For construction contracts (construction of new facilities, renovation of existing facilities, or road construction projects), or demolition contracts, over $25,000 (twenty five thousand dollars), evidence of participation in apprenticeship and training programs applicable to the work to be performed on the project, which are approved by and registered with the United States Department of Labor's Office of Apprenticeship, or its successor organization. The required evidence includes but is not limited to a copy of all applicable apprenticeship standards or Apprenticeship Agreement(s) for any apprentice(s) who will perform work on the public works project.

11. Disclosure of the name and address of each subcontractor from whom the contractor has accepted a bid and/or intends to hire on any part of the project. Further, each such subcontractor shall be required to adhere to the requirements set forth herein as though it were bidding directly to the city. Each contractor shall submit all subcontractor information and supporting documentation to the city prior to the subcontractor commencing work on the project.

12. Unless otherwise agreed to in a collective bargaining agreement, the bidder shall certify that it provides, or contributes to, a health care plan for those employees working on the project and shall provide a copy of the health care plan upon request. The contributions toward a health care plan must be part of the employee's regular compensation, and not merely part of the employee's compensation during the period of time for which the employee is performing work on the project.

13. Unless otherwise agreed to in a collective bargaining agreement, the bidder shall certify that it contributes to an employee pension or retirement program, including but not limited to a 401k, a defined benefit plan or a similar plan for its field employees working on the project and shall provide a copy of the plan upon request. The contributions toward a pension or retirement program must be a part of the employee's regular compensation and not merely part of the employee's compensation during the period of time for which the employee is performing work on the project.

14. Certification that the bidder has not been subject to any determinations by a court or governmental agency for violations of federal, state, or local laws, including but not limited to serious, willful, or repeated violations of the Occupational Safety and Health Act (OSHA), violations of contracting or antitrust laws, tax or licensing laws, environmental laws, or the federal Davis-Bacon and Related Acts.

15. Whenever practical, the bidder should prequalify as a local bidder.

16. Any material changes to the contractor's status, at any time during the performance of the project, must be reported in writing to the city within fourteen (14) days of its occurrence. Failure to comply with this requirement is grounds for the contractor to be deemed a non-responsible bidder.

17. The submission requirements of this Ordinance also apply to subcontractors, except that the contractor shall submit all subcontractor submissions to the city prior to the subcontractor commencing work on the project. Failure of a subcontractor to submit the required information shall not disqualify the successful bidder from performing work on the project and shall not constitute a contractual default and/or breach by the successful bidder. However, the city may withhold all payments otherwise due for work performed by a subcontractor until the subcontractor submits the required information and the city approves such information. Further, where the city deems necessary, the city may also require that the successful bidder remove the subcontractor from the project and replace it with a responsive and responsible subcontractor.

CERTIFICATIONS/ATTACHMENTS

For each required certification or submission, the bidder shall comply with the appropriate subsection of the City of Joliet code of ordinances by initialing the page and/or attaching the required documentation to the page.

The certification pages should be initialed and submitted with the bid along with the required attachments.

There are 16 certification pages and a checklist that follows.

2-440(1) - The bidder must be a duly organized legal entity in good standing with the Illinois Secretary of State and in compliance with all laws prerequisite to doing business in the state and submit a copy of the Illinois Secretary of State Department of Business Services online records evidencing that the bidder has a current corporate annual report on file, if required. If the bidder is an individual, sole proprietorship, or partnership, this subsection shall not apply.

I hereby certify that the bidder is a duly organized legal entity in good standing with the Illinois Secretary of State and in compliance with all laws prerequisite to doing business in the state.

_____

Initials of bidder

Or:

I certify that the bidder is an individual, sole proprietor, or partnership.

_____

Initials of bidder

Attachment: Illinois Secretary of State Department of Business Services online records evidencing that the bidder has a current corporate annual report on file (if required).

Mark attachment as "Attachment A"

2-440(2) - The bidder must have a valid Federal Tax Identification Number or Social Security Number (for individuals), documents evidencing current registration with the Illinois Department of Revenue and the Illinois Department of Employment Security (if bidder has employees).

Attachment: Documents evidencing current registration with the Illinois Department of Revenue and the Illinois Department of Employment Security (if bidder has employees).

Mark attachment as "Attachment B"

2-440(3) - The bidder must be an equal opportunity employer and comply with Section 2000(e) of Chapter 21, Title 42 of the United States Code and Executive Order 11246.

I certify that the bidder is an equal opportunity employer and is in compliance with Section 2000(e) of Chapter 21, Title 42 of the United States Code and Executive Order 11246.

_____

Initials of bidder

2-440(4) - The bidder shall provide certificates of insurance indicating the following coverages if called for in the bid solicitation: general liability, workers compensation, completed operations, automobile, hazardous occupation, and product liability.

Attachments: Certificates of insurance indicating the following coverages as called for in the bid solicitation.

Mark attachment as "Attachment C"

2-440(5) - A statement that all employees are (i) covered under a current workers' compensation insurance policy, and (ii) properly classified under such policy. If the bidder is insured with a carrier, the evidence of workers' compensation insurance shall be a copy of the "Information Page" which includes the name and address of the insured, as well as class codes upon which the compensation premium is based and the total estimated remuneration per class code.

I certify that all employees are (i) covered under a current workers' compensation insurance policy, and (ii) properly classified under such policy.

_____

Initials of bidder

Attachment: "Information Page" which includes the name and address of the insured, as well as class codes upon which the compensation premium is based and the total estimated remuneration per class code (if applicable).

Mark attachment as "Attachment D"

2-440(6) - A statement of compliance with all provisions of the Illinois Prevailing Wage Act (820 ILCS 130), as amended, and all the rules and regulations therein, for the past five (5) years. Such statement shall also provide that the contractor has reviewed the Prevailing Wage Act or the federal Davis-Bacon and Related Acts, has reviewed and agrees to pay the applicable prevailing wage rates attached to the bid specifications, and will strictly comply with the Prevailing Wage Act or federal Davis-Bacon and Related Acts and related requirements, including wages, medical and hospitalization insurance and retirement for those trades covered in the Act. A contractor who has been found, by the Illinois Department of Labor, to be in violation of the Prevailing Wage Act twice within a three (3) year period shall be deemed to not be Responsible Bidder for two (2) years from the date of the latest finding.

I certify that the bidder is in compliance with all provisions of the Illinois Prevailing Wage Act (820 ILCS 130), as amended, and all the rules and regulations therein, and has been for the past five (5) years.

_____

Initials of bidder

I certify that that the contractor has reviewed the Prevailing Wage Act or the federal Davis-Bacon and Related Acts, has reviewed and agrees to pay the applicable prevailing wage rates attached to the bid specifications, and will strictly comply with the Prevailing Wage Act or federal Davis-Bacon and Related Acts and related requirements, including wages, medical and hospitalization insurance and retirement for those trades covered in the Act.

_____

Initials of bidder

2-440(7) - Certification of compliance with the Substance Abuse Prevention on Public Works Projects Act (820 ILCS 265/1, et seq.).

I certify that the bidder is in compliance with the Substance Abuse Prevention on Public Works Projects Act (820 ILCS 265/1, et seq.).

_____

Initials of bidder

2-440(8) - A certification that individuals who perform work on the public works project on behalf of the contractor are properly classified as either (i) an employee, or (ii) an independent contractor under all applicable state and federal laws and local ordinances.

I certify that all individuals who perform work on the public works project on behalf of the contractor are properly classified as either (i) an employee, or (ii) an independent contractor under all applicable state and federal laws and local ordinances.

_____

Initials of bidder

2-440(9) - Documents evidencing any professional or trade licenses required by law or local ordinance for any trade or specialty in which the contractor is seeking a contract award. Additionally, the contractor must disclose any suspension or revocation of such license held by the company, or of any director, officer, or manager of the company.

Attachments: Documents evidencing any professional or trade licenses required by law or local ordinance for any trade or specialty in which the contractor is seeking a contract award.

Mark attachment as "Attachment E"

Attachments: Disclosure of any suspension or revocation of such license held by the company, or of any director, officer, or manager of the company.

Mark attachment as "Attachment E1"

Or

I certify that the contractor has not been the subject of any suspension or revocation of such license held by the company, or of any director, officer, or manager of the company.

_____

Initials of bidder

2-440(10) - For construction contracts (construction of new facilities, renovation of existing facilities, or road construction projects), or demolition contracts, over $25,000 (twenty five thousand dollars), evidence of participation in apprenticeship and training programs applicable to the work to be performed on the project, which are approved by and registered with the United States Department of Labor's Office of Apprenticeship, or its successor organization. The required evidence includes but is not limited to a copy of all applicable apprenticeship standards or Apprenticeship Agreement(s) for any apprentice(s) who will perform work on the public works project.

Attachments: Evidence of participation in apprenticeship and training programs applicable to the work to be performed on the project, which are approved by and registered with the United States Department of Labor's Office of Apprenticeship, or its successor organization. The required evidence includes but is not limited to a copy of all applicable apprenticeship standards or Apprenticeship Agreement(s) for any apprentice(s) who will perform work on the public works project.

Mark attachment as "Attachment F"

2-440(11) - Disclosure of the name and address of each subcontractor from whom the contractor has accepted a bid and/or intends to hire on any part of the project. Further, each such subcontractor shall be required to adhere to the requirements set forth herein as though it were bidding directly to the city. Each contractor shall submit all subcontractor information and supporting documentation to the city prior to the subcontractor commencing work on the project.

Attachments: The name and address of each subcontractor from whom the contractor has accepted a bid and/or intends to hire on any part of the project.

Mark attachment as "Attachment G"

I certify and acknowledge that the bidder shall submit all subcontractor information and supporting documentation to the city prior to the subcontractor commencing work on the project.

_____

Initials of bidder

2-440(12) - Unless otherwise agreed to in a collective bargaining agreement, the bidder shall certify that it provides, or contributes to, a health care plan for those employees working on the project and shall provide a copy of the health care plan upon request. The contributions toward a health care plan must be part of the employee's regular compensation, and not merely part of the employee's compensation during the period of time for which the employee is performing work on the project.

I certify that the bidder provides, or contributes to, a health care plan for those employees working on the project and shall provide a copy of the health care plan upon request. I further certify that these contributions are part of the employee's regular compensation, and not merely part of the employee's compensation during the period of time for which the employee is performing work on the project.

_____

Initials of bidder

Or

I certify that the bidder is subject to a collective bargaining agreement which addresses issues regarding a health care plan.

_____

Initials of bidder

2-440(13) - Unless otherwise agreed to in a collective bargaining agreement, the bidder shall certify that it contributes to an employee pension or retirement program, including but not limited to a 401k, a defined benefit plan or a similar plan for its field employees working on the project and shall provide a copy of the plan upon request. The contributions toward a pension or retirement program must be a part of the employee's regular compensation and not merely part of the employee's compensation during the period of time for which the employee is performing work on the project.

I certify that the bidder contributes to an employee pension or retirement program, including but not limited to a 401k, a defined benefit plan or a similar plan for its field employees working on the project and shall provide a copy of the plan upon request. These contributions toward a pension or retirement program are part of the employee's regular compensation and not merely part of the employee's compensation during the period of time for which the employee is performing work on the project.

_____

Initials of bidder

Or

I certify that the bidder is subject to a collective bargaining agreement which addresses contributions to an employee pension or retirement program, including but not limited to a 401k, a defined benefit plan or a similar plan for its field employees working on the project and shall provide a copy of the plan upon request.

_____

Initials of bidder

2-440(14) - Certification that the bidder has not been subject to any determinations by a court or governmental agency for violations of federal, state, or local laws, including but not limited to serious, willful, or repeated violations of the Occupational Safety and Health Act (OSHA), violations of contracting or antitrust laws, tax or licensing laws, environmental laws, or the federal Davis-Bacon and Related Acts.

I certify that the bidder has not been subject to any determinations by a court or governmental agency for violations of federal, state, or local laws, including but not limited to serious, willful, or repeated violations of the Occupational Safety and Health Act (OSHA), violations of contracting or antitrust laws, tax or licensing laws, environmental laws, or the federal Davis-Bacon and Related Acts.

_____

Initials of bidder

2-440(b) - Any material changes to the contractor's status, at any time during the performance of the project, must be reported in writing to the city within fourteen (14) days of its occurrence. Failure to comply with this requirement is grounds for the contractor to be deemed a non-responsible bidder.

I certify and acknowledge that any material changes to the contractor's status, at any time during the performance of the project, must be reported in writing to the city within fourteen (14) days of its occurrence. Failure to comply with this requirement is grounds for the contractor to be deemed a non-responsible bidder.

_____

Initials of bidder

2-440(d) - The submission requirements of this Ordinance also apply to subcontractors, except that the contractor shall submit all subcontractor submissions to the city prior to the subcontractor commencing work on the project. Failure of a subcontractor to submit the required information shall not disqualify the successful bidder from performing work on the project and shall not constitute a contractual default and/or breach by the successful bidder. However, the city may withhold all payments otherwise due for work performed by a subcontractor until the subcontractor submits the required information and the city approves such information. Further, where the city deems necessary, the city may also require that the successful bidder remove the subcontractor from the project and replace it with a responsive and responsible subcontractor.

I certify and acknowledge that the submission requirements of this Ordinance also apply to subcontractors. I further acknowledge that the city may withhold all payments otherwise due for work performed by a subcontractor until the subcontractor submits required information and the city approves such information. I further acknowledge that where the city deems necessary, the city may also require that the successful bidder remove the subcontractor from the project and replace it with a responsive and responsible subcontractor.

_____

Initials of bidder

CERTIFICATION CHECKLIST

Initial bottom of page to certify that required certifications and attachments are complete.

Bidders/Contractor are required to certify to the following items:

2-440(1) – Good standing with S.O.S. _____

2-440(3) – Equal opportunity employer _____

2-440(5) – Workers' compensation coverage _____

2-440(6) – Prevailing Wage Act _____

2-440(7) – Substance Abuse Prevention on Public Works Act _____

2-440(8) – Employees properly classified _____

2-440(9) – Contractor properly licensed _____

2-440(11) – Disclosure of subcontractor information _____

2-440(12) – Employee health care plan _____

2-440(13) – Employee retirement plan _____

2-440(14) – OSHA compliance _____

2-440(b) – Required reporting of change in status _____

2-440(d) – Required updating of subcontractor information _____

Bidders/Contractor are required to attach the following documents:

2-440(1) – S.O.S. annual report (if required) _____

2-440(2) – Registration with IDOR and IDES _____

2-440(4) – Certificates of insurance _____

2-440(5) – Information page regarding workers' compensation _____

2-440(9) – Professional or trade licenses required _____

2-440(9) – Disclosure of suspension or revocation of license _____

2-440(10) – Apprenticeship standards or agreements (if required) _____

2-440(11) – List of subcontractors _____

I certify that all required certifications and attachments are included in the bid documents

_____

Initials of bidder

DEPARTMENT OF
PUBLIC WORKS
815-724-4200 Direct
815-723-7770 Fax

CITY OF JOLIET

150 WEST JEFFERSON STREET
JOLIET, ILLINOIS 60432-4158

GENERAL CONTRACTOR

RE: 2023 CONSTRUCTION PROJECTS

Dear General Contractor:

The City of Joliet currently has specifications, which require ten **(10%)** percent minority participation in contracts over $100,000.00. In an effort to track this information better, the City of Joliet will be requiring all GENERAL CONTRACTS to submit to a complete list of sub-contractors they intend to use on the awarded project at the pre-construction meeting. The issuance of this sub-contractor list will help the City ensure that minority requirements are met as well as prevailing wages. The sub-contractor list should include the dollar amount or percentage of this contract for the work the sub-contractor is responsible. I.D.O.T. for BC 260-A is an example of such an acceptable form. In addition, the specification states that monthly certified payroll records are to be submitted to the Engineer. This will also be enforced for the upcoming construction season.

The City of Joliet appreciates your effort throughout the years and looks forward to working with you in the upcoming construction season.

Gregory P. Ruddy, P.E.
Director of Public Works

Allison Swisher
Director of Public Utilities

NOTICE TO BIDDERS – ETHICS ORDINANCE AND INSPECTOR GENERAL COMPLIANCE

The City of Joliet has an Ethics Ordinance (Section 2-333 et seq. of the Code of Ordinances of the City of Joliet) which prohibits any appointed or elected official of the City of Joliet, or any employee of the City of Joliet from receiving or soliciting anything of value to influence that City official or employee in carrying out his or her official duties. The City of Joliet appreciates your anticipated cooperation in refraining from offering any official or employee any thing, item, service, or favor of value to influence that person's decision on any City business. With your cooperation, the City of Joliet will achieve its goal of maintaining a fair and competitive contract procedure that promotes the best interests of the citizens of the City of Joliet. You should report immediately any violation of the Ethics Ordinance to the Inspector General, including any solicitation of a thing of value by a City official or employee. A bidder or contractor's participation or encouragement in the violation of the Ethics Ordinance may result in the rejection of a bid, termination of contract, or declaration of ineligibility to bid on future contracts.

It is the duty of any bidder, proposer, consultant, subcontractor, applicant for pre-qualification for a City contract, applicant for local bidder certification, and all officers, directors, agents, partners and employees of any bidder, proposer, consultant, subcontractor, or such applicant to cooperate with the Inspector General in any investigation or hearing undertaken pursuant to City of Joliet Ordinance 2-180, et. seq.. Any of the aforementioned parties understands and will abide by all provisions of the aforementioned Ordinance. All contractors must inform subcontractors of the provision and require understanding and compliance with it.

A copy of the City of Joliet Ethics Ordinance and all other City Ordinances are available in the City Clerk's office or on the City website for your review.

AFFIDAVITS

Business Status of Bidder

BIDDER/APPLICANT:

_____
Name

_____
Principal place of business

_____
Address

_____
City, State, Zip Code

The Bidder is a:

_____ *Corporation*
_____ *Partnership*
_____ *Limited Liability Company*
_____ *Sole Proprietorship*
_____ *Other (please explain:* _____)

Corporation

The state of incorporation is: _____

The registered agent of the corporation in Illinois is:

Name _____

Address _____

_____

City, State, Zip _____

_____

The officers of the corporation are:

_____ _____
President *Secretary*

_____ _____
Vice President *Treasurer*

The Corporation is authorized to do business in the State of Illinois

Limited Liability Company

The state of registration is: _____

The registered agent of the Limited Liability Company in Illinois is:

Name _____

Address _____

City State Zip _____

The registered office of the Limited Liability Company in Illinois is:

Address _____

City State Zip _____

The managers and members of the Limited Liability Company are:

_____	_____
Name	*Name*
_____	_____
Address	*Address*
_____	_____
City, State	*City, State*

The LLC is authorized to do business in the State of Illinois

Sole Proprietorship

The address of the sole proprietor is:

_____
Address

_____
City, State

The sole proprietor transacts business in Illinois under the following assumed names:

_____ _____

BID RIGGING AND BID ROTATING

Section 2: That in connection with this solicitation for bids/proposals:

A. The bid is not made in the interest of or on behalf of any undisclosed person, partnership, company, association, organization or corporation;

B. The bidder has not in any manner directly or indirectly sought by consultation, communication or agreement with anyone to fix the bid price of said bidder or

any other bidder or to fix any overhead profit or cost element of such bid price or that of any other bidder or to secure any advantage against the public body awarding the contract or anyone interested in the proper contract;

C. The bid is genuine and not collusive or sham;

D. The prices or breakdowns thereof and any and all contents which had been quoted in this bid have not been knowingly disclosed by the bidder and will not be knowingly disclosed by the bidder directly or indirectly to any other bidder or any competitor prior to opening;

E. All statements contained in such bid are true;

F. No attempt has been made or will be made by the bidder to induce any other person or firm to submit a false or sham bid;

G. No attempt has been made or will be made by the bidder to induce any other person or firm to submit or not to submit a bid for the purpose of restricting competition;

Section 2a ***NON-COLLUSION***

A. No officer or employee of the City of Joliet has a direct or indirect pecuniary interest in this bid.

B. No officer or employee of the City of Joliet has disclosed to the bidder any information related to the terms of a sealed bid.

C. No officer or employee of the City of Joliet has informed the bidder that the bid will be accepted only if specified persons are included as subcontractors.

D. Only the bidder will be entitled to the proceeds of the contract if this bid is accepted by the City of Joliet.

E. This bid is made without the benefit of information obtained in violation of law.

Section 3. The undersigned further states that: (circle A or B)

A. He is the person in the bidder's organization responsible within that organization for the decision as to the prices being bid herein and that he has not participated, and will not participate, in any action contrary to paragraphs A through G above; or

B. He is not the person in the bidder's organization responsible within that organization for the decision as to the prices being bid herein but that he has been authorized to act as agent for the persons responsible for such decision in certifying that such persons have not participated, and will not participate, in any action contrary to paragraphs A through G above and as their agent does hereby so certify; and

C. That he has not participated, and will not participate, in any action contrary to paragraphs A through G above.

Section 4. The undersigned certifies that the bidder has never been convicted for a violation of State laws prohibiting bid rigging or bid rotating.

THE REQUIREMENTS OF THE ILLINOIS DRUG FREE WORKPLACE ACT

Section 5. The undersigned will publish a statement:

A. Notifying employees that the unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance is prohibited in the aforementioned company's workplace;

B. Specifying the actions that will be taken against employees for violations of this prohibition;

C. Notifying the employees that, as a condition of their employment to do work under the contract with the City of Joliet, the employees will:

1. Abide by the terms of the statement; and

2. Notify the aforementioned company of any criminal drug statute conviction for a violation occurring the in the workplace not later than five (5) days after such a conviction.

D. Establishing a drug free awareness program to inform the aforementioned company's employees about:

1. The dangers of drug abuse in the workplace;

2. The aforementioned company's policy of maintaining a drug free workplace;

3. Any available drug counseling, rehabilitation, and employee assistance programs; and

4. The penalties that may be imposed upon employees for drug violations.

E. Making it a requirement to give a copy of the statement required by Section 5. to each employee engaged in the performance of the contract with the City of Joliet and to post the statement in a prominent place in the workplace;

F. Notifying the City of Joliet within ten (10) days after receiving notice under Section 5.C.2. from an employee or otherwise receiving actual notice of such a conviction;

G. Imposing a sanction on, or requiring the satisfactory participation in a drug abuse assistance or rehabilitation program by, any employee who is so convicted, as required by Section 6., below;

H. Training personnel to effectively assist employees in selecting a proper course of action in the event drug counseling, treatment, and rehabilitation is required and indicating that an effectively trained counseling and referral team is in place;

I. Making a good faith effort to continue to maintain a drug free workplace through implementing these requirements.

J. Making a good faith effort to continue to maintain a drug free workplace through implementation of this policy.

Section 6. The undersigned further affirms that within thirty (30) days after receiving notice from an employee of a conviction of a violation of the criminal drug statute occurring in the aforementioned company's workplace he shall:

A. Take appropriate personnel action against such employee up to and including termination; or

B. Require the employee to satisfactorily participate in a drug abuse assistance or rehabilitation program approved for such purposes by a federal, state, or local health, law enforcement, or other appropriate agency.

TAX COMPLIANCE

Section 7. The undersigned on behalf of the entity making the foregoing proposal certifies that neither the undersigned nor the entity is barred from contracting with the City of Joliet because of any delinquency in the payment of any tax administered by the State of Illinois, Department of Revenue, unless the undersigned or the entity is contesting, in accordance with the procedures established by the appropriate revenue act, liability of the tax or the amount of tax.

Section 8. The undersigned or the entity making the proposal or bid understands that making a false statement regarding delinquency in taxes is a Class A Misdemeanor and in addition, voids the contract and allows the municipality to recover all amounts paid to the individual or entity under the contract in a civil action.

NON DISCRIMINATION AND EQUAL EMPLOYMENT OPPORTUNITY

Section 9. This EQUAL EMPLOYMENT OPPORTUNITY CLAUSE is required by the Illinois Human Rights Act and the Rules and Regulations of the Illinois Department of Human Rights published at 44 Illinois Administrative Code Section 750, et seq..

Section 10. In the event of the contractor's noncompliance with any provision of this Equal Employment Opportunity Clause, the Illinois Human Right Act, or the Rules and Regulations for Public Contracts of the Department of Human Rights (hereinafter referred to as the Department) the contractor may be declared nonresponsible and therefore ineligible for future contracts or subcontracts with the State of Illinois or any of its political subdivisions or municipal corporations,

and the contract may be canceled or avoided in whole or in part, and such other sanctions or penalties may be imposed or remedies involved as provided by statute or regulation.

During the performance of this contract, the contractor agrees:

A. That it will not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin or ancestry; and further that it will examine all job classifications to determine if minority persons or women are underutilized and will take appropriate affirmative action to rectify any such underutilization.

B. That, if it hires additional employees in order to perform this contract, or any portion hereof, it will determine the availability (in accordance with the Department's Rules and Regulations for Public Contracts) of minorities and women in the area(s) from which it may reasonably recruit and it will hire for each job classification for which employees are hired in such a way that minorities and women are not underutilized.

C. That, in all solicitations or advertisements for employees placed by it or on its behalf, it will state that all applicants will be afforded equal opportunity without discrimination because of race, color, religion, sex, marital status, national origin or ancestry, age, physical or mental handicap unrelated to ability, or an unfavorable discharge from military service.

D. That it will send to each labor organization or representative of workers with which it has or is bound by a collective bargaining or other agreement or understanding, a notice advising such labor organization or representative of the contractor's obligations under the Illinois Human Rights Act and the Department's Rules and Regulations for Public Contract. If any such labor organization or representative fails or refuses to cooperate with the contractor in its efforts to comply with such Act and Rules and Regulations, the contractor will promptly so notify the Department and the contracting agency will recruit employees from other sources when necessary to fulfill its obligations thereunder.

E. That it will submit reports as required by the Department's Rules and Regulations for Public Contracts, furnish all relevant information as may from time to time be requested by the Department or the contracting agency, and in all respects comply with the Illinois Human Rights Act and the Department's Rules and Regulations for Public Contracts.

F. That it will permit access to all relevant books, records, accounts and work sites by personnel of the contracting agency and the Department for purposes of investigation to ascertain compliance with the Illinois Human Rights Act and the Department's Rules and Regulations for Public Contracts.

G. That it will include verbatim or by reference the provisions of this Equal Employment Opportunity Clause in every subcontract it awards under which any portion of the contract obligations are undertaken or assumed, so that such provisions will be binding upon such subcontractor. In the same manner as the other provisions of this contract, the contractor will be liable for compliance with applicable provisions of this clause by such subcontractors; and further it will promptly notify the contracting agency and the Department in the event any subcontractor fails or refuses to comply therewith. In addition, the contractor will not utilize any subcontractor declared by the Illinois Human Rights Department to be ineligible for contracts or subcontracts with the State of Illinois or any of its political subdivisions or municipal corporations.

Section 11. For the purposes of subsection G of Section 10, "Subcontract" means any agreement, arrangement or understanding, written or otherwise, between a public contractor and any person under which any portion of the public contractor's obligations under one or more public contracts is performed, undertaken or assumed; the term "subcontract," however, shall not include any agreement, arrangement or understanding in which the parties stand in the relationship of an employer and an employee, or between a bank or other financial institution and its customers.

Section 12. It is expressly understood that the foregoing statements and representations and promises are made as a condition to the right of the bidder to receive payment under any award made under the terms and provisions of this bid.

Section 13. Have written sexual harassment policies that shall include, at a minimum, the following information: (i) the illegality of sexual harassment; (ii) the definition of sexual harassment under State law; (iii) a description of sexual harassment, utilizing examples; (iv) the vendor's internal complaint process including penalties; (v) the legal recourse, investigative and complaint process available through the Department and the Commission; (vi) directions on how to contact the Department and Commission; and (vii) protection against retaliation as provided by Section 6-101 of this Act. A copy of the policies shall be provided to the Department upon request.

Section 14. In the event that this contract is subject to Executive Order 11246, Seller certifies that it (1) is in compliance with Section 202 thereof and the Rules and Regulations issued thereunder; (2) does not and will not provide or maintain at any of it's establishments, or permit it's employees to perform their services at any location under its control where there are maintained, segregated facilities, and (3) agrees that a breach of this Certification violates the Equal Employment clause of Executive Order 11246. "Segregated Facilities," means facilities which are in fact segregated on a basis of race, color, creed, sex, religion or national origin, because of habit, local custom, or otherwise.

THE AMERICANS WITH DISABILITIES ACT

Section 15. As a condition of receiving this contract, the undersigned vendor certifies that services, programs and activities provided under this contract are and will continue to be in compliance with the Joliet Accessibility Code.

Signed by:_____
[name]

_____
[title]

Subscribed and Sworn to before me this _____ day of _____, 20___.

By: _____
Notary Public

-seal-

STATE OF ILLINOIS)
) SS.
COUNTY OF WILL)

* *
*NOTE: THIS AFFIDAVIT MUST BE
*COMPLETED BY THE CHIEF OFFICER
*OF THE BIDDER
* *

AFFIDAVIT
REGARDING BIDDER AVAILABILITY

The undersigned, _____, being first duly sworn on oath and being duly authorized to make this Affidavit, hereby declares that the following is a true and correct statement relating to All uncompleted contracts of the undersigned for Federal, State, County, City and private work, including All subcontract work; and all pending low bids not yet awarded or rejected; and equipment available.

PART I. WORK UNDER CONTRACT

List below all work you have under contract as either a prime contractor or a subcontractor, including all pending low bids not yet awarded or rejected.

	1	2	3	4	5	Awards Pending	
County and Section No.							
Contract With							
Estimated Completion Date							
Total Contract Price							Total
Uncompleted Dollar Value							

PART II. UNCOMPLETED WORK TO BE DONE WITH YOUR OWN FORCES.

List below the uncompleted dollar value of work for each contract to be completed with your own forces. All work subcontract TO others will be listed on the reverse of this form. In a joint venture list only that portion of the work to be done by your company.

							TOTALS
Excav. Grading & Clearing							
Portland Cement Concrete Paving							
Bituminous Hot Mix Surface							
Bituminous Aggregate Mix							
Aggregate Bases & Surface							
Structures							
Drainage							

Electrical							
Curb & Gutter							
Sewer							
Water							
Sidewalks							
Demolition							
Other/Explain							
Totals							

Date Equipment Available For Work							

_____
(SIGNATURE)

_____
(PRINT NAME)

_____
(TITLE)

Subscribed and Sworn to before me this

_____ day of _____, AD, **20___.**

_____
NOTARY PUBLIC

PROPOSED SUBCONTRACTORS FORM

TO: City of Joliet
Mayor and City Council
150 West Jefferson Street
Joliet, Illinois 60432
(hereinafter called Owner)

1. Pursuant to bidding requirements for the Work titled:

CITY OF JOLIET, ILLINOIS
ALTERNATIVE WATER SOURCE PROGRAM JOL0801-SCADA SYSTEM UPGRADES
CITY OF JOLIET CONTRACT NO. 2722-0923

for portions of the Work equaling or exceeding $10,000, Bidder proposes to use the following Subcontractors. Except as otherwise approved by Owner, Bidder proposes to perform all other portions of the Work with his own forces:

2. Portion of the Work:	Subcontractor name and address:
_____	_____
	_____
	_____
_____	_____
	_____
	_____
_____	_____
	_____
	_____
_____	_____
	_____
	_____
_____	_____
	_____

Portion of the Work:	Subcontractor name and address:

USE ADDITIONAL SHEETS IF REQUIRED

END OF PROPOSED SUBCONTRACTORS FORM

STOP*

CHECK THE FOLLOWING LIST TO MAKE SURE THAT YOUR BID CONTAINS ALL OF THE REQUIRED DOCUMENTS.

_____ 1. BID SECURITY

_____ 2. BIDDING SCHEDULE

_____ 3. BID PROPOSAL, DULY SIGNED

_____ 4. ALL AFFIDAVITS, SIGNED & NOTARIZED

_____ 5. RESPONSIBLE BIDDER CERTIFICATION CHECKLIST (SECTION 00 49 60.9-21)

_____ 6. IEPA-REQUIRED ATTACHMENTS LISTED IN ARTICLE 7 OF SECTION 00 41 00.

_____ 7. RESPONSIBLE BIDDER ORDINANCE FORMS.

_____ 8. PROPOSED SUBCONTRACTORS FORM.

FAILURE TO INCLUDE ANY ONE OR ALL OF THE ABOVE MAY CONSTITUTE SUITABLE GROUNDS FOR REJECTION OF YOUR BID.

***(FOR CONSTRUCTION CONTRACTS ONLY)**

NOTICE OF INTENT TO AWARD

To: _____

_____

_____

Project Description: _____

_____

_____

The OWNER has considered the BID submitted by you for the above-described WORK, in response to its Advertisement for Bids, dated _____ and Instructions for Bidders.

You are hereby notified that your BID will be accepted, contingent upon Illinois Environmental Protection Agency (IEPA) approval, for items in the amount of _____.

You will be required by the Information for Bidders to execute the Agreement and furnish the required CONTRACTOR'S Performance BOND, Payment BOND and certificates of insurance within fifteen (15) calendar days from the date of the final Notice to be sent upon IEPA approval, to you.

Dated this day of _____

_____

OWNER

By: _____

Title: _____

NOTICE OF AWARD

To: _____

_____

_____

_____

_____

PROJECT Description: _____

_____

_____

The OWNER has considered the BID submitted by you for the above-described WORK in response to its Advertisement for Bids dated _____,20 _____ and Instructions for Bidders.

You are hereby notified that your BID has been accepted for items in the amount of $_____. You are required by the Information for Bidders to execute the Agreement and furnish the required CONTRACTOR'S Performance BOND, Payment BOND and certificates of insurance within fifteen (15) calendar days from the date of this Notice to you.

If you fail to execute said Agreement and to furnish said BONDS within fifteen (15) days from the date of this Notice, said OWNER will be entitled to consider all your rights arising out of the OWNER'S acceptance of your BID as abandoned and as a forfeiture of your BID BOND. The OWNER will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the OWNER.

Dated this _____ day of _____, 20 _____.

_____
(Owner)

By _____

Title_____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged,

by _____,

this the _____day of _____, 20 _____.

By _____

Title _____

SECTION 00 52 00

AGREEMENT

THIS AGREEMENT is by and between _____

(hereinafter called OWNER) and _____

(hereinafter called CONTRACTOR).

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

OWNER and CONTRACTOR, in consideration of the mutual covenants set forth herein, agree as follows:

Article 1. WORK

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

Article 2. THE PROJECT

2.01 The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

Article 3. ENGINEER

3.01 OWNER has retained Strand Associates, Inc.® ("ENGINEER") to act as OWNER's representative, assume all duties and responsibilities of ENGINEER, and have the rights and authority assigned to ENGINEER in the Contract.

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

Article 4. CONTRACT TIMES

4.01 Time 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 Dates for Substantial Completion and Final Payment

A. The Work will be substantially complete within 515 calendar days after the date when the Contract Time commences 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 545 calendar days after the date when the Contract Time commences to run.

4.03 Liquidated Damages

A. CONTRACTOR and OWNER recognize that time is of the essence as stated in Paragraph 4.01 above and that OWNER will suffer financial and other losses if the Work is not completed and Milestones not achieved within the Contract Times, as duly modified. The parties also recognize the delays, expense, and difficulties involved in proving, in a legal or arbitration proceeding, the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty):

1. Substantial Completion: CONTRACTOR shall pay OWNER $2,500 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A above for Substantial Completion until the Work is substantially complete. This amount is comprised of $2,300 per day for engineering, construction administration services, and construction observation services, and $200 per day for administration, labor, expenses, and other costs that will be incurred by OWNER.

2. Completion of Remaining Work: After Substantial Completion, if CONTRACTOR shall neglect, refuse, or fail to complete the remaining Work within the Contract Time (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, CONTRACTOR shall pay OWNER $2,500 for each day that expires after such time until the Work is completed and ready for final payment. This amount is comprised of $2,300 per day for engineering, construction administration services, and construction observation services, and $200 per day for administration, labor, expenses, and other costs that will be incurred by OWNER.

3. Liquidated damages for failing to timely attain Milestones, Substantial Completion, and final completion are not additive, and will not be imposed concurrently.

Article 5. CONTRACT PRICE

5.01 OWNER shall pay CONTRACTOR for completion of the Work in accordance with the Contract Documents an amount in current funds as follows, subject to adjustment under the Contract:

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

B. All specific Cash Allowances are included in the Contract Price and have been computed in accordance with Paragraph 13.02 of the General Conditions.

Article 6. PAYMENT PROCEDURES

6.01 Submittal and Processing of Payments

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

6.02 Progress Payments; Retainage

A. OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR's Applications for Payment as established at the preconstruction conference during performance of the Work as provided in Paragraphs 6.02.A.1 and 6.02.A.2 below. All such payments will be measured by the schedule of values established in Paragraph 2.05.A of 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 in the General Requirements:

1. Prior to Substantial Completion, OWNER will retain an amount equal to 10% of each progress payment application until 50% of the Work has been completed. At 50% completion, further progress payment applications shall be paid in full to CONTRACTOR and no additional amounts will be retained unless ENGINEER certifies to OWNER that the job is not proceeding satisfactorily. Amounts previously retained shall not be paid to CONTRACTOR until substantial completion of the Work. At 50% completion of the Work, or any time thereafter when the character and progress of the Work is not satisfactory to OWNER on recommendation of ENGINEER, additional amounts may be retained, but in no event shall the total retainage be more than 10% of the value of the work completed.

2. Upon Substantial Completion, OWNER shall pay an amount sufficient to increase total payments to CONTRACTOR to 98% of the Work completed, less such amounts as ENGINEER shall determine in accordance with Paragraph 15.01.C.5 and 15.01.C.6 of the General Conditions and less 100% of ENGINEER's estimate of the value of Work to be completed or corrected as shown on the tentative list of items to be completed or corrected attached to the certificate of Substantial Completion.

6.03 Final Payment

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

6.04 Consent of Surety

A. OWNER will not make final payment unless CONTRACTOR submits written consent of the surety to such payment, return, or release.

Article 7. HIERARCHY

7.01 In resolving inconsistencies among two or more sections of the Contract Documents, precedence shall be given in the following order:

First:	WRITTEN AMENDMENTS
Second:	CHANGE ORDERS/FIELD ORDERS/WORK CHANGE DIRECTIVES
Third:	ADDENDA
Fourth:	AGREEMENT
Fifth:	SUPPLEMENTARY CONDITIONS
Sixth:	GENERAL CONDITIONS
Seventh:	SPECIFICATIONS
Eighth:	DRAWINGS

Figure dimensions (numerical) on Drawings shall take precedence over dimensions measured utilizing a scale.

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, if any, 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.

Article 9. CONTRACT DOCUMENTS

9.01 Contents

A. The Contract Documents consist of the following:

1. This Agreement (pages 00 52 00-1 through 00 52 00-____, inclusive);

2. Performance bond (pages to 00 61 13.13-1 through 00 61 13.13-4, inclusive);

3. Payment bond (pages 00 61 13.16-1 through 00 61 13.16-4, inclusive);

4. Other bonds

   a. _____ (pages _____ to _____ , inclusive);

   b. _____ (pages _____ to _____ , inclusive);

5. General Conditions (pages 00 72 00-1 through 00 72 00-_____, inclusive);

6. Supplementary Conditions (pages 00 73 00-1 through 00 73 00-___, inclusive);

7. Specifications as listed in the table of contents of the Project Manual;

8. Drawings–Sheets No. _____ through No. _____

_____

inclusive incorporated herein by reference with each sheet bearing the following general title:

_____

_____

as well as drawings listed in the table of contents that are bound at the back of these specifications.

9. Addenda (_____).

10. Exhibits to this Agreement (enumerated as follows:)

   a. CONTRACTOR's Bid (pages _____ to _____);

   b. Documentation submitted by CONTRACTOR prior to Notice of Award

      (_____);

   c. (_____);

11. The following may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:

   a. Notice to Proceed (pages {_____} to {_____}, inclusive);
   b. Erosion Control Certification (pages {_____} to {_____}, inclusive);
   c. Work Change Directives (not attached to this Agreement);
   d. Change Order(s) (not attached to this Agreement).
   e. Warranty Bond, if any.

B. The Contract Documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 9.

D. The Contract Documents may only be amended, modified, or supplemented as provided in Paragraph 11.01 of the General Conditions.

Article 10. MISCELLANEOUS

10.01 Assignment of Contract

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

10.02 Successors and Assigns

A. OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect of all covenants, agreements, and obligations contained in the Contract Documents.

10.03 Severability

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

10.04 Nonwaiver

A. No provision of the Contract Documents will be deemed waived by reason of one party failing to enforce the provision on one or more occasions. Any such waiver must be in writing.

10.05 Integration

A. The parties' entire agreement is contained in the Contract Documents, and the provisions of the Contract Documents supersede all prior discussions or writings between the parties.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed this Agreement in duplicate. One counterpart each has been delivered to OWNER and CONTRACTOR. All portions of the Contract Documents have been signed or identified by OWNER and CONTRACTOR or identified by ENGINEER on their behalf.

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

OWNER _____

_____
Signature and Title

ATTEST:

By: _____
Signature and Title

Address for Giving Notices:

Name: _____

Street: _____

City, State, Zip Code: _____

Phone: _____

Facsimile: _____

E-mail: _____

Designated Representative: _____

CONTRACTOR _____

_____
Signature and Title

ATTEST:

By: _____
Signature and Title

Address for Giving Notices:

Name: _____

Street: _____

City, State, Zip Code: _____

Phone: _____

Facsimile: _____

E-mail: _____

Designated Representative: _____

License No.: _____
(Where applicable)

(If CONTRACTOR is a corporation, limited liability company, or a partnership, attach evidence of authority to sign.)

INSTRUCTIONS FOR EXECUTING CONTRACT

The full name and business address of CONTRACTOR should be inserted and the Agreement should be signed with CONTRACTOR's official signature. Please have the name of the signing party printed under all signatures to the Agreement.

If CONTRACTOR is operating as a partnership, each partner should sign the Agreement. If the Agreement is not signed by each partner, there should be attached to the Agreement a duly authenticated power of attorney evidencing the signer's (signers') authority to sign such Agreement for and on behalf of the partnership.

If CONTRACTOR is an individual, the trade name (if CONTRACTOR is operating under a trade name) should be indicated in the Agreement and the Agreement should be signed by such individual. If signed by other than CONTRACTOR, there should be attached to the Agreement a duly authenticated power of attorney evidencing the signer's authority to execute such Agreement for and on behalf of CONTRACTOR.

If CONTRACTOR is operating as a limited liability company, and it is member-managed, each member should sign the Agreement, or an authorized member should sign. If the LLC is manager-managed, an authorized manager should sign. If the Agreement is not signed by each member, there should be attached to the Agreement a duly authenticated power of attorney evidencing the signer's (signers') authority to sign such Agreement for and on behalf of the LLC.

If CONTRACTOR is a corporation, the Secretary of the corporation should sign the certificate below. If the Agreement itself is signed by the Secretary of the corporation, the certificate below should be executed by some other officer of the corporation. In lieu of the following certificate, there may be attached to the Agreement copies of so much of the records of the corporation which will show the official character and authority of the officers signing, duly certified by the Secretary or Assistant Secretary to be true copies.

I, _____, certify that I am the _____
(Print Name) *(Title of Officer Signing Certificate)*

of the corporation named as CONTRACTOR herein above; that _____,
(Print Name of Officer Signing Agreement)

who signed the foregoing Agreement on behalf of CONTRACTOR was then

_____ of said corporation; that said Agreement was duly signed
(Title of Officer Signing Agreement)

for and on behalf of said Corporation by authority of its governing body, and is within the scope of its corporate powers.

_____
(Officer Signature)

END OF SECTION

NOTICE TO PROCEED

To: _____ Date: _____

_____ Project: _____

_____ _____

_____ _____

_____ _____

You are hereby notified to commence WORK in accordance with the Agreement dated _____ _____, 20 _____, on or before _____, 20 _____, and you are to complete the WORK within _____ consecutive calendar days thereafter.
The date of completion of all WORK is therefore _____, 20 _____.

_____
(Owner)

By _____

Title _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED
is hereby acknowledged by _____

_____,

this the _____day of

_____, 20 _____.

By _____

Title _____

EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

PERFORMANCE BOND

Contractor	Surety
Name: [Full formal name of Contractor] Address *(principal place of business)*: [Address of Contractor's principal place of business]	Name: [Full formal name of Surety] Address *(principal place of business)*: [Address of Surety's principal place of business]
Owner	**Contract**
Name: [Full formal name of Owner] Mailing address *(principal place of business)*: [Address of Owner's principal place of business]	Description *(name and location)*: [Owner's project/contract name, and location of the project] Contract Price: [Amount from Contract] Effective Date of Contract: [Date from Contract]

Bond

Bond Amount: [Amount]

Date of Bond: [Date]

(Date of Bond cannot be earlier than Effective Date of Contract)

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
(Full formal name of Contractor)	*(Full formal name of Surety) (corporate seal)*
By: _____ *(Signature)*	By: _____ *(Signature)(Attach Power of Attorney)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____
Attest: _____ *(Signature)*	Attest: _____ *(Signature)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.

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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

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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.

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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: [Describe modification]~~

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EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

PAYMENT BOND

Contractor Name: [Full formal name of Contractor] Address *(principal place of business)*: [Address of Contractor's principal place of business]	Surety Name: [Full formal name of Surety] Address *(principal place of business)*: [Address of Surety's principal place of business]
Owner Name: [Full formal name of Owner] Mailing address *(principal place of business)*: [Address of Owner's principal place of business]	Contract Description *(name and location)*: [Owner's project/contract name, and location of the project] Contract Price: [Amount, from Contract] Effective Date of Contract: [Date, from Contract]
Bond Bond Amount: [Amount] Date of Bond: [Date] *(Date of Bond cannot be earlier than Effective Date of Contract)* 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 *(Full formal name of Contractor)* By: _____ *(Signature)* Name: _____ *(Printed or typed)* Title: _____ Attest: _____ *(Signature)* Name: _____ *(Printed or typed)* Title: _____	Surety *(Full formal name of Surety) (corporate seal)* By: _____ *(Signature)(Attach Power of Attorney)* Name: _____ *(Printed or typed)* Title: _____ Attest: _____ *(Signature)* Name: _____ *(Printed or typed)* Title: _____
Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.	

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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.

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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.

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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: [Describe modification]~~

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared By

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

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

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

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

3. *Application for Payment*—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

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

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

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

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

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

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

10. *Claim*

a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by Engineer concerning the

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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

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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.

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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.

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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.

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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.

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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

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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.

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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

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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.

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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

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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.

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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.

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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

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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.

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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

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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;

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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

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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

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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

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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

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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

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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.

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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);

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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

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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.

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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.

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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;

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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.

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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.

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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.

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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.

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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.

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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.

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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.

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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

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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.

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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

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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.

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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.

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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.

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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.

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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.

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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.

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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.

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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.

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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:

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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.

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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

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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

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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

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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

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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.

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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, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. 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

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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

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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.

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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,

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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,

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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

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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.

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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;

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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

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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

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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.

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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,

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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.

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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,

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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

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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.

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18.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination of the Contract or of the services of Contractor.

18.07 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Assignment of Contract*

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

18.09 *Successors and Assigns*

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

18.10 *Headings*

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

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SECTION 00 73 00

SUPPLEMENTARY CONDITIONS

A. 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.

B. 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.

C. The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

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SC-1.01.A Defined Terms

Insert in the first sentence after the phrase "printed with initial capital letters" the following phrase:

"or with all capital letters"

SC-1.01.A.7 Bidding Requirements

Delete Paragraph 1.01.A.7 in its entirety and insert the following in its place:

7. Bidding Requirements–The Advertisement for Bids, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.

SC-1.01.A.8 Change Order

Insert a comma and the word "ENGINEER" immediately after the word "CONTRACTOR" in this definition.

SC-1.01.A.18 Drawings

Add the following to the end of Paragraph 1.01.A.18:

The following Drawings are part of the Contract Documents:

Drawings titled "Alternative Water Source Program, JOL0801–SCADA System Upgrades, Contract 2722-0923, City of Joliet, Illinois," Sheets No. 1 through No. 16, prepared by Strand Associates, Inc.®

Electronic files were provided for the convenience of CONTRACTOR. The data on which CONTRACTOR may rely is limited to the paper copy.

SC-1.01.A.50 Work Change Directive

Amend the phrase "signed by OWNER" in the first sentence of Paragraph 1.01.A.50 to read as follows:

"signed by OWNER and CONTRACTOR."

Add the following language to the end of Paragraph 1.01.A.50:

A Work Change Directive cannot change Contract Price or Contract Times without a subsequent Change Order.

SC-1.01.A.51 Request for Information

Add the following new paragraph immediately after Paragraph 1.01.A.50:

51. Request for Information:

Written request submitted by CONTRACTOR to ENGINEER on a form supplied by ENGINEER requesting clarification, interpretation, or additional information pertaining to Contract Documents.

SC-2.01 Delivery of Bonds and Evidence of Insurance

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.

SC-2.02 Copies of Documents

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

OWNER shall furnish to CONTRACTOR one printed copy of the Contract Documents (including one fully signed counterpart of the Agreement) and one copy in electronic portable document format (PDF).

SC-2.03 Before Starting Construction

Add the following subparagraph to Paragraph 2.03:

4. a proposed listing of subcontractors and major material and equipment suppliers. The list shall include any proposed substitutions in accordance with Paragraph 7.06.

SC-2.05 Acceptance of Schedules

Add the following language to the end of Paragraph 2.05.A.2:

The schedule for submittals shall show all submittals complete before 50% of completion of the Work and the schedule for maintenance manuals shall show all submittals complete before 75% of completion of the Work.

Add the following new paragraph immediately after Paragraph 2.05.A:

B. The times included in this paragraph apply to the preliminary schedules. See Division 01 for other submittal and time requirements for the construction progress schedule and submittal schedule.

SC–3.03 Reporting Discrepancies

Add the following language at the end of Paragraph 3.03.A:

4. CONTRACTOR shall report apparent discrepancies to ENGINEER using a Request for Information form on a form supplied by ENGINEER. The Request for Information form shall:

a. be submitted by CONTRACTOR only;

b. be legible and complete;

c. not be used for the purposes of only confirming or verifying issues; and,

d. be prioritized by CONTRACTOR in the event that multiple Requests for Information are outstanding.

Requests for Information that are not in conformance with the requirements above shall be returned to CONTRACTOR without response.

5. CONTRACTOR shall not be relieved of its responsibility to coordinate the Work to prevent adverse impacts to CONTRACTOR's Project Schedule while submitting Requests for Information.

6. If CONTRACTOR believes the Scope of Work included in the Request for Information has a cost and/or time impact, CONTRACTOR should submit a claim in accordance with Article 12 of these General Conditions.

7. If CONTRACTOR proceeds with work when CONTRACTOR had actual knowledge or should have known that a conflict, error, ambiguity, or discrepancy existed as indicated above, correction of work constructed without such notification to ENGINEER shall be at CONTRACTOR's expense, (except in an emergency as authorized by Paragraph 7.15.A).

SC-3.04 Requirements of the Contract Documents

Delete Paragraph 3.04.C in its entirety.

SC-4.01 Commencement of Contract Times; Notice to Proceed

In the last sentence of Paragraph 4.01.A, change “60th day” to “120th day.”

SC-4.03 Reference Points

Add the following new paragraph immediately after Paragraph 4.03.A:

B. CONTRACTOR is referred to the General Requirements for additional requirements for laying out the work.

SC-5.03 Subsurface and Physical Conditions

Add the following new paragraph(s) immediately after Paragraph 5.03.D:

E. No reports of explorations or tests of subsurface conditions at or adjacent to the Site containing technical data are known to OWNER. CONTRACTOR shall conduct its own personal investigation to determine conditions at the site which may affect the Work, including compliance with OSHA excavation and trenching requirements.

F. No drawings of physical conditions relating to existing surface or subsurface structures at the Site containing technical data, are known to OWNER. CONTRACTOR shall conduct its own personal investigation to determine conditions at the site which may affect the Work, including compliance with OSHA excavation and trenching requirements.

SC-5.05 Underground Facilities

Add the following paragraph immediately after Paragraph 5.05.F:

G. CONTRACTOR is referred to the General Requirements for requirements for keeping records of Underground Facilities and allowing facility owners to inspect.

SC-5.06 Hazardous Environmental Conditions at the Site

Delete Paragraphs 5.06.A and 5.06.B in their entirety and insert the following:

A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to OWNER.

B. Not Used.

SC-6.01 Performance, Payment and Other Bonds

Add the following new paragraphs immediately after Paragraph 6.01.H:

I. The forms of the performance and payment or other Bonds attached hereto shall be used for the Contract. Note instructions thereon as to the form applicable. Each form contemplates one corporate surety only. In case co-sureties or individual sureties will be furnished, proper forms therefore shall be obtained. Besides the stipulations of Paragraphs 6.01 through 6.03, the surety on the Bonds shall provide a certificate indicating surety is licensed to underwrite contracts in the jurisdiction of the project location which shall be attached to the Bonds.

J. Bonds shall be placed with surety with a Best's rating of no less than A–.

SC-6.03 CONTRACTOR's Insurance

Add the following new language to the end of Paragraph 6.03.C.3:

CONTRACTOR shall provide an executed endorsement form CG 20 01 04 13, or equal, supporting this requirement.

Add the following new paragraphs under Paragraphs 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: Stantec and V3 Companies.

E. Worker's 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	
Each accident	$1,000,000
Each employee	$1,000,000
Policy limit	$1,000,000

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), or equal, for each required additional insured. 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. Insurance certificates for commercial general, automobile, and umbrella shall specifically indicate by name the additional insureds which are to include OWNER and ENGINEER as well as other persons or entities so identified. Certificates shall be Acord 25-S or equivalent.

8. Endorsements or General Liability policy shall not exclude supervisory or inspection services.

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
Products—Completed Operations Aggregate	$1,250,000
Personal and Advertising Injury	$5,000,000
Bodily Injury and Property Damage—Each Occurrence	$2,500,000

General Aggregate Limits specified above shall apply separately to this project by attachment of:

"Amendment of Limits of Insurance–Designated Location(s) General Aggregate Limit Endorsement (ISO Form No. CG 25 04 05 09) or "Designated Construction Project(s) General Aggregate Limit" Endorsement (ISO Form CG 25 03 05 09) or equivalent endorsement coverage.

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

Automobile Liability	**Policy limits of not less than:**
Bodily Injury	
Each Person	$1,000,000
Each Accident	$1,000,000
Property Damage	
Each Accident	$1,000,000
or	
Combined Single Limit	
Combined Single Limit (Bodily Injury and Property Damage)	$1,000,000

CONTRACTOR shall also provide an Additional Insured Endorsement for the automobile policy. Endorsement form shall be CA 20 48, or equal.

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	$3,000,000
General Aggregate	$10,000,000

L. *Using Umbrella or Excess Liability Insurance to Meet CGL and Other Policy Limit Requirements:* CONTRACTOR may meet the policy limits specified for employer's liability, commercial general liability, and automobile liability through the primary policies alone, or through combinations of the primary insurance policy's policy limits and partial attribution of the policy limits of an umbrella or excess liability policy that is at least as broad in coverage as that of the underlying policy, as specified herein. If such umbrella or excess liability policy was required under this Contract, at a specified minimum policy limit, such umbrella or excess policy must retain a minimum limit of $5,000 after accounting for partial attribution of its limits to underlying policies, as allowed above.

M. *Contractor's Pollution Liability Insurance:* CONTRACTOR shall purchase and maintain a policy covering third-party injury and property damage, including cleanup costs, as a result of pollution conditions arising from CONTRACTOR's operations and completed operations. This insurance must be maintained for no less than three years after final completion.

Contractor's Pollution Liability	Policy limits of not less than:
Each Occurrence/Claim	Not Applicable
General Aggregate	Not Applicable

☒ If box is checked, CONTRACTOR is not required to provide this insurance.

CONTRACTOR's Pollution Liability coverage shall include coverage for fungus, mold, and bacteria.

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	Not Applicable
Annual Aggregate	Not Applicable

☒ If box is checked, CONTRACTOR is not required to provide this insurance.

O. *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.

Railroad Protective Liability Insurance	**Policy limits of not less than:**
Each Claim	Not Applicable
Aggregate	Not Applicable

☒ If box is checked, CONTRACTOR is not required to provide this insurance.

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	Not Applicable
General Aggregate	Not Applicable

☒ If box is checked, CONTRACTOR is not required to provide this insurance.

Q. Waiver of Subrogation: CONTRACTOR's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall provide a waiver of subrogation covering OWNER and ENGINEER, and any individuals or entities identified in the Supplementary Conditions. CONTRACTOR shall obtain all necessary endorsements to support these requirements. Endorsement shall be CG 24 04 05 09, or equal.

R. General Liability, Automobile Liability, and Umbrella Liability shall include coverage for mental anguish and punitive damages.

SC-6.04 OWNER Provided Property Insurance

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.

OWNER's property insurance includes a $5,000 deductible for which CONTRACTOR shall be responsible.

SC-6.04.F Special Insurance

Add the following new paragraph immediately after Paragraph 6.04.E:

F. Special Insurance:

1. Prior to commencing work, CONTRACTOR shall obtain and review OWNER's insurance policies and advise OWNER of the adequacy of the policy to meet CONTRACTOR's requirements.

2. If CONTRACTOR does not advise OWNER in writing of special insurance needs, CONTRACTOR relinquishes any claim against OWNER for any loss CONTRACTOR may incur during the course of completing the Work.

SC-7.03.C Labor; Working Hours

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

1. Regular working hours will be 7 A.M. until 5:30 P.M.

2. OWNER's legal holidays are New Year's Day, Martin Luther King Jr. Day, Presidents' Day, Good Friday, Memorial Day, Independence Day, Labor Day, Columbus Day, Veterans' Day, Thanksgiving Day, the day after Thanksgiving, and Christmas Day.

Amend the first and second sentences of Paragraph 7.03.C to state "…all Work at the Site shall be performed during regular working hours, Monday through Saturday. CONTRACTOR will not perform Work on a Sunday or any legal holiday."

Add the following new paragraphs under Paragraphs 7.03.C:

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

SC-7.04.B Services, Materials, and Equipment Warranty

Add the following to the end of Paragraph 7.04.B:

Suppliers shall be deemed to impliedly warrant that their products and all component materials incorporated into them are suitable and fit for the intended use of such products and shall be free from defect in material, workmanship or design, such warranty to run to the benefit of OWNER and ENGINEER. The foregoing applies whether the products or their component materials are specified in the Contract Documents or are of Supplier's design.

SC-7.09 Permits

Delete last sentence of Paragraph 7.09.A and add the following in its place:

See General Requirements and technical specification sections for utility charge provisions.

Add Paragraph 7.09.B as follows:

B. See General Requirements for additional permit information.

SC-7.10 Taxes

Add the following new paragraph immediately after Paragraph 7.10.A:

B. OWNER is exempt from payment of sales and compensating use taxes of the State of Illinois, the City of Joliet, and the County of Will 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 highway, street, or road construction included in the Work.

3. OWNER's exemption also 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.

SC-7.11 Laws and Regulations

Add the following new paragraphs immediately after Paragraph 7.11.C:

D. CONTRACTOR shall comply with Employment of Illinois Workers on Public Works Act 30 ILCS 570, which requires contractors to use Illinois laborers on all public works construction and improvement projects during a period of excessive unemployment. Excessive unemployment is defined as any month immediately following two consecutive calendar months that the Illinois unemployment rate exceeds 5%, CONTRACTOR agrees to employ a work force that is comprised of at least 90% Illinois laborers. An "Illinois laborer" is defined as any person who has resided in Illinois for at least 30 days and intends to become or remain an Illinois resident.

E The goods and services under this Contract are being completed with funding made available by the United States Environmental Protection Agency (USAEPA) WIFIA program. CONTRACTOR is required to comply with all applicable WIFIA statutes and regulations and any additional terms and conditions imposed by the EPA in connection with WIFIA funding for the Project.

F. EPA-provided compliance language "WIFIA Specification Package and Bid Contract Language" is included at the end of the Supplementary Conditions and is part of the Contract Documents. Compliance with all provisions of the WIFIA requirements is required. Some requirements will be met by following the requirements in the General Conditions, and others are not applicable to this Project.

SC-7.12 Record Documents

In Paragraph 7.12.A delete last sentence and insert the following:

Upon completion of the Work, these record documents, samples, and shop drawings shall be delivered by CONTRACTOR to OWNER.

SC-7.13 Safety and Protection

Add the following language to the end of Paragraph 7.13.A:

If the Work includes excavation or trenches, CONTRACTOR shall keep at the Site at all times during the progress of the Work a competent person to comply with OSHA trenching and excavation requirements. The competent person shall be one who is capable of identifying existing and predictable hazards in the surroundings, or working conditions that are unsanitary, hazardous or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Add the following new paragraph immediately after Paragraph 7.13.J:

K. The following OWNER safety programs are applicable to the Work: None.

SC-7.17 CONTRACTOR's General Warranty and Guarantee

Add the following new paragraph immediately after Paragraph 7.17.E:

F. At a minimum, CONTRACTOR's general warranty shall extend throughout the correction period as defined in Paragraph 15.08.

SC-7.18 Indemnification

Add the following to the end of Paragraph 7.18.A:

In addition, CONTRACTOR shall indemnify, hold harmless, and pay for the defense of OWNER and ENGINEER from and against claims, losses, or damages in regard to any act or failure to act by OWNER or ENGINEER in connection with general supervision, inspection and/or coordination of CONTRACTOR's operations.

CONTRACTOR shall, at its own expense, appear, defend, and pay all fees of attorneys and all costs and other expenses arising therefrom or incurred in connection therewith; and, if any judgments shall be rendered against any individual or entity indemnified hereunder in any such action, CONTRACTOR shall, at its own expense, satisfy and discharge same. CONTRACTOR expressly understands and agrees that any Letter of Credit or insurance protection required by the Contract, or otherwise provided by CONTRACTOR, shall in no way limit the responsibility to indemnify, keep and, save harmless, and defend any individual or entity indemnified hereunder as herein provided.

Add the following new paragraph immediately after Paragraph 7.18.B:

C. For any matter for which OWNER and ENGINEER are indemnified under Paragraph 7.18.A, CONTRACTOR shall pay for OWNER's and ENGINEER's reasonable defense, 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 or awards until OWNER or ENGINEER are found negligent. If OWNER or ENGINEER are found negligent, OWNER or ENGINEER

shall reimburse CONTRACTOR for the prorata extent of OWNER's or ENGINEER's negligence for the cost of OWNER's or ENGINEER's reasonable defense.

D. In Paragraphs 7.18.A through C as may be amended by the Supplementary Conditions, ENGINEER shall also include Stantec and V3 Companies.

SC-7.19 Delegation of Professional Design Services

Add the following new paragraphs immediately after Paragraph 7.19.G:

H. The design professional providing the design calculations and design drawings shall be licensed in the State of the Project.

I. The design calculation and design drawings are not shop drawings, but shall be submitted to ENGINEER separately along with the required shop drawings for the system, material, or equipment specified. These calculations will be forwarded to OWNER for their records.

SC-10.03 Resident Project Representative

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

1. Strand Associates, Inc.® provided design services for the Project and will assume all duties and responsibilities of ENGINEER in Article 10 with the exception of Paragraph 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. Schedules: Review the progress schedule, schedule of Shop Drawing and Sample submittals, and Schedule of Values prepared by CONTRACTOR and consult with ENGINEER concerning acceptability.

3. Liaison:

a. Serve as ENGINEER's liaison with CONTRACTOR. Working principally through CONTRACTOR's authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.

b. Assist ENGINEER in serving as OWNER's liaison with CONTRACTOR when CONTRACTOR's operations affect OWNER's on-Site operations.

c. Assist in obtaining from OWNER additional details or information, when required for proper execution of the Work.

4. Interpretation of Contract Documents: Report to ENGINEER when clarifications and interpretations of the Contract Documents are needed and transmit to CONTRACTOR clarifications and interpretations as issued by ENGINEER.

5. Modifications: Consider and evaluate CONTRACTOR's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR's recommendations, if any, to ENGINEER. Transmit to CONTRACTOR in writing decisions as issued by ENGINEER.

6. Review of Work and Rejection of Defective Work:

a. Conduct on-Site observations of CONTRACTOR's work in progress to assist ENGINEER in determining if the Work is in general proceeding in accordance with the Contract Documents.

b. Report to ENGINEER whenever RPR believes that any part of CONTRACTOR's work in progress is defective, will not produce a completed Project that conforms generally to the Contract Documents, or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise ENGINEER of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.

7. Tests and System Start-ups:

a. Observe that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate OWNER's personnel, and that CONTRACTOR maintains adequate records thereof.

b. Observe, record, and report to ENGINEER appropriate details relative to the test procedures and systems start-ups.

8. Records:

a. Prepare a daily report or keep a diary or log book, and send periodic reports to ENGINEER.

9. Reports:

a. Furnish to ENGINEER periodic reports as required of progress of the Work and of CONTRACTOR's compliance with the Progress Schedule and schedule of Shop Drawing and Sample submittals.

b. Draft and recommend to ENGINEER proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from CONTRACTOR.

c. Notify ENGINEER of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, force majeure or delay events, damage to property by fire or other causes, or the discovery of any Constituent of Concern or Hazardous Environmental Condition.

10. Payment Requests: Review applications for payment with CONTRACTOR for compliance with the established procedure for their submission and forward with recommendations to ENGINEER, noting particularly the relationship of the payment requested to the Schedule of Values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.

11. Certificates, Operation and Maintenance Manuals: During the course of the Work, review materials and equipment certificates, operation and maintenance manuals and other data required by the Contract Documents to be assembled and furnished by CONTRACTOR are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to ENGINEER for review and forwarding to OWNER prior to payment for that part of the Work.

12. 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.

SC-11.01 Amending and Supplementing the Contract

Delete the second sentence in Paragraph 11.01.C in its entirety.

SC-11.07 Change of Contract Price

Amend the phrase at the end of Paragraph 11.07.B.2 to read:

(which may include an allowance for overhead and profit in accordance with Paragraph 11.07.C.2. unless OWNER and CONTRACTOR agree that these allowances are not appropriate for the Work involved.)

SC-11.09.C Change Proposals

Delete Paragraph 11.09.C in its entirety and insert the following in its place:

"Not used."

SC-11.10 Notification to Surety

Add the following new paragraphs immediately after Paragraph 11.10.A:

B. CONTRACTOR shall be responsible for notifying the surety of any assignment, modification, or change of the Contract, change in the Work covered thereby, or extension of time for the completion of the project.

C. Failure to provide notice to the surety of any such change shall not exonerate the surety from its obligations under the bond.

SC-12.01.A Claims Process

Delete Paragraph 12.01.A.3 in its entirety and insert the following in its place:

"Not used."

SC-14.02.A Tests and Inspections

Add the following to the beginning of Paragraph 14.02.A:

All Work is subject to testing to indicate compliance with Contract Document requirements. Duplicate copies of test results of all tests required shall be submitted to ENGINEER. Tests and inspection of work may be conducted by OWNER or an independent laboratory employed by OWNER. Tests may also be performed in the field by ENGINEER as a basis for acceptance of the Work.

Add the following to the end of Paragraph 14.02.A:

Samples required for testing shall be furnished by CONTRACTOR at no cost to OWNER. In the event that completed Work does not conform to specification requirements during the initial test, the Work shall be corrected and retested for conformance. The entire cost of retesting completed Work shall be borne by CONTRACTOR. This shall include the extra cost for inspection to OWNER which will be deducted from the final amount due CONTRACTOR.

SC-15.01 Progress Payments

Add the following language at the end of Paragraph 15.01.B.1:

An updated Progress Schedule shall be submitted with each Application for Payment. Applications for Payment submitted without an acceptable updated Progress Schedule will be returned to CONTRACTOR without review. Progress Schedules that are submitted which do not reflect current project conditions, will not be considered acceptable.

SC-15.01.B Applications for Progress Payment

Delete Paragraph 15.01.B.3 in its entirety and renumber Paragraph 15.01.B.4 as 15.01.B.3.

Add the following language at the end of Paragraph 15.01.B.3:

No payments will be made that would deplete the retainage, place in escrow any funds that are required for retainage, or invest the retainage for the benefit of CONTRACTOR.

Add the following paragraph immediately after Paragraph 15.01.B.3:

4. CONTRACTOR shall submit with each pay request CONTRACTOR's partial waiver of lien for the full amount of the requested payment. Beginning with the second pay request, and with each succeeding pay request, CONTRACTOR shall submit partial waivers of lien for each Subcontractor and Supplier showing that the amount paid to date to each is at least equivalent to the total value of Subcontractor's or Supplier's work, less retainage, included on the previous pay request. CONTRACTOR shall submit with each pay request a signed Waiver of Lien Log clearly documenting the following:

a. The names of all Subcontractors/Suppliers on the project.

b. Contract amounts for each Subcontractor/Supplier.

c. Amount paid to date to each Subcontractor/Supplier.

d. Lien waivers provided with current pay application for previous month's payments.

e. Amount to be paid to each Subcontractor/Supplier included in the pending pay request.

f. Remaining balance for each Subcontractor/Supplier.

5. CONTRACTOR shall submit one original and one copy on 8 1/2-inch by 11-inch paper of each lien waiver submitted.

6. CONTRACTOR shall submit four copies of each pay request for approval.

7. No advanced payment for shop drawing preparation will be made. Shop drawing costs will be paid when equipment and materials are delivered and suitably stored on the site.

8. All stored equipment and materials for which payment is requested shall have two copies of invoices included with the pay request. Equipment shall be identified thoroughly on the invoices, including serial numbers.

9. Payment for the stored equipment and material which are on the site shall not exceed the invoiced amount for each item, less the Contract retainage. The overhead and profit for the stored items shall not be invoiced until the item is installed.

10. Payment for off-site storage is normally reserved for sensitive or very large pieces of equipment that in ENGINEER's opinion would not be practical to have stored on the site. Payment for off-site stored items shall be limited to 75% of the invoiced value of the item, less Contract retainage. CONTRACTOR shall reimburse OWNER the cost of inspecting off-site stored items. When off-site storage is approved, CONTRACTOR shall provide Insurance Certificates and Document of Ownership to OWNER.

11. Payment for PLC and SCADA programming shall be limited to 75% of the invoiced time spent, less Contract retainage.

To allow this payment value, programming must be completed by area and system. CONTRACTOR must provide the following:

a. Signed certification by an officer of CONTRACTOR and electrical subcontractor that work has been completed.

b. Ladder diagram or function block dump with complete descriptive narrative in PDF format.

c. Database cross reference report for graphics (if applicable).

d. I/O partition list.

e. Smart I/O (DeviceNet, profibers, control net, Ethernet I/O, field bus, etc.) configuration report.

f. Processor configuration report.

g. Subroutine listing.

SC-15.02 CONTRACTOR’s Warranty of Title

Amend Paragraph 15.02.A by striking out the following text: “no later than seven days after the time of payment by OWNER” and inserting “no later than the time of payment by OWNER.”

SC-15.03 Substantial Completion

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.

SC-15.04 Partial Use or Occupancy

Add the following new paragraph immediately after Paragraph 15.04.A.4:

5. OWNER may at any time request CONTRACTOR in writing to permit OWNER to take over operation of any part of the Work although it is not substantially complete. A copy of such request will be sent to ENGINEER, and within a reasonable time thereafter, OWNER, CONTRACTOR, and ENGINEER shall make an inspection of that part of the Work to determine its status of completion and will prepare a list of the items remaining to be completed or corrected thereon before final payment. If CONTRACTOR does not object in writing to OWNER and ENGINEER that such part of the Work is not ready for separate operation by OWNER, ENGINEER will finalize the list of items to be completed or corrected and will deliver such lists to OWNER and CONTRACTOR together with a written recommendation as to the division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, maintenance, utilities, insurance, warranties, and guarantees for that part of the Work which will become binding upon OWNER and CONTRACTOR at the time when OWNER takes over such operation (unless they shall have otherwise agreed in writing and so informed ENGINEER). During such operation and prior to Substantial Completion of such part of the Work, OWNER shall allow CONTRACTOR reasonable access to complete or correct items on said list and to complete other related Work.

SC-15.08.A Correction Period

Delete in Paragraph 15.08.A the phrase “If within one year after the date of Substantial Completion” and insert in its place the following:

“If within one year of the date of final payment or from the date established by ENGINEER that the Work or portion thereof began operating or was used in a continuous, satisfactory manner for its intended purpose, whichever is earlier,”

SC-16.02 OWNER May Terminate for Cause

Add the following new paragraphs immediately after Paragraph 16.02.B.2:

3. complete the Work as OWNER may deem expedient at the expense of CONTRACTOR and surety;

4. apply the amounts retained from partial payments to the completion of the Work; and

5. authorize the surety to complete the steps in Paragraphs 16.02.B.1 through 4.

SC-16.03 OWNER May Terminate for Convenience

Add the following paragraph after Paragraph 16.03.B:

C. CONTRACTOR shall require similar provisions contained in Paragraph 16.03 in each of its subcontracts to protect CONTRACTOR from claims by Subcontractors arising from OWNER’s termination for convenience, or to minimize claims by such subcontractors. The remedy provided to

CONTRACTOR under this Paragraph 16.03 shall be CONTRACTOR's sole remedy in the event of termination for convenience by OWNER.

END OF SECTION

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME:	
Insurance Agency	PHONE (A/C, No, Ext):	FAX (A/C, No):
	E-MAIL ADDRESS:	
	PRODUCER CUSTOMER ID #:	

INSURED	INSURER(S) AFFORDING COVERAGE	NAIC #
Contractor	INSURER A : Insurance Company	
	INSURER B :	
	INSURER C :	
	INSURER D :	
	INSURER E :	
	INSURER F :	

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	GENERAL LIABILITY						EACH OCCURRENCE	$ 2,500,000
	X COMMERCIAL GENERAL LIABILITY						DAMAGE TO RENTED PREMISES (Ea occurrence)	$
	CLAIMS-MADE [X] OCCUR						MED EXP (Any one person)	$
		X					PERSONAL & ADV INJURY	$ 5,000,000
							GENERAL AGGREGATE	$ 5,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						PRODUCTS - COMP/OP AGG	$ 1,250,000
	POLICY [X] PRO-JECT [ ] LOC							$
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
	X ANY AUTO						BODILY INJURY (Per person)	$ 1,000,000
	ALL OWNED AUTOS						BODILY INJURY (Per accident)	$ 1,000,000
	SCHEDULED AUTOS	X					PROPERTY DAMAGE (Per accident)	$ 1,000,000
	HIRED AUTOS							$
	NON-OWNED AUTOS							$
	UMBRELLA LIAB X OCCUR						EACH OCCURRENCE	$ 3,000,000
	EXCESS LIAB CLAIMS-MADE	X					AGGREGATE	$ 10,000,000
								$
								$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N						X WC STATU-TORY LIMITS [ ] OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? [ ] **(Mandatory in NH)**	N / A					E.L. EACH ACCIDENT	$ 1,000,000
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000
								$
								$

SPECIMEN

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

Alternative Water Source Program JOL0801-SCADA System Upgrades, Contract 2722-0923, City of Joliet, Illinois
The City of Joliet, Strand Associates, Inc., Stantec, and V3 Companies are additional insured with respect to General Liability, Automobile Liability, and Excess/Umbrella Liability. In addition, see attached Additional Insured Endorsements for the General and Automobile Liability policies.

CERTIFICATE HOLDER

City of Joliet
1150 West Jefferson Street
Joliet, IL 60432

V3 Companies
444 North Well Street, Suite 602
Chicago, IL 60654

Strand Associates, Inc.
1170 South Houbolt Road
Joliet, IL 60431

Stantec
350 North Orleans Street, #1301
Chicago, IL 60654-1983

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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WIFIA SPECIFICATION PACKAGE
AND BID CONTRACT LANGUAGE

APPENDIX: WIFIA SPECIFICATION PACKAGE AND BID CONTRACT LANGUAGE

Last Updated: December 2020

The is a reference document that provides all necessary contract language for WIFIA funded projects. Please note that some of the contract language in this package is required and must be included verbatim and some is suggested. For *Suggested Contract Language*, you may use your own language so long as it still ensures that provisions are included to guarantee compliance with the federal requirements.

EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THE FEDERAL LANGUAGE PROVISIONS WITH RESPECT TO STATE OR LOCAL LAW.

ECONOMIC AND MISCELLANEOUS AUTHORITIES

DEBARMENT AND SUSPENSION AND PROHIBITIONS RELATING TO VIOLATIONS OF CWA AND CAA WITH RESPECT TO FEDERAL CONTRACTS, GRANTS, OR LOANS

Suggested Contract Language:

Debarment and Suspension. Contractor certifies that it will not knowingly enter into a contract with anyone who is ineligible under the 2 CFR part 180 and part 1532 (per Executive Order 12549, 51 FR 6370, February 21, 1986) or who is prohibited under Section 306 of the Clean Air Act or Section 508 of the Clean Water Act to participate in the [Project]. Suspension and debarment information can be accessed at http://www.sam.gov. Contractor represents and warrants that it has or will include a term or conditions requiring compliance with this provision in all of its subcontracts under this Agreement.

NEW RESTRICTIONS ON LOBBYING

Suggested Contract Language:

Federal Lobbying Restrictions (31 U.S.C 1352). Recipients of federal financial assistance may not pay any person for influencing or attempting to influence any officer or employee of a federal agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress with respect to the award, continuation, renewal, amendment, or modification of a federal grant, loan, or contract. These requirements are implemented for USEPA in 40 CFR Part 34, which also describes types of activities, such as legislative liaison activities and professional and technical services, which are not subject to this prohibition. Upon award of this contract, Contractor shall complete and submit to the City the certification and disclosure forms in Appendix A and Appendix B to 40 CFR Part 34. Contractor shall also require all subcontractors and suppliers of any tier awarded a subcontract over $100,000 to similarly complete and submit the certification and disclosure forms pursuant to the process set forth in 40 CFR 34.110.

CIVIL RIGHTS, NONDISCRIMINATION, AND EQUAL EMPLOYMENT OPPORTUNITY AUTHORITIES

AGE DISCRIMINATION ACT, SECTION 504 OF THE REHABILITATION ACT, TITLE VI OF THE CIVIL RIGHTS ACT OF 1964, AND SECTION 13 OF THE CLEAN WATER ACT

Suggested Contract Language:

CIVIL RIGHTS OBLIGATIONS. Contractor shall comply with the following federal non-discrimination requirements:

a. Title VI of the Civil Rights Act of 1964, which prohibits discrimination based on race, color, and national origin, including limited English proficiency (LEP). (42 U.S.C 2000D, *et. seq)*

b. Section 504 of the Rehabilitation Act of 1973, which prohibits discrimination against persons with disabilities. (29 U.S.C. 794, supplemented by EO 11914, 41 FR 17871, April 29, 1976 and EO 11250, 30 FR 13003, October 13, 1965)

c. The Age Discrimination Act of 1975, which prohibits age discrimination. (42 U.S.C 6101 *et. seq)*

d. Section 13 of the Federal Water Pollution Control Act Amendments of 1972, which prohibits discrimination on the basis of sex.

e. 40 CFR Part 7, as it relates to the foregoing.

EQUAL EMPLOYMENT OPPORTUNITY

Required *Contract Language. This language must be included verbatim:*

Equal Employment Opportunity (EEO). The Contractor shall comply with Executive Order 11246, entitled 'Equal Employment Opportunity,' as amended by Executive Order 11375, and as supplemented in Department of Labor regulations (41 CFR Part 60). (EO 11246, 30 FR 12319, September 28, 1965)

Contractor's compliance with Executive order 11246 shall be based on implementation of the Equal Opportunity Clause, and specific affirmative active obligations required by the Standard Federal Equal Employment Opportunity Construction Contract Specifications, as set forth in 41 CFR Part 60-4.

During the performance of this contract, the contractor agrees as follows:

1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices

to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

2) The contractor will, in all solicitations or advancements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.
3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.
4) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under Section 202 of Executive Order No. 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
5) The contractor will comply with all provisions of Executive Order No. 11246 of Sept. 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
6) The contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
7) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be cancelled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 11246 of Sept. 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
8) The contractor will include the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the contractor may request the United States to enter into such litigation to protect the interests of the United States. [Sec. 202 amended by EO 11375 of Oct. 13, 1967, 32 FR 14303, 3 CFR, 1966–1970 Comp., p. 684, EO 12086 of Oct. 5, 1978, 43 FR 46501, 3 CFR, 1978 Comp.,

p. 230, EO 13665 of April 8, 2014, 79 FR 20749, EO 13672 of July 21, 2014, 79 FR 42971]

Standard Federal Equal Employment Opportunity Construction Contract Specifications. (41 CFR 60-4.3)

1) As used in these specifications:
   a) "Covered area" means the geographical area described in the solicitation from which this contract resulted;
   b) "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;
   c) "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.
   d) "Minority" includes:
      i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
      ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
      iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
      iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).
2) Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.
3) If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.
4) The Contractor shall implement the specific affirmative action standards provided in paragraphs 7 a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered Construction contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area

where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

5) Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.
6) In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.
7) The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:
    a) Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.
    b) Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.
    c) Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.
    d) Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.
    e) Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs

funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.

f) Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g) Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h) Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

i) Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j) Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.

k) Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR part 60-3.

l) Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m) Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n) Ensure that all facilities and company activities are non-segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o) Document and maintain a record of all solicitations of offers for subcontracts from minority and

female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p) Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8) Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9) A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

10) The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, sexual orientation, gender identity, or national origin.

11) The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12) The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13) The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14) The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions

hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15) Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

Segregated Facilities. (41 CFR 60-1.8) The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensuring that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. This obligation extends to all contracts containing the equal opportunity clause regardless of the amount of the contract. The term "facilities," as used in this section, means waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, wash rooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees; Provided, That separate or single-user restrooms and necessary dressing or sleeping areas shall be provided to assure privacy between the sexes.

Required *language in bid solicitations (or equivalent):*

Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246) located at 41 CFR § 60-4.2:

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.
2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Timetables	Goals for minority participation for each trade	Goals for female participation in each trade
	Insert goals for each year[1]	6.9%[2]

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the contractor performs construction work

[1] Goals can be found at: https://www.dol.gov/agencies/ofccp/construction

[2] Nationwide goal for all covered areas

in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and non-federally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.
4. As used in this Notice, and in the contract resulting from this solicitation, the “covered area” is (insert description of the geographical areas where the contract is to be performed giving the state, county and city, if any).

PARTICIPATION BY DISADVANTAGED BUSINESS ENTERPRISES IN PROCUREMENT UNDER EPA FINANCIAL ASSISTANCE AGREEMENTS

Note: The WIFIA program only requires use of the EPA DBE program’s six good faith efforts during contract procurement. States may require additional DBE reporting.

Suggested Contract Language:

Disadvantaged Business Enterprises (DBE). The contractor must ensure that the DBE’s six good faith efforts are used during the procurement of subcontractors for the [Project]. The six good faith efforts are found at: https://www.epa.gov/grants/disadvantaged-business-enterprise-program-requirements#sixgoodfaithefforts.

AMERICAN IRON AND STEEL (AIS) REQUIREMENT

Suggested Contract Language:

The Contractor acknowledges to and for the benefit of _____ ("Purchaser") and the United States Environmental Protection Agency ("EPA") that it understands the goods and services under this Agreement are being funded with monies made available by the Water Infrastructure Finance and Innovation Act program of the EPA that has 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 Contactor pursuant to this Agreement. The Contractor hereby represents, warrants and covenants to and for the benefit of the Purchaser and the EPA 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 EPA. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or the EPA to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Purchaser or the EPA resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the EPA or any damages owed to the EPA by the Purchaser). While the Contractor has no direct contractual privity with the EPA, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the EPA 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 EPA.

LABOR LAWS AND STANDARDS

Note that the language below addresses Davis Bacon and Related Acts and incorporates the WIFIA borrower as an authorized representative, in accordance with the WIFIA loan agreement, to ensure compliance with this federal requirement.

***Required** Contract Language.*

Compliance with Davis-Bacon and Related Acts.

(a) In any contract in excess of $2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a public building or public work, or building or work financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in 29 C.F.R. § 5.1, the following clauses (or any modifications thereof to meet the particular needs of the agency, provided that such modifications are first approved by the Department of Labor):

(1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), 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 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. Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) 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 shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in § 5.5(a)(4). 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 classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall 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)

(A) The WIFIA assistance recipient, [name of WIFIA borrower], on behalf of the U.S. Environmental Protection Agency (EPA), shall 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 shall be classified in conformance with the wage determination. The WIFIA assistance recipient shall approve an additional classification and wage rate and fringe benefits therefore 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 utilized 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) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the WIFIA assistance recipient agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent to the Administrator of the Wage and Hour Division (WHD Administrator), U.S. Department of Labor, Washington, DC 20210. The WHD Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the WIFIA assistance recipient or will notify the WIFIA assistance recipient within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the WIFIA assistance recipient do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the WIFIA assistance recipient shall refer the questions, including the views of all interested parties and the recommendation of the WIFIA assistance recipient, to the WHD Administrator for determination. The WHD Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the WIFIA assistance recipient or will notify the WIFIA assistance recipient within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii) (B) or (C) of this section, shall 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.

(iii) 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 shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) 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, 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.

(2) Withholding. [name of WIFIA borrower], shall upon written request of the WIFIA Director or an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the contract, the WIFIA Director may, after written notice to the contractor, sponsor, applicant, or owner, 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.

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, 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 section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) 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 section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall 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. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii) {no text here}

(A) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to [name of WIFIA borrower] . The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at https://www.dol.gov/agencies/whd/forms/wh347 or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to [name of WIFIA borrower], for transmission to the EPA, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to[name of WIFIA borrower]).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed 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 Regulations, 29 CFR part 3;

(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 of work performed, as specified in the applicable wage determination incorporated into the contract.

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

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of [name of the borrower, EPA, or the Department of Labor, and shall permit such

representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the EPA may, after written notice to the [name of WIFIA borrower], 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 may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees –

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed 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 Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall 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 the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall 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 WHD Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to

and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the WHD Administrator determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

(5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the EPA may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and [name of WIFIA borrower], EPA, the U.S.

Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) 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 section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

(b) Contract Work Hours and Safety Standards Act. The following clauses set forth in paragraphs (b)(1), (2), (3), and (4) of this section shall be inserted in full in any contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by § 5.5(a) or § 4.6 of part 4 of this title. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the conract 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 employedon 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. 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 watchmen and guards, employed in violation of the clause set forth inparagraph (b)(1) of this section, in the sum of $25 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) of this section.

(3) Withholding for unpaid wages and liquidated damages. The [name of WIFIA borrower] shall upon its own action or upon written request of an authorized representative of the Department of Labor, or the EPA, withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or 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, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (b)(1) through (4) of this section and also a clause requiring the subcontractors

to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (4) of this section.

(c) In addition to the clauses contained in paragraph (b), in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in § 5.1, the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contractfor all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the EPA shall cause or require the [name of WIFIA borrower] to insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the [name of WIFIA borrower], EPA and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

LATEST UPDATES ON FEDERAL REQUIREMENTS

PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT

Suggested Contract Language:

Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment (Effective August 13, 2020). The John S. McCain National Defense Authorization Act for Fiscal Year 2019 (P.L. 115-232), at Section 889, prohibits EPA financial assistance recipients, including WIFIA borrowers, from expending loan 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 the Act, "covered telecommunications equipment or services" means:

a) Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).
b) 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).
c) Telecommunications or video surveillance services provided by such entities or using such equipment.
d) 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.

The Act does not prohibit:

a) Procuring with an entity to provide a service that connects to the facilities of a third-party, such as backhaul, roaming, or interconnection arrangements.
b) Telecommunications equipment that cannot route or redirect user data traffic or permit visibility into any user data or packets that such equipment transmits or otherwise handles.

SPECIFICATIONS

SECTION 01 11 00

SUMMARY OF WORK

PART 1–GENERAL

1.01 DIVISION ONE

A. The requirements of Division 01 apply to all sections of the Contract.

1.02 PROJECT SCOPE

A. CONTRACTOR shall provide all items, articles, materials, operations or methods mentioned or scheduled on the Drawings or herein specified: including all labor, supervision, equipment, incidentals, taxes, and permits necessary to complete the Work as described within the Contract Documents. CONTRACTOR shall install all items provided by OWNER as mentioned or scheduled on the Drawings or herein specified.

1.03 CONTRACT DOCUMENTS–INTENT AND USE

A. Intent of Documents:
   1. Singular notations and specifications shall be considered plural where application is reasonably inferred.
   2. Mention or indication of extent of work under any division or Specification section is done only for convenience of CONTRACTOR and shall not be construed as describing all work required under that division or section.
   3. Some individual sections may contain a list of related sections. The list of related sections in individual sections is provided for the convenience of CONTRACTOR and is not necessarily all-inclusive. CONTRACTOR may not rely upon this listing for determination of scope of work. Other sections of the Specifications not referenced in individual sections shall apply as required for proper performance of the Work.
   4. Command type sentences may be used in the Contract Documents. These sentences refer to and are directed to CONTRACTOR.
   5. Symbols for various elements and systems are shown on the Drawings. Should there be any doubt regarding the meaning or intent of the symbols used, a written interpretation shall be obtained from ENGINEER.

B. Use of Documents:
   1. CONTRACTOR shall examine all Specifications and Drawings for the Work, including those that may pertain to Work CONTRACTOR does not normally perform with its own forces.
   2. CONTRACTOR shall use all of the Project Drawings and Specifications:
      a. For a complete understanding of the Project.
      b. To determine the type of construction and systems required.
      c. For coordination with other contractors.
      d. To determine what other work may be involved in various parts or phases.
      e. To anticipate and notify others when work by others will be required.
      f. And all other relevant matters related to the project.

3. CONTRACTOR is also bound by all requirements of the Contract Documents which are applicable to, pertain to, or affect its Work as may be shown or inferred by the entire set of Project Drawings and Specifications.

1.04 CONSTRUCTION REQUIREMENTS

A. General Information and Requirements:
   1. The City of Joliet operates the water distribution system 24 hours a day, seven days a week. The SCADA System allows operations personnel to monitor and control the distribution system remotely.
   2. It shall be the responsibility of CONTRACTOR to not in any way impair the normal treatment or operation efficiency of the facilities, regardless of the Work underway. No bypassing of raw or partially treated water to the distribution system or to downstream treatment units shall occur at any time as a result of construction unless authorized in writing by the Plant Operations Superintendent. In general, this requires that new facilities be complete and ready for service prior to removing existing units from service for modifications. CONTRACTOR shall provide all temporary electrical and temporary construction required to meet the requirements of this section and to complete the Work.
   3. Operation of the facilities will be the responsibility of OWNER. CONTRACTOR shall cooperate with the operation staff at all times, and removal of any operating units from service shall be coordinated by CONTRACTOR with OWNER and ENGINEER. Prior to removing or placing any unit process in or out of service, CONTRACTOR shall request in writing authorization from OWNER.
   4. No more than one existing treatment unit may be taken out of service at a time when making connections, etc., so that the remaining units are available for treatment. CONTRACTOR shall coordinate taking units out of service and placing units back in service with OWNER.
   5. CONTRACTOR shall maintain site roadways open at all times to meet OWNER's requirements.
   6. Outage Plan: CONTRACTOR shall submit for review, a detailed outage plan which includes time scheduled for work activities. The plan shall be in writing and also in the form of a bar graph. The outage plan shall be coordinated with the work construction schedule and shall be updated monthly. The outage plan shall include the length of time required to complete said work. The length of time unit processes are out of service shall be minimized. To that end, all new equipment, tools, and materials required for the Work shall be readily available when outage is implemented to minimize down time of unit processes.

B. Construction Sequence:
   1. The construction sequence is included in Section 26 09 00, Part 3, and is provided as a general guideline for the information and for the benefit of CONTRACTOR. This construction sequence is not intended to dictate means, method of construction, or direct construction activities. This construction sequence is a conceptual general construction sequence with minimum recommended outage, shutdowns, and operating units to be maintained in service. The general construction sequence is projected to allow the Work to be completed while maintaining operation of the system. It is not intended to be all inclusive and does not list all work elements or details that are required to complete the Work. CONTRACTOR shall be responsible for implementing any additional details required, including temporary construction, at no additional cost to OWNER.

2. CONTRACTOR may propose alternate sequence or modifications to this sequence. OWNER will review the proposed modification and determine if such modification of the sequence interferes with the proper operation of the system. Any modifications to this general construction sequence shall be proposed in writing and shall be approved by OWNER prior to their implementations.

1.05 CONTRACTOR USE OF SITE

A. General:
   1. The “area of the site” referred to in these Specifications shall be as shown on the Drawings. If the “area of the site” is not shown, OWNER's property lines, the Project right-of-way and/or any easements obtained for the Project shall be considered the “area of the site.”
   2. Construction activities shall be confined within the “area of the site” limits.
   3. From the start of work to completion CONTRACTOR is responsible for the care of the site and the premises which are affected by operations of Work of this Contract.
   4. Except for permanent site improvements provided under the Contract, CONTRACTOR shall restore property disturbed during the Work, to the conditions which previously existed.
   5. Work in occupied spaces shall be restricted to specified Work and essential activities, such as making necessary connections and extending services or constructing temporary access ways. Such work shall be scheduled in advance with OWNER.

B. Parking and Deliveries:
   1. CONTRACTOR is responsible for control of traffic by vehicles and persons within the limits of its operations.
   2. Parking for employees, subcontractors, and agents of CONTRACTOR shall be in areas subject to approval of OWNER.
   3. Access to the site for delivery of construction material or equipment shall be subject to approval of OWNER.

1.06 EXISTING SERVICES, OVERHEAD UTILITIES, AND UNDERGROUND FACILITIES INCLUDING STRUCTURES

A. Interruption of existing services and systems including heating, ventilating, air conditioning, water, sanitary, lighting and power, signal and security will not be permitted unless specifically indicated otherwise. Provide temporary facilities to maintain services.

B. If deemed necessary by OWNER, such work shall be accomplished after OWNER’s normal office hours.

C. Work shall not commence until all labor, materials, and equipment are available so Work can continue without interruption or delay.

D. Should uncharted or incorrectly charted services or Underground Facilities be encountered during installation, notify OWNER and consult with utility owner immediately.

E. Cooperate with OWNER and utility companies in keeping respective services and Underground Facilities in operation and repair any damage.

F. CONTRACTOR shall not interrupt existing services and Underground Facilities occupied and used by OWNER or others, except when permitted in writing by OWNER.

G. Any accidental interruption of services and Underground Facilities shall be repaired immediately, including provision of temporary facilities until permanent repairs can be made.

H. Prior to any excavation, demolition, or drilling on site, CONTRACTOR shall contact owners of the Underground Facilities in and near the construction area of the intent to excavate, demolish, or drill. As part of this notification requirement, CONTRACTOR shall contact "JULIE" (811 or 1-800-892-0123). CONTRACTOR shall be aware that not all owners participate in "JULIE." A call to this agency shall not absolve CONTRACTOR of the requirements for contacting owners of all Underground Facilities in and near the construction area. CONTRACTOR shall give reasonable advance notice to "JULIE" and other owners for the notification which shall not be less than the minimum advance notification required.

I. Locations and elevations of services and Underground Facilities as shown on the Drawings are approximate. It shall be CONTRACTOR's responsibility to determine their exact location when in their vicinity. To this end, CONTRACTOR shall proceed with caution in the excavation and preparation of the Site so the exact location of services and Underground Facilities can be determined. CONTRACTOR shall include in the Contract Price any costs for temporary or permanent relocations of such services and Underground Facilities required to complete the Work unless specifically indicated otherwise in the Specifications.

J. Where potential grade conflicts might occur with existing services and Underground Facilities, CONTRACTOR shall uncover such services and Underground Facilities sufficiently in advance of construction so that elevations may be determined to allow any necessary adjustments to be made.

K. CONTRACTOR shall coordinate with overhead utility companies prior to the Work. CONTRACTOR shall provide all necessary temporary and permanent support relocation or temporary and permanent restraint to maintain overhead utilities in service.

L. CONTRACTOR shall keep an accurate and complete record of all such services and Underground Facilities encountered and shall provide OWNER a copy of this record. The record shall include a description of the item encountered, opinion as to conditions, and adequate measurements and depths so that the item can be located in the future.

M. CONTRACTOR shall inspect all services and Underground Facilities for condition and soundness. Unsound conditions shall be reported to OWNER immediately after exposing. CONTRACTOR shall not proceed with the Work until the service or facility owner has been notified. Service or facility owner shall then be given time to inspect and correct, if required, the service or Underground Facility. CONTRACTOR may make claim under the provisions of Articles 11 and 12 of the General Conditions should CONTRACTOR feel a price or time adjustment is justified.

N. Any additional costs incurred because of failure of CONTRACTOR to report the condition of any and all existing services and Underground Facility encountered shall be paid for by CONTRACTOR.

O. Whenever ENGINEER feels it is necessary to explore and excavate to determine the location of existing services and Underground Facilities, CONTRACTOR shall make

explorations and excavations for such purposes. If CONTRACTOR is required to perform additional Work in making the explorations and excavations, extra compensation will be allowed as provided for in the General Conditions.

1.07 PROTECTION OF WORK AND IMPROVEMENTS

A. CONTRACTOR shall protect the property of OWNER, existing improvements, and the Work installed by CONTRACTOR and others from abuse, damage, dust, debris, and other objectionable materials resulting from construction activities.

B. CONTRACTOR shall provide suitable covers, partitions, or other dust and fume containment devices to suit construction operations.

C. CONTRACTOR shall keep property, existing improvements, and the Work including structures, mains, fittings, and accessories free from dirt and foreign matter at all times.

D. CONTRACTOR shall provide temporary plugging of openings, holes, and pipe ends that are existing or that CONTRACTOR has installed.

E. Property, improvements, and Work damaged by CONTRACTOR shall be repaired or replaced by CONTRACTOR to the satisfaction of OWNER.

F. CONTRACTOR is cautioned that existing public and private streets, alleyways, and roads may not hold up to typical construction traffic or activities. CONTRACTOR shall repair or replace streets, alleyways, roads, and shoulders damaged by its construction activities to their original condition at CONTRACTOR's expense.

1.08 AVAILABILITY OF LANDS

A. Easements were not obtained for this Project. CONTRACTOR shall confine its operations, equipment and storage areas to the lands and rights-of-way in which the Project is to be located. CONTRACTOR may enter into written agreements with property owners for use of other lands during construction. Copies of such agreements shall be provided to OWNER.

PART 2–PRODUCTS

NOT APPLICABLE

PART 3–EXECUTION

NOT APPLICABLE

END OF SECTION

SECTION 01 29 00

CONTRACT CONSIDERATIONS

PART 1–GENERAL

1.01 SUMMARY

A. Work Included:
   1. Cash Allowances.
   2. Measurement and Payment–Lump Sum.

1.02 CASH ALLOWANCES

A. See Paragraph 13.02 of the General Conditions for costs to be included in allowances.

B. Refer to sections of the specifications identified in the Bid Form for specific information on use of cash allowances.

C. The Bid shall include the amount equal to the specified quantity times the unit price.

1.03 MEASUREMENT AND PAYMENT–LUMP SUM

A. Payment for Lump Sum projects will be based on the accepted schedule of values for the project.

B. An acceptable schedule of values will include the following features:
   1. Schedule shall list the installed value of the component parts of the work in sufficient detail to serve as a basis for computing values for progress payments during construction. Schedule shall be subdivided as necessary by specification section and work area.
   2. Identify each line item with the number and title of the respective Specification Section.
   3. For each major line item list sub-values of major products or operations under the item.
   4. For the various portions of the work:
      a. Each item shall include a directly proportional amount of CONTRACTOR's overhead and profit.
      b. For items on which progress payments will be requested for stored materials, break down the value into:
         (1) The cost of the materials, delivered and unloaded, with taxes paid. Paid invoices are required for materials upon request by ENGINEER.
         (2) The total installed value.
   5. The sum of all values listed in the schedule shall equal the total Contract Sum.
   6. Schedule shall include a separate listing of general items such as bonds, insurance, mobilization, demobilization, field supervision, and record documents.

C. Once a schedule of values is accepted, it shall not be revised, except for changes associated with subsequently executed change orders.

D. No separate measurement for payment will be performed for Lump Sum Work.

E. CONTRACTOR shall estimate percentage of Work completed. ENGINEER will review CONTRACTOR's estimate of quantity of Work completed.

F. Payment will be made based on the percentage of the Contract completed less retainage and/or liquidated damages.

G. Unless noted otherwise, all Work described in the Specifications and/or shown on the Drawings shall be included in the Lump Sum Bid.

H. Some technical specification sections may include payment provisions. These provisions are in addition to the provisions of this section which apply to all of the Work.

PART 2–PRODUCTS

NOT APPLICABLE

PART 3–EXECUTION

NOT APPLICABLE

END OF SECTION

SECTION 01 31 00

COORDINATION, FIELD ENGINEERING, AND MEETINGS

PART 1–GENERAL

1.01 SUMMARY

A. Work Included:
   1. Coordination.
   2. Field engineering.
   3. Progress meetings.

1.02 COORDINATION

A. CONTRACTOR shall coordinate scheduling, submittals, and work of the various sections of the work to provide an efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later. See Section 01 11 00–Summary of Work for specific construction sequence.

B. CONTRACTOR shall verify utility requirements and characteristics of operating equipment are compatible with building utilities and coordinate Work of various sections having interdependent responsibilities for installing, connecting to, and placing in service such equipment.

C. CONTRACTOR shall coordinate space requirements and installation of mechanical and electrical work which are indicated diagrammatically on the Drawings and shall follow routing shown for pipes, ducts, and conduit as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

D. In finished areas, except as otherwise indicated, CONTRACTOR shall conceal pipes, ducts, and wiring within the construction and coordinate locations of fixtures and outlets with finish elements.

E. CONTRACTOR shall coordinate completion and cleanup of Work of separate sections in preparation for substantial completion and for portions of Work designated for OWNER's occupancy.

F. After OWNER occupancy of premises, CONTRACTOR shall coordinate access to Site for correction of defective Work and Work not in accordance with Contract Documents to minimize disruption of OWNER's activities.

1.03 FIELD ENGINEERING

A. CONTRACTOR shall locate and protect property stakes, legal survey monuments, benchmarks, and survey control and reference points. CONTRACTOR shall pay for replacement of disturbed property stakes and legal survey monuments by a Registered Land Surveyor acceptable to OWNER and for replacement of benchmarks and survey control and reference points provided by ENGINEER.

B. CONTRACTOR shall provide field engineering services as required to establish elevations, lines, and levels utilizing recognized engineering survey practices.

C. CONTRACTOR shall furnish all required plummets and graduated poles to check all Work.

D. If stakes and boards have to be reset because of negligence of CONTRACTOR, CONTRACTOR shall bear the cost of such work.

E. If laser beam is used, CONTRACTOR shall check its Work against intermediate grade stakes provided between manholes. Prior to initial use of the laser, CONTRACTOR shall set up laser on ground surface and check line and gradient controls. Lasers not functioning properly shall be immediately removed.

F. If existing property stakes not within the limits of the trench are removed or damaged by CONTRACTOR, CONTRACTOR shall bear the cost of replacement. Replacement shall be made by a legal survey performed by a licensed Land Surveyor hired by OWNER. Cost for survey shall be deducted from the Contract Price.

G. CONTRACTOR shall be responsible for all lines, elevations, and measurements of buildings, structures, piping, utilities, and other work executed by CONTRACTOR under the Contract. CONTRACTOR must exercise proper precaution to verify figures before laying out the Work and will be held responsible for any error resulting from its failure to exercise such precaution.

1.04 PROGRESS MEETINGS

A. Progress meetings will be held throughout progress of the Work at intervals agreed to by OWNER, ENGINEER, and CONTRACTOR. Interval will generally be monthly.

B. CONTRACTOR's project manager, job superintendent, major subcontractors, and suppliers shall attend as appropriate to address agenda topics for each meeting. CONTRACTOR's representatives shall have authority to bind CONTRACTOR to decisions at the meetings.

C. The project schedule shall be updated monthly and shall be reviewed at each progress meeting.

D. CONTRACTOR shall also provide the following information in written form at each meeting.
   1. Construction progress, including:
      a. Activities completed this reporting period.
      b. Activities in progress this reporting period.
      c. Activities scheduled to commence this reporting period.
   2. Description of problem areas.
   3. Current and anticipated delays.
      a. Cause of the delay.
      b. Corrective action and schedule adjustments to correct the delay.
      c. Impact of the delay on other activities, on milestones, and on completion dates.
   4. Changes in construction sequence.

E. ENGINEER will prepare and distribute minutes to all attending parties.

PART 2–PRODUCTS

NOT APPLICABLE

PART 3–EXECUTION

NOT APPLICABLE

END OF SECTION

SECTION 01 33 00

SUBMITTALS

PART 1–GENERAL

1.01 SUMMARY

A. Work Included:
   1. Whenever possible throughout the Contract Documents, the minimum acceptable quality of workmanship and materials has been defined either by manufacturer's name and catalog number or by reference to recognized industry standards.
   2. To facilitate CONTRACTOR's understanding of the design intent, procedures have been established for advance submittal of design data and for its review or rejection by ENGINEER.
   3. The type of submittal requirements specified in this section include construction progress schedule, submittal schedule, shop drawings, product data, samples, maintenance manuals, and other miscellaneous work-related submittals.

B. Related work described elsewhere: More detailed requirements for submittals are described in other sections of these specifications for some materials and equipment. They are to be considered additional requirements to supplement the requirements specified in this section. Submittals shall conform to Article 7 of the General Conditions.

C. Definitions: "Electronic Submittal" is defined as any submittal transmitted electronically to ENGINEER for review.

1.02 IDENTIFICATION OF SUBMITTALS

A. CONTRACTOR shall completely identify each submittal and resubmittal by showing at least the following information:
   1. Name and address of submitter, plus name and telephone number of the individual who may be contacted for further information.
   2. Name and location of project and identification number.
   3. Drawing number and specifications section number to which the submittal applies.
   4. Include the date of each submittal or resubmittal.

1.03 GROUPING OF SUBMITTALS

A. Unless otherwise specifically permitted by ENGINEER, CONTRACTOR shall make all submittals in groups containing all associated items so that information is available for checking each item when it is received.

B. Partial submittals may be rejected as not complying with the provisions of the Contract Documents.

1.04 TIMING OF SUBMITTALS

A. CONTRACTOR shall make all submittals far enough in advance of scheduled dates of installation to provide required time for reviews, for securing necessary approval, for possible revision and resubmittal, and for placing orders and securing delivery.

B. The review period for submittals that are received after 3 P.M. shall commence on the following business day.

1.05 CONSTRUCTION PROGRESS AND SUBMITTAL SCHEDULES

A. Submit preliminary schedules within 10 days of the Effective Date of the Contract.

B. Revise schedules incorporating any comments provided at the schedule review conference required in GC-2.05 and resubmit.

C. As a minimum, the construction progress schedule shall consist of a horizontal bar chart with a separate line for each major portion of Work or operation, identifying first workday of each week.

D. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration for each activity. Identify activities that are on the critical path.

E. Include line items for milestones (if any), Substantial, and Final Completion.

F. Submit updated schedules with each Application for Payment, identifying changes since previous version.

G. Indicate estimated percentage of completion for each item of Work at each submission.

H. Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates.

1.06 SHOP DRAWINGS

A. Shop drawings shall include specially prepared technical data for this project including drawings, diagrams, performance curves, data sheets, schedules, templates, patterns, reports, calculations, instructions, measurements, and similar information not in standard printed form for general application to a range of similar projects. Shop drawings shall be submitted for all manufactured or fabricated items. See individual technical sections for special requirements.

B. CONTRACTOR shall make all shop drawings accurately to scale and sufficiently large to show all pertinent aspects of the item and its method of connection to the work.

C. Shop drawings shall be checked, approved, and stamped by CONTRACTOR in accordance with the General Conditions before transmittal to ENGINEER for review and approval.

D. Complete shop drawings and descriptive data shall be submitted on all manufactured or fabricated items prior to 50% completion of the Work. Applications for payment beyond 50% of the Contract amount will not be recommended for payment until all shop drawings are submitted, including the required hard copies, or a revised schedule for any remaining submittals is agreed to by OWNER and ENGINEER.

E. CONTRACTOR shall submit shop drawings following the electronic submittal procedure described below. If electronic submittal is impossible, CONTRACTOR may request

ENGINEER to review hard copy submittals on a limited basis. ENGINEER may request to review hard copy submittals on a limited basis for submittals that are over 100 pages in length. If ENGINEER agrees to or requests hard copy submittal review, CONTRACTOR shall submit six color copies of shop drawings and descriptive data to ENGINEER for approval. Three copies of these will be returned to CONTRACTOR if approved. If shop drawings are not approved or if they are stamped “Approved as Noted-Resubmit,” two corrected copies will be returned to CONTRACTOR for use in resubmittal. If CONTRACTOR desires more than three approved copies, submitted quantity shall be increased accordingly.

F. Shop drawings submitted to ENGINEER will be reviewed and stamped “Approved,” “Approved as Noted,” “Approved as Noted-Resubmit,” or “Not Approved.” CONTRACTOR shall resubmit the above number of corrected shop drawings for all shop drawings stamped “Approved as Noted-Resubmit” and “Not Approved” and will continue this process until shop drawings are stamped “Approved” or “Approved as Noted.” If drawings are stamped “Approved as Noted-Resubmit,” fabrication may proceed in accordance with the marked-up shop drawings. Installation shall not proceed until shop drawings have been resubmitted and stamped “Approved” or “Approved as Noted.”

G. If shop drawings are stamped “Approved as Noted” or “Approved as Noted-Resubmit” and CONTRACTOR does not agree with revisions or cannot conform with revisions, fabrication shall not proceed and shop drawings shall be resubmitted with explanation of CONTRACTOR’s position.

H. All shop drawings used for construction site activities shall bear the “Approved” or “Approved as Noted” stamp of ENGINEER.

I. Arrangements may be made between CONTRACTOR and ENGINEER to provide additional copies of “Approved” shop drawings for field activity purposes.

J. Electronic Submittal Procedures:
   1. Summary:
      a. Shop drawing and product data submittals shall be transmitted to ENGINEER in electronic (PDF) format using Submittal Exchange, or equal, a website service designed specifically for transmitting submittals between construction team members, or equal.
      b. The intent of electronic submittals is to expedite the construction process by reducing paperwork, improving information flow, and decreasing turnaround time.
      c. The electronic submittal process is not intended for color samples, color charts, or physical material samples.
   2. Procedures:
      a. CONTRACTOR shall review and apply electronic stamp certifying that the submittal complies with the requirements of the Contract Documents including verification of manufacturer/product, dimensions and coordination of information with other parts of the work.
      b. CONTRACTOR shall transmit each submittal to ENGINEER using the Submittal Exchange website, www.submittalexchange.com, or equal.
      c. ENGINEER review comments will be made available on the Submittal Exchange website for downloading. CONTRACTOR will receive email notice of completed review.
      d. Distribution of reviewed submittals to subcontractors and suppliers is the responsibility of CONTRACTOR.

e. Electronically submitted shop drawings shall follow the following format:
   (1) Filenames for the shop drawing submittals shall follow a XX XX XX.YYY-Z. Description convention where XX XX XX is the specification section number, YYY is the submittal number, .Z is the resubmittal number, and description is a short description of what the submittal includes. Submittals shall be consecutively numbered in direct sequence of submittal. Resubmittals shall be consecutively numbered with the first submittal numbered with a -0 and the first resubmittal numbered with a -1. Example file name: 03 20 00.016-1. Structure 10 Concrete Reinforcement. This would be the first revision of the sixteenth submittal and contain information on concrete reinforcement.
   (2) All files shall be delivered in PDF format with a minimum resolution of 300 dpi unless otherwise requested by ENGINEER. Scanned in material shall be scanned in color and any markings by CONTRACTOR shall be made in red. Pages shall be rotated to the appropriate position for easy reading on a computer monitor such that the majority of text is vertical.
   (3) Files shall be delivered without security features activated.
   (4) Shop Drawings shall be uploaded as individual files. Files combined into a zip drive are not acceptable. All pages of one submittal should be contained in one file.
   (5) The file shall open to a cover page containing, at a minimum, the following information:
      (a) CONTRACTOR's stamp.
      (b) Name, e-mail, and telephone number of the individual who may be contacted for further information.
      (c) Project number.
      (d) Submittal number.
      (e) Submission date, if resubmittal, all previous submission dates.
      (f) Index detailing contents and the total number of pages in the submittal.

f. Once a shop drawing has been "Approved" or "Approved as Noted," CONTRACTOR shall provide three hard color copies of the "Approved" or "Approved as Noted," shop drawings to ENGINEER. CONTRACTOR is responsible for the hard copy color replication of ENGINEER's "Approved" or "Approved as Noted," shop drawings for use by CONTRACTOR. Hard copy shop drawings shall be submitted in 3-ring binders or 3-tab report covers.

3. Costs:
   a. CONTRACTOR shall include the full cost of Submittal Exchange, or equal, project subscription in their proposal. This cost shall be included in the Contract amount. Contact Submittal Exchange at 1-800-714-0024 to verify cost prior to Bid.
   b. At CONTRACTOR's option, training is available from Submittal Exchange regarding use of website and PDF submittals. Contact Submittal Exchange at 1-800-714-0024.
   c. Internet Service and Equipment Requirements:
      (1) Email address and Internet access at CONTRACTOR's main office.
      (2) Adobe Acrobat (www.adobe.com), Bluebeam PDF Revu (www.bluebeam.com), or other similar PDF review software for applying electronic stamps and comments.

K. CONTRACTOR is fully responsible for obtaining any and all copyright permission associated with conversion of shop drawing information to electronic format.

L. Shop drawings shall include verification that the item meets applicable codes and standards.

1.07 PRODUCT DATA

A. CONTRACTOR shall provide product data as required to supplement shop drawings.

B. Product data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by CONTRACTOR to illustrate a material, product, or system for some portion of the work.

C. CONTRACTOR shall collect required product data into one submittal for each unit of work or system.

D. CONTRACTOR shall include manufacturer's standard printed recommendations for application and use, compliance with standards, performance characteristics, wiring and piping diagrams and controls, component parts, finishes, dimensions, required clearances, and other special coordination requirements.

E. CONTRACTOR shall mark each copy of standard printed data to identify pertinent products, models, options, and other data.

F. CONTRACTOR shall supplement manufacturer's standard data to provide information unique to the work.

1.08 RESUBMISSION REQUIREMENTS

A. Make any corrections or changes in the submittals required by ENGINEER.

B. Shop Drawings and Product Data:
   1. Revise initial drawings or data and resubmit as specified for initial submittal.
   2. Itemize in a cover letter any changes which have been made other than those requested by ENGINEER.

1.09 MANUFACTURER'S DIRECTIONS

A. Manufactured articles, materials, and equipment shall be stored, commissioned, operated, applied, installed, connected, erected, used, cleaned, and conditioned as directed by the manufacturer, unless specified to the contrary.

B. Wherever specifications call for work to be performed or materials to be installed in accordance with the manufacturer's printed instructions or directions, CONTRACTOR shall furnish copies as required for shop drawings of those instructions or directions to ENGINEER before installing the material or performing the work.

1.10 MAINTENANCE MANUAL

A. Prior to 75% completion of the Contract or at a minimum of 45 days prior to the scheduled start-up date of any individual item of equipment, whichever is earlier, CONTRACTOR shall furnish to ENGINEER four complete color hard copies of a maintenance manual for all equipment furnished. Applications for payment beyond 75% of the contract amount will not be recommended for payment until all maintenance manuals are submitted or a revised schedule for remaining maintenance manuals is agreed to by OWNER and ENGINEER.

B. The manuals shall include manufacturer's instructions for maintenance and operation for each item of mechanical and electrical equipment. Manuals shall be specific for the equipment as installed; provide project specific inserts as required. Manuals shall contain: operation instructions, lubrication schedules, types and quantities, preventative maintenance program, spare parts list, parts lists, I.D. No. and exploded views, assembly instructions, parts supplier location, trouble shooting and startup procedures and, where applicable, test data and curves.

C. All sheets shall have reduced dimensions as described for shop drawings, and shall be furnished in 3-ring binders or 3-tab report covers.

D. CONTRACTOR is responsible for producing an electronic version of the Equipment Operations and Maintenance (O&M) Manuals Manual. The Electronic Equipment O&M Manual shall be delivered in Portable Document Format (PDF). The entire manual may be converted to PDF via scanning or other method of conversion. Drawings or other graphics must be converted to PDF format and made part of the PDF document. CONTRACTOR shall provide all Equipment O&M Manuals in the electronic format as defined below.

E. The filename for the Equipment O&M Manual submittal will be provided with the request for final Equipment O&M Manuals. Filenames use the “eight dot three” convention (XX XX XX_YY.PDF) where XX XX XX is the specification section number and YY is an ID number. No one file shall be larger than 10 MB. If technical problems require that the submittal be divided into more than one file, a letter extension shall be added to the end of each filename.

F. The number of files shall be kept to a minimum. Equipment O&M Manuals that span more than one file shall have the final Bookmark “Return to Table of Contents” which shall take the User to the first file on the Equipment O&M Manual.

G. All text (word processed), spreadsheets, and electronic graphics shall be delivered in portable document format (*.PDF). The resolution of all scanned images shall be a minimum of 300 dpi unless otherwise requested by ENGINEER. Scanned images shall be processed with the “original image with hidden text” option (Adobe Acrobat 6 or higher). This results in a clear image and provides for optical character recognition (OCR) and word search functionality. Graphical files shall be fully searchable. All submittals must be indexed with the Adobe Catalog feature. Placement and structure of index files shall be in accordance with Adobe's recommendations to minimize problems when transferring files. Successful searches for words or strings in the PDF document shall demonstrate proof of OCR.

H. Rotate pages viewed in landscape to the appropriate position for easy reading on a computer monitor.

I. Bookmarks shall be created in the navigation frame for each entry in the Table of Contents. Three levels deep is usually enough (i.e., “Chapter,” “Section,” “Subsection”); however, complex submittals like instrumentation and electrical may be required at the discretion of ENGINEER. When setting bookmarks for Chapter level heading, the page shall be displayed at Full Page. Section and Subsection level heading pages shall be displayed as a magnified view. Bookmarks shall be displayed as subordinate to other bookmarks in their hierarchy set so that only the Chapter level headings are displayed.

J. Thumbnails shall be generated and embedded in each PDF file.

K. Files shall be delivered without Security features activated. Password protected files will be unacceptable.

L. The opening view for PDF files shall be set as follows:
   1. Initial View: Bookmarks and Page
   2. Magnification: Fit In Window
   3. Page Layout: Single Page

M. The file shall open to the cover page of the Equipment O&M Manual with bookmarks to the left. The first bookmark shall be the name of Equipment O&M Manual.

N. O&M Manual PDFs shall be delivered electronically.

O. CONTRACTOR shall reprocess any portion of the document that does not view or print to OWNER's satisfaction.

P. CONTRACTOR is fully responsible for obtaining any and all copyright permissions associated with conversion of this information to electronic format.

PART 2–PRODUCTS

NOT APPLICABLE

PART 3–EXECUTION

NOT APPLICABLE

END OF SECTION

SECTION 01 41 00

REGULATORY REQUIREMENTS

PART 1–GENERAL

1.01 SUMMARY

A. Work Included:
1. OSHA requirements.
2. 35 Ill. Adm. Code 1100.
3. Roadway limits.
4. Permits.
5. Wage rates.
6. American Iron and Steel requirements.

1.02 OSHA REQUIREMENTS

A. All work including site safety, equipment, materials, and fabricated items provided under the Contract shall comply with the provisions of the “Occupational Safety and Health Act.”

1.03 35 ILL. ADM. CODE 1100

A. CONTRACTOR shall comply with 35 Ill. Adm. Code 1100 when disposing of clean construction or demolition debris (CCDD) or uncontaminated soil at a CCDD or uncontaminated soil fill operation.

1.04 ROADWAY LIMITS

A. CONTRACTOR shall comply with roadway weight restrictions including seasonal weight restrictions.

1.05 PERMITS

A. No permits were obtained by OWNER for this Project. CONTRACTOR shall obtain required permits. Where the requirements of any permit are more restrictive than the Drawings or the Specifications, the permit requirements shall govern.

B. A building permit will be required from OWNER. However, OWNER will waive fees associated with the permit.

1.06 WAGE RATES

A. CONTRACTOR and any subcontractor shall pay all laborers, workers, and mechanics performing work under the Contract not less than the prevailing wage rates adopted by OWNER or determined by the court on review and filed with the Secretary of State in Springfield. A copy of the Schedule of Prevailing Wage Rates is attached hereto.

B. CONTRACTOR shall keep or cause to be kept a record of employees and wages paid as required by the Prevailing Wage Act (820 ILCS 130/1-12). CONTRACTOR shall also require each subcontractor employed on the project to keep these same records. In accordance with

Illinois Public Act 94-0515, CONTRACTOR shall submit certified payroll records on a monthly basis to OWNER, along with a statement affirming that such records are true and accurate, that the wages paid to each worker are not less than the required prevailing rate and that CONTRACTOR is aware that filing records he or she knows to be false is a Class B misdemeanor.

C. The certified payroll records shall include for every worker employed on the project the name, address, telephone number, social security number, job classification, hourly wages paid in each pay period, number of hours worked each day, and starting and ending time of work each day.

D. If at the time this Contract is executed, or if during the term of this Contract, there is excessive unemployment in Illinois as defined in the Employment of Illinois Workers on Public Works Act, 30 ILCS 570, as two consecutive months of unemployment exceeding 5%, CONTRACTOR agrees to employ a work force that is comprised of at least 90% Illinois laborers. An “Illinois laborer” is defined as any person who has resided in Illinois for at least 30 days and intends to become or remain an Illinois resident.

E. See Wage Rate Forms bound at the end of Division 01.

F. CONTRACTOR shall also comply with the attached Federal Wage Rates. Payment shall be made at the higher of the rates between Will County and Federal (Davis-Bacon).

1.07 AMERICAN IRON AND STEEL REQUIREMENTS

A. CONTRACTOR shall comply with the American Iron and Steel (AIS) requirements of the Consolidated Appropriations Act of 2014. CONTRACTOR shall submit, with each shop drawing, step certification that regulated iron and steel products meet AIS requirements. A sample certification letter is attached at the end of Division 01. Certification letters shall include the following at minimum:
   1. Identification of the product.
   2. City and State where the product was manufactured.
   3. Reference to OWNER and/or project.
   4. Signature of authorized manufacturer employee.
   5. Reference to current AIS requirements.

B. The Consolidated Appropriations Act of 2014 does grant the possibility of a De Minimis waiver and exclusions if certain conditions are met.

C. CONTRACTOR shall provide required AIS documentation prior to installation of regulated iron and steel product.

PART 2–PRODUCTS

NOT APPLICABLE

PART 3–EXECUTION

NOT APPLICABLE

END OF SECTION

SECTION 01 42 00

REFERENCE STANDARDS AND DEFINITIONS

PART 1–GENERAL

1.01 SUMMARY

A. Work Included:
   1. Reference Standards:
      a. Throughout the Contract Documents, reference is made to codes and standards which establish qualities and types of workmanship and materials, and which establish methods for workmanship and materials, and which establish methods for testing and reporting on the pertinent characteristics.
      b. Where materials or workmanship are required by these Contract Documents to meet or exceed the specifically named code or standard, it is CONTRACTOR's responsibility to provide materials and workmanship which meet or exceed that specifically named code or standard.
      c. It is also CONTRACTOR's responsibility, when so required by the Contract Documents, to deliver to ENGINEER all required proof that the material or workmanship, or both, meet or exceed the requirements of the specifically named code or standard.
   2. Definitions:
      a. A substantial amount of specification language constitutes definitions for terms found in other Contract Documents, including the Drawings which must be recognized as diagrammatic in nature and not completely descriptive of requirements indicated thereon.
      b. Certain terms used in the Contract Documents are defined generally in this section to supplement definitions of the Agreement, General Conditions, Supplementary Conditions, and other general contract documents.
      c. Definitions and explanations of this section are not necessarily either complete or exclusive, but are general for the Work.

B. Related Work Described Elsewhere: The specific naming of codes or standards occurs on the Drawings and in other sections of these Specifications.

1.02 QUALITY ASSURANCE

A. Familiarity with Pertinent Codes and Standards:
   1. It is CONTRACTOR's responsibility to verify the requirements of the specifically named codes and standards and to verify that the items procured for use in this Work meet or exceed the specified requirements.
   2. When required by individual sections of these specifications, CONTRACTOR shall obtain a copy of each pertinent code or standard and maintain the copies at the job site during submittals, planning, and progress of the Work until Substantial Completion of the Work is attained.

B. Overlapping or Conflicting Requirements:
   1. Where compliance with two or more industry standards or sets of requirements are specified, and the overlapping of those standards or requirements establishes different

or conflicting minimums or levels of quality, the most stringent requirement (which is generally recognized to be also most costly) is intended and will be enforced, unless more detailed language written directly into Contract Documents clearly indicates that a less stringent requirement is acceptable.

2. Refer all uncertainties to ENGINEER for decision before proceeding.

1.03 REFERENCE STANDARDS

A. Applicable standards of the construction industry are made a part of the Contract Documents by reference as if copied directly into the Contract Documents, or as if published copies were bound herewith. See Article 3.02 of the General Conditions for additional provisions regarding references.

B. Standards referenced directly in the Contract Documents or by governing regulation, have precedence over nonreferenced standards which are recognized in industry for applicability to the Work.

C. Nonreference standards are hereby defined to have no particular applicability to the Work except as a general measurement of whether the Work complies with standards recognized in the construction industry.

D. Reference standards and codes listed in these specifications may include, but are not necessarily limited to, standards or codes published by the following agencies and organizations:

1. AA — Aluminum Association
   1525 Wilson Boulevard, Arlington, VA 22209

2. AAMA — American Architectural Manufacturer's Association
   1827 Walden Office Square Suite 550, Schaumberg, IL 60173-4268

3. AASHTO — American Association of State Highway & Transportation Officials
   444 North Capitol Street NW Suite 249, Washington, DC 20001

4. ACI — American Concrete Institute
   38800 Country Club Drive, Farmington Hills, MI 48331-3439

5. AI — Asphalt Institute
   2696 Research Park Drive, Lexington, KY 40511-8480

6. AISC — American Institute of Steel Construction
   One East Wacker Drive Suite 700, Chicago, IL 60601-1802

7. AISI — American Iron and Steel Institute
   25 Massachusetts Avenue NW Suite 800, Washington, DC 20001

8. ANSI — American National Standards Institute
   25 West 43rd Street, New York, NY 10036

9. APA	American Plywood Association 7011 South 19th, Tacoma, WA 98466-5333
10. API	American Petroleum Institute 1220 L Street NW, Washington, DC 20005-4070
11. ARI	Air-Conditioning & Refrigeration Institute 4100 North Fairfax Drive Suite 200, Arlington, VA 22203
12. ASHRAE	American Society of Heating, Refrigerating, and Air Conditioning Engineers 1791 Tullie Circle NE, Atlanta, GA 30329
13. ASME	American Society of Mechanical Engineers Two Park Avenue, New York, NY 10016-5990
14. ASSE	American Society of Sanitary Engineering 901 Canterbury Suite A, Westlake, OH 44145
15. ASTM	ASTM International 100 Barr Harbor Drive, West Conshohoken, PA 19428-2959
16. AWI	Architectural Woodwork Institute 46179 Westlake Drive Suite 120, Potomac Falls, VA 20165-5874
17. AWPA	American Wood Protection Association P.O. Box 361784, Birmingham, AL 35236-1784
18. AWS	American Welding Society 8669 Doral Boulevard Suite 130, Doral, FL 33166
19. AWWA	American Water Works Association 6666 West Quincy Avenue, Denver, CO 80235
20. BHMA	Builder's Hardware Manufacturers Association 355 Lexington Avenue 15th floor, New York, NY 10017
21. BIA	Brick Industry Association 1850 Centennial Park Drive Suite 301, Reston, VA 20191
22. CRSI	Concrete Reinforcing Steel Institute 9333 North Plum Grove Road, Schaumburg, IL 60173
23. DOT	U.S. Department of Transportation 1200 New Jersey Avenue, SE, Washington, DC 20590
24. EJMA	Expansion Joint Manufacturers Association 25 North Broadway, Tarrytown, NY 10591

25. FM	FM Global FM Global Corporate Offices, 270 Central Avenue, Johnston, RI 02919
26. FTI	Facing Tile Institute Box 8880, Canton, OH 44711
27. GA	Gypsum Association 6525 Belcrest Road Suite 480, Hyattsville, MD 20782
28. GANA	Glass Association of North America 800 SW Jackson Street Suite 1500, Topeka, KS 66612-1200
29. ICC	International Code Council 500 New Jersey Avenue NW 6th Floor, Washington, DC 20001
30. IES	Illuminating Engineering Society 120 Wall Street, Floor 17, New York, NY 10005-4001
31. MIL	Military Specifications Naval Publications and Forms Center 5801 Tabor Avenue, Philadelphia, PA 19120
32. NAAMM	National Association of Architectural Metal Manufacturers 800 Roosevelt Road Building C Suite 312, Glen Ellyn, IL 60137
33. NCMA	National Concrete Masonry Association 13750 Sunrise Valley Drive, Herndon, VA 20171-4662
34. NECA	NECA National Electrical Contractors Association 3 Bethesda Metro Center Suite 1100, Bethesda, MD 20814
35. NEMA	National Electrical Manufacturers Association 1300 North 17th Street Suite 1752, Rosslyn, VA 22209
36. NFPA	National Fire Protection Association 1 Batterymarch Park, Quincy, MA 02169-7471
37. NIST	National Institute of Standards and Technology (U.S. Department of Commerce), 100 Bureau Drive, Stop 1070 Gaithersburg, MD 20899-1070
38. NRCA	National Roofing Contractors Association 10255 West Higgins Road Suite 600, Rosemont, IL 60018-5607
39. NSF	National Sanitation Foundation International P.O. Box 130140, 789 North Dixboro Road, Ann Arbor, MI 48113-0140

40. OSHA — Occupational Safety & Health Administration
200 Constitution Avenue NW, Washington, DC 20210

41. PCA — Portland Cement Association
5420 Old Orchard Road, Skokie, IL 60077

42. PCI — Prestressed Concrete Institute
200 West Adams Street Suite 2100, Chicago, IL 60606

43. SAE — Society of Automotive Engineers
SAE World Headquarters
400 Commonwealth Drive, Warrendale, PA 15096-0001

44. SDI — Steel Deck Institute
P.O. Box 25, Fox River Grove, IL 60021

45. SDI — Steel Door Institute
30200 Detroit Road, Westlake, OH 44145-1987

46. SIGMA — Sealed Insulating Glass Manufacturers Assoc.
401 North Michigan Avenue Suite 2400, Chicago, IL 60611

47. SJI — Steel Joist Institute
234 Cheves Street, Florence, SC 29501

48. SMACNA — Sheet Metal and Air Conditioning
Contractor's National Association
4201 Lafayette Center Drive, Chantilly, VA 20151-1219

49. SSPC — Society for Protective Coatings
40 24th Street 6th Floor, Pittsburgh, PA 15222-4656

50. TCA — Tile Council of America
100 Clemson Research Boulevard, Anderson, SC 29625

51. UL — Underwriters Laboratories
333 Pfingston Road; Northbrook, IL 60062

1.04 SUBMITTALS

A. For OWNER's records, CONTRACTOR shall submit copies of permits, licenses, certifications, inspection reports, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the Work.

1.05 DEFINITIONS

A. Indicated:
   1. The term “indicated” is a cross-reference to details, notes, or schedules on the drawings, to other paragraphs or schedules in the specifications and to similar means of recording requirements in the Contract Documents.
   2. Where terms such as “shown,” “noted,” “scheduled,” and “specified” are used in lieu of “indicated,” it is for the purpose of helping the reader locate cross-reference, and no limitation is intended except as specifically noted.

B. Approve (or Words of Similar Nature):
   1. Where used in conjunction with ENGINEER's response to submittals, requests, applications, inquiries, reports, and claims by CONTRACTOR, the meaning of the term “approve” will be held to the limitation of ENGINEER's responsibilities and duties as specified in Paragraph 1.02.B.1. of the General Conditions.
   2. In no case will “approval” by ENGINEER be interpreted as a release of CONTRACTOR from responsibility to fulfill requirements of the Contract Documents.

C. Minimum Requirements:
   1. Indicated requirements are for a specific minimum acceptable level of quality or quantity, as recognized in the industry.
   2. Actual work must comply with (or within specified tolerances) or exceed minimums.
   3. CONTRACTOR shall refer uncertainties to ENGINEER before proceeding.

D. Abbreviations: Abbreviations, where not defined in the Contract Documents, will be interpreted to mean the normal construction industry terminology.

PART 2–PRODUCTS

NOT APPLICABLE

PART 3–EXECUTION

NOT APPLICABLE

END OF SECTION

SECTION 01 45 00

QUALITY CONTROL

PART 1–GENERAL

1.01 SUMMARY

A. Work Includes:
   1. Quality Assurance–Control of Installation.
   2. Tolerances.
   3. Manufacturers' Field Services and Reports.

1.02 QUALITY ASSURANCE–CONTROL OF INSTALLATION

A. CONTRACTOR shall monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship to produce Work of specified quality.

B. CONTRACTOR shall comply with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, CONTRACTOR shall request clarification from ENGINEER before proceeding.

D. CONTRACTOR shall comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Work shall be performed by persons qualified to produce workmanship of specified quality.

F. CONTRACTOR shall secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.03 TOLERANCES

A. CONTRACTOR shall monitor tolerance control of installed products to produce acceptable work and shall not permit tolerances to accumulate.

B. CONTRACTOR shall comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, CONTRACTOR shall request clarification from ENGINEER before proceeding.

C. CONTRACTOR shall adjust products to appropriate dimensions; position before securing products in place.

1.04 MANUFACTURERS' FIELD SERVICES AND REPORTS

A. When specified in individual specification sections or when requested by ENGINEER, CONTRACTOR shall require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, and quality of workmanship.

B. CONTRACTOR shall submit qualifications of observer to ENGINEER 30 days in advance of required observations.

C. CONTRACTOR shall report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

D. CONTRACTOR shall submit report in duplicate within 30 days of observation to ENGINEER for information.

PART 2–PRODUCTS

NOT APPLICABLE

PART 3–EXECUTION

NOT APPLICABLE

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES

PART 1–GENERAL

1.01 SUMMARY

A. Work Included:
   1. Temporary utilities.
   2. Temporary stairs and access.
   3. Temporary support facilities.
   4. Removal of temporary facilities.
   5. Damage to existing property.
   6. Security.
   7. Temporary parking.
   8. Cell phone.

B. CONTRACTOR shall arrange for and provide temporary facilities as required for proper and expeditious prosecution of the Work.

C. CONTRACTOR shall pay all costs, except as otherwise specified, until final acceptance of the Work unless OWNER makes arrangements for use of completed portions of the Work after substantial completion in accordance with the provisions of the General Conditions.

D. CONTRACTOR shall make all temporary connections to utilities and services in locations acceptable to OWNER and local authorities having appropriate jurisdiction.
   1. Furnish all necessary labor and materials.
   2. Make all installations in a manner subject to the acceptance of such authorities and OWNER.
   3. Maintain such connections.
   4. Remove temporary installation and connection when no longer required.
   5. Restore services and sources of supply to proper operating conditions.

1.02 TEMPORARY UTILITIES

A. Temporary Toilets: Temporary portable toilets are not allowed. CONTRACTOR shall arrange with OWNER to use existing facilities where they exist. Toilets used by workmen shall be kept clean and sanitary at all times.

B. Temporary Electrical Services:
   1. Existing outlets and wiring shall not be used for motors larger than fractional HP or for welding equipment. Circuits for larger motors and welding equipment may be provided with special circuits to mains of electrical panels at the expense of those trades requiring them, provided that written permission is obtained from OWNER and ENGINEER.
   2. Any temporary electrical services required during power outages shall be obtained and paid for by CONTRACTOR.
   3. All temporary lighting required for construction as well as OWNER’s full use of the entire facility throughout construction shall be provided by CONTRACTOR.

4. No permanent electrical equipment or wiring shall be used without express written permission of OWNER. Such approval, if given, shall not affect guarantee period.

C. Weather Protection and Temporary Heat: CONTRACTOR shall provide weather protection to protect the Work from damage because of freezing, rain, snow, and other inclement weather.

D. Temporary Fire Protection: CONTRACTOR and Subcontractor(s) who maintain or provide an enclosed shed or trailer shall provide and maintain in operating order in each shed or trailer a minimum of one fire extinguisher. More extinguishers shall be provided as necessary. Fire extinguishers shall be minimum dry chemical, nonfreezing-type, UL rating 2A-30BC, with 10-pound capacity for Class A, B, and C fires.

1.03 TEMPORARY STAIRS AND ACCESS

A. CONTRACTOR shall provide and maintain all equipment such as temporary stairs, ladders, ramps, runways, chutes, and so on as required for proper execution of the Work. CONTRACTOR shall be responsible for providing its own scaffolds, hoists, etc.

B. All such apparatus, equipment, and construction shall meet all requirements of OSHA, the labor laws, and other applicable State and local laws. Provide stairs with handrails. As soon as possible and where applicable, permanent stairs shall be installed.

C. Provide barricades at hazardous locations, complete with signs, temporary general lighting, warning lights, and similar devices as required.

1.04 TEMPORARY SUPPORT FACILITIES

A. CONTRACTOR shall provide whatever facilities and services which may be needed to properly support primary construction process and meet compliance requirements and governing regulations.

B. CONTRACTOR shall not use permanent facilities except as otherwise indicated, unless authorized by OWNER.

1.05 REMOVAL OF TEMPORARY FACILITIES

A. Remove temporary materials, equipment, services, and construction as soon as practicable but no later than just prior to substantial completion inspection.

B. Clean and repair damage caused by installation or use of temporary facilities and restore existing facilities used during construction to specified, or to original, condition.

C. Minor temporary facilities which interfere with OWNER's operations shall be removed at the end of each Work period.

1.06 DAMAGE TO EXISTING PROPERTY

A. CONTRACTOR shall be responsible for replacing or repairing damage to existing buildings, sidewalks, roads, parking lot surfacing, mail boxes, utilities, and other existing assets.

B. CONTRACTOR shall take measures so that debris does not enter any of OWNER's facilities (including, but not limited to, sanitary and storm sewers, valve vaults, and boxes). If debris does enter these facilities, CONTRACTOR shall take immediate corrective action to remove all debris.

1.07 SECURITY

A. Security will not be provided by OWNER.

B. CONTRACTOR shall be held responsible for loss or injury to persons or property where its work is involved and shall take such precautionary measures as deemed necessary to protect CONTRACTOR's and OWNER's interests.

1.08 TEMPORARY PARKING

A. CONTRACTOR shall make arrangements for parking area for employee's vehicles.

B. Costs involved in obtaining this parking area shall be borne by CONTRACTOR.

C. CONTRACTOR shall confine its equipment, storage of materials, and operations to the limits prescribed by ordinances or permits, or as may be directed by OWNER, and shall not unreasonably encumber the site.

1.09 CELL PHONE

A. CONTRACTOR’s Superintendent of the job must have a cell phone, so he may be reached at all times during the working day.

PART 2–PRODUCTS

NOT APPLICABLE

PART 3–EXECUTION

NOT APPLICABLE

END OF SECTION

SECTION 01 52 13

FIELD OFFICES AND SHEDS

PART 1–GENERAL

1.01 SUMMARY

A. Work Included:
   1. Materials, equipment, and furnishings.
   2. Construction.
   3. Environmental control.
   4. Storage areas and sheds.
   5. Preparation.
   6. Removal.

PART 2–PRODUCTS

2.01 MATERIALS, EQUIPMENT, AND FURNISHINGS

A. Materials, equipment, and furnishings shall be serviceable, new or used, and adequate for required purpose.

2.02 CONSTRUCTION

A. CONTRACTOR shall provide structurally sound, secure, weathertight enclosures for storage spaces.

B. Temperature transmission resistance of floors, walls, and ceilings shall be compatible with storage requirements.

C. Exterior materials shall be weather resistant.

D. Provide appropriate type fire extinguisher at each storage area.

E. Interior materials in storage sheds shall be as required to provide specified conditions for storage of products.

2.03 ENVIRONMENTAL CONTROL

A. Heating and ventilation for storage spaces shall be as needed to maintain products in accordance with Contract Documents and to provide adequate lighting for maintenance and observation of products.

2.04 STORAGE AREAS AND SHEDS

A. Provide storage areas and sheds of size to meet storage requirements for products of individual sections, allowing for access and orderly provision for maintenance and for observation of products to meet requirements of Section 01 60 00–Materials and Equipment.

PART 3–EXECUTION

3.01 PREPARATION

A. CONTRACTOR shall fill and grade sites for temporary structures to provide drainage away from structures.

3.02 REMOVAL

A. Upon final acceptance and completion of the Work, CONTRACTOR shall remove temporary structures and storage sheds and shall restore areas.

END OF SECTION

SECTION 01 57 00

TEMPORARY CONTROLS

PART 1–GENERAL

1.01 SUMMARY

A. Work Included:
   1. Dust Control.
   2. Water, Erosion, and Sediment Control.
   3. Noise Control.
   4. Traffic Control.
   5. Site Security.
   6. Daily Cleanup.

PART 2–PRODUCTS

NOT APPLICABLE

PART 3–EXECUTION

3.01 DUST CONTROL

A. CONTRACTOR shall execute the Work by methods to minimize raising dust from construction operations.

B. CONTRACTOR shall provide positive means to prevent airborne dust from dispersing into atmosphere.

C. CONTRACTOR shall provide partitions, enclosures, etc., within buildings as necessary to confine dust and protect adjacent areas.

3.02 WATER, EROSION, AND SEDIMENT CONTROL

A. CONTRACTOR shall grade site to drain and shall maintain excavations free of water. Provide, operate, and maintain pumping equipment.

B. CONTRACTOR shall protect Site from puddling or running water.

C. CONTRACTOR shall provide erosion control measures as necessary to control discharge of sediment laden water to surface waters and wetlands.

D. Except as provided for in the document, overland discharge of water from dewatering operations shall not be allowed. Depending on water quality, such water shall either be piped directly to the surface water or shall be directed to sedimentation basins or other such structures or features prior to discharge to surface waters so as not to cause damage to existing ground and improvements, erosion, or deposition in the discharge area.

E. CONTRACTOR shall use jute or synthetic netting, silt fences, straw bales, dikes, channels, and other applicable measures to prevent erosion of soils disturbed by its construction operation.

F. Restoration of the Site shall proceed concurrently with the construction operation. See Drawings and Specifications for erosion control measures in addition to that which may be required above.

G. Erosion control measures shall comply with the following document: "Standard Specifications for Soil Erosion and Sediment Control," of the Illinois Environmental Protection Agency, IEPA/WPC 87-012.

3.03 NOISE CONTROL

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

3.04 TRAFFIC CONTROL

A. CONTRACTOR shall be responsible for providing all signs, barricades, flagmen, and other traffic control devices in the construction zone.

B. Conduct operations with minimum interference to roadways.

C. Maintain two-way traffic on streets at all times.

D. All traffic control measures shall meet the requirements of Illinois Manual on Uniform Traffic Control Devices for Streets and Highways, Latest Edition, and the Standard Specifications for Traffic control Items, Latest Edition.

E. Do not close or obstruct roadways without approval of OWNER.

3.05 SITE SECURITY

A. CONTRACTOR shall have the sole responsibility of safeguarding the Site perimeter to prevent unauthorized entry to the Site throughout the duration of the Project. CONTRACTOR shall at all times provide such permanent and temporary fencing or barricades or other measures as may be necessary to restrict unauthorized entry to its construction area including construction in public rights-of-way or easements. Site security measures shall include safeguards against attractive nuisance hazards as a result of construction activity.

B. CONTRACTOR shall at all times be responsible for the security of the Work including materials and equipment. OWNER will not take any responsibility for missing or damaged equipment, tools, or personal belongings. CONTRACTOR shall have the sole responsibility of safeguarding the Work and the Site throughout the duration of the Project.

3.06 DAILY CLEANUP

A. CONTRACTOR shall clean up the Site and remove all rubbish on a daily basis.

B. CONTRACTOR shall clean up public streets and highways and remove any dirt, mud, or other materials due to project traffic on daily basis and shall comply with all local and state ordinances and permit requirements.

END OF SECTION

SECTION 01 60 00

MATERIALS AND EQUIPMENT

PART 1–GENERAL

1.01 SUMMARY

A. Work Included: CONTRACTOR shall be responsible for the delivery, handling, storage and protection of all material and equipment required to complete the Work as specified herein.

B. Related Sections and Divisions: Specific requirements for the handling and storage of material and equipment are described in other sections of these Specifications.

1.02 PRODUCTS

A. Components required to be supplied in quantity within a Specification section shall be the same, and shall be interchangeable.

B. CONTRACTOR shall not use materials and equipment removed from existing construction, except as specifically required, or allowed, by the Contract Documents.

C. When any construction deviations from the Drawings and/or Specifications necessary to accommodate equipment supplied by CONTRACTOR, result in additional costs to CONTRACTOR or other contractors, such additional costs shall be borne by CONTRACTOR. CONTRACTOR shall also pay any additional costs necessary for revisions of Drawings and/or Specifications by ENGINEER.

D. Each major component of equipment shall bear a nameplate giving the name and address of the manufacturer and the catalogue number or designation.

1.03 TRANSPORTATION AND HANDLING

A. Materials, products and equipment shall be properly containerized, packaged, boxed, and protected to prevent damage during transportation and handling.

B. CONTRACTOR shall not overload any portion of the structure in the transporting or storage of materials.

C. CONTRACTOR shall not damage other construction by careless transportation, handling, spillage, staining or impact of materials.

D. CONTRACTOR shall provide equipment and personnel to handle products, including those provided by OWNER, by methods to prevent soiling and damage.

E. CONTRACTOR shall provide additional protection during handling to prevent marring and otherwise damaging products, packaging, and surrounding surfaces.

F. CONTRACTOR shall handle product by methods to avoid bending or overstressing. Lift large and heavy components only at designated lift points.

1.04 DELIVERY AND RECEIVING

A. CONTRACTOR shall arrange deliveries of products in accordance with the Progress Schedule, allowing time for observation prior to installation.

B. CONTRACTOR shall coordinate deliveries to avoid conflict with the Work and conditions at the Site; work activities of other contractors or OWNER; limitations on storage space; availability of personnel and handling equipment and OWNER's use of premises.

C. CONTRACTOR shall deliver products in undamaged, dry condition, in original unopened containers or packaging with identifying labels intact and legible.

D. CONTRACTOR shall clearly mark partial deliveries of component parts of equipment to identify equipment and contents to permit easy accumulation of parts and to facilitate assembly.

E. Immediately on delivery, CONTRACTOR shall inspect shipment to review that:
   1. Product complies with requirements of Contract Documents and reviewed submittals.
   2. Quantities are correct.
   3. Accessories and installation hardware are correct.
   4. Containers and packages are intact and labels legible.
   5. Products are protected and undamaged.

1.05 STORAGE AND PROTECTION

A. General:
   1. CONTRACTOR shall store products, immediately on delivery, in accordance with manufacturer's instructions, with all seals and labels intact and legible.
   2. Any additional off-site space required shall be arranged by CONTRACTOR.
   3. CONTRACTOR shall allocate the available storage areas and coordinate their use by the trades on the job.
   4. CONTRACTOR shall arrange storage in a manner to provide access for maintenance of stored items and for observation.

B. In enclosed storage, CONTRACTOR shall:
   1. Provide suitable temporary weather tight storage facilities as may be required for materials that will be damaged by storage in the open.
   2. Maintain temperature and humidity within ranges stated in manufacturer's instructions.
   3. Provide ventilation for sensitive products as required by manufacturer's instructions.
   4. Store unpacked and loose products on shelves, in bins, or in neat groups of like items.
   5. Store solid materials such as insulation, tile, mechanical and electrical equipment, fittings, and fixtures under shelter, in original packages, away from dampness and other hazards.
   6. Store liquid materials away from fire or intense heat and protect from freezing.

C. At exterior storage, CONTRACTOR shall:
   1. Store unit materials such as concrete block, brick, steel, pipe, conduit, door frames, and lumber off ground, out of reach of dirt, water, mud and splashing.
   2. Store tools or equipment that carry dirt outside.
   3. Store large equipment so as not to damage the Work or present a fire hazard.

4. Cover products subject to discoloration or deterioration from exposure to the elements, with impervious sheet material and provide ventilation to avoid condensation.
5. Completely cover and protect any equipment or material which is prime coated or finish painted with secured plastic or cloth tarps. Store out of reach of dirt, water, mud and splashing.
6. Store loose granular materials on clean, solid surfaces such as pavement, or on rigid sheet materials, to prevent mixing with foreign matter.
7. Provide surface drainage to prevent erosion and ponding of water.
8. Prevent mixing of refuse or chemically injurious materials or liquids.
9. Cover aggregates such as sand and gravel in cold wet weather.
10. Remove all traces of piled bulk materials at completion of work and return site to original or indicated condition.

1.06 MAINTENANCE OF STORAGE

A. CONTRACTOR shall periodically inspect stored products on a scheduled basis.

B. CONTRACTOR shall verify that storage facilities comply with manufacturer's product storage requirements, and verify that manufacturer required environmental conditions are maintained continually.

C. CONTRACTOR shall verify that surfaces of products exposed to the elements are not adversely affected and that any weathering of finishes is acceptable under requirements of Contract Documents.

D. CONTRACTOR shall perform scheduled maintenance of equipment in storage as recommended by the manufacturer. A record of the maintenance shall be kept and turned over to ENGINEER when the equipment is installed.

1.07 INSTALLATION REQUIREMENTS

A. Manufactured articles, materials, and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned as directed by the respective manufacturers, unless otherwise specified.

B. After installation, CONTRACTOR shall protect all materials and equipment against weather, dust, moisture, and mechanical damage.

C. CONTRACTOR shall be responsible for all damages that occur in connection with the care and protection of all materials and equipment until completion and final acceptance of the Work by OWNER. Damaged material and equipment shall be immediately removed from the Site.

1.08 EQUIPMENT WARRANTIES

A. Warranties shall be nonprorated, include all parts and labor, and be in written form. Warranties shall specifically exclude buyer's indemnification language. Warranty language shall not eliminate manufacturer’s responsibility for sizing of the equipment. During warranty period, manufacturer shall be responsible for any travel expenses, outside contractor fees, and rental equipment fees associated with providing warranty service. Manufacturer shall pay expenses incurred for repairs and parts replacement not made by manufacturer if

manufacturer's response is not within 72 hours of notification by OWNER. Warranty language shall be provided with the shop drawings.

1.09 CONCRETE EQUIPMENT BASE

A. Cast-in-place concrete equipment bases shall be provided for all new and relocated equipment including electrical control panels, motor control centers, switchgear, etc. Concrete equipment bases shall be provided by CONTRACTOR except where specifically noted to be provided by others. Bases shall be 3 1/2-inch minimum height and shall be a minimum of 3 inches larger than equipment being supported. Grouting of equipment bases shall be as recommended by equipment manufacturer.

B. Concrete and grout shall meet applicable sections of the specifications.

C. Provide all anchor bolts, metal shapes and templates to be cast in concrete or used to form concrete for support of equipment.

PART 2–PRODUCTS

NOT APPLICABLE

PART 3–EXECUTION

NOT APPLICABLE

END OF SECTION

SECTION 01 73 29

CUTTING, PATCHING, AND ALTERATIONS

PART 1–GENERAL

1.01 SUMMARY

A. Work Included: CONTRACTOR shall be responsible for all cutting, fitting, patching, and other alterations required to complete the Work as specified herein or to:
   1. Make its several parts fit together properly.
   2. Uncover portions of the Work to install improperly sequenced Work.
   3. Remove and replace defective Work.
   4. Remove and replace Work not conforming to requirements of the Contract Documents.
   5. Remove samples of installed Work as specified for testing.
   6. Provide penetrations of surfaces for installation of piping and electrical conduit.

1.02 REFERENCES

A. ANSI A10 Safety Requirements for Construction and Demolition.

1.03 QUALITY ASSURANCE

A. CONTRACTOR shall perform all cutting, patching, and alterations in strict accordance with pertinent requirements of these Specifications.

B. Except as modified by governing codes, CONTRACTOR shall comply with the applicable provision and recommendations of ANSI A10.

1.04 SUBMITTALS

A. CONTRACTOR shall submit a written request to OWNER well in advance of executing any cutting or alteration which affects the following:
   1. Work of OWNER or any separate contractor.
   2. Structural value or integrity of any element of the Project.
   3. Integrity or effectiveness of weather-exposed or moisture-resistant elements or systems.
   4. Efficiency, operational life, maintenance, or safety of operational elements.
   5. Visual qualities of sight-exposed elements.

B. The request shall include:
   1. Description of affected work.
   2. The necessity for cutting, patching, or alteration.
   3. Effect on work of OWNER, any separate contractor, or on the structural or weather-proof integrity of the Project.
   4. Description of proposed work to include:
      a. Scope of cutting, patching, or alteration.
      b. Trades who will execute the Work.
      c. Products proposed to be used.
      d. Extent of refinishing to be done.

5. Alternatives to cutting and patching.
6. Written permission of any separate contractor whose work will be affected.

C. Submit written notice to OWNER designating the date and the time the Work will be uncovered or executed.

1.05 SCHEDULING AND COORDINATION

A. All work under this section shall be coordinated with OWNER's work forces and those of other contractors and shall be accomplished at times acceptable to OWNER.

B. Before starting any work relating to existing utilities (electrical, sewer, water, heat, gas, fire lines, etc.) that will temporarily discontinue or disrupt service to the existing building, notify ENGINEER and OWNER 72 hours in advance and obtain OWNER's approval before proceeding with this phase of the Work. Temporary facilities, if required, shall be in place prior to disruption of service.

PART 2–PRODUCTS

2.01 NEW MATERIALS

A. For replacement of work removed, CONTRACTOR shall use materials which comply with the pertinent sections of these Specifications.

B. All new materials for patching and extending work shall match existing products and work.

C. CONTRACTOR shall determine type and quality of existing products by inspection and any necessary testing and workmanship by use of existing as the standard.

2.02 SALVAGEABLE MATERIAL

A. Materials or items designated to be reinstalled or to become the property of OWNER shall be as specified or as shown on the Drawings.

B. CONTRACTOR shall remove such items with care under the supervision of the trade responsible for reinstallation.

C. CONTRACTOR shall store these materials (off-site if necessary) and protect from damage until they are incorporated into the new work.

D. Items which are not to be reinstalled but are to become the property of OWNER shall be removed by CONTRACTOR with care, cleaned, and stored in a location at the Site to be approved by OWNER.

E. Materials or items damaged in its removal shall be replaced by CONTRACTOR with similar new material at no additional cost to OWNER.

F. Where existing equipment or fixtures are indicated to be reused, CONTRACTOR shall repair such equipment and refinish as specified elsewhere.

2.03 UNSALVAGEABLE MATERIALS

A. Materials or items demolished and not designated to become the property of OWNER or not designated to be reinstalled shall become the property of CONTRACTOR and shall be removed from the site and legally and properly disposed of by CONTRACTOR.

B. Materials shall be removed by CONTRACTOR in a manner that will avoid damage to materials or equipment to remain.

PART 3–EXECUTION

3.01 INSPECTION

A. CONTRACTOR shall inspect existing conditions including elements subject to movement or damage during cutting, patching, and other alterations.

B. After uncovering the Work, CONTRACTOR shall inspect conditions affecting installation of new products or performance of new work.

C. CONTRACTOR shall report unsatisfactory or questionable conditions to ENGINEER in writing.

D. CONTRACTOR shall not proceed with work until unsatisfactory or questionable conditions are resolved.

E. Beginning of cutting, patching, and alterations work means acceptance of existing conditions by CONTRACTOR.

3.02 PREPARATION AND PROTECTION

A. CONTRACTOR shall provide temporary bracing, shoring, needling, and support of the structure during alterations work as necessary to prevent collapse, settling, or deflection and to protect persons and property from injury or damage.

B. Temporary supports must adequately carry all existing and imposed load.

C. CONTRACTOR shall provide and maintain temporary protection of surface finishes, equipment, and adjacent work designated to remain where demolition, removal, and new work is being done, connections are being made, materials are being handled, or equipment is being removed.

D. CONTRACTOR shall provide temporary partitions or barriers to contain all dust, dirt, and debris from entering into finished areas or areas where OWNER is operating, storing, or manufacturing products.

E. CONTRACTOR shall provide adequate fire protection in accordance with local Fire Department requirements.

F. CONTRACTOR shall provide waterproofing, weather protection, heat, and other facilities for that portion of the Work which may be exposed by cutting and patching, demolition, or other alterations.

G. CONTRACTOR shall cut, move, or remove items as necessary for access to alterations and renovations work and replace and restore at completion of the Work.

H. CONTRACTOR shall prepare surfaces and remove surface finishes to provide for proper installation of new work and new finishes.

I. CONTRACTOR shall be responsible for any damage to the existing structure or its contents directly or indirectly by its crews or those of its subcontractors.

3.03 PERFORMANCE

A. CONTRACTOR shall accomplish all Work of cutting, removal, demolition, patching, or other alterations using only persons skilled in the appropriate trade.

B. CONTRACTOR shall execute the Work in a careful and orderly manner with the least possible disturbance to the public and to the occupants of the building.

C. CONTRACTOR shall execute cutting and demolition by methods which will prevent damage to other work and will provide proper surfaces to receive installation of repairs.

D. CONTRACTOR shall execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances, and finishes.

E. CONTRACTOR shall fit work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

F. CONTRACTOR shall thoroughly clean and prepare all surfaces to receive new finish or covering to completely remove all dirt, dust, grease, oil, paint, loose materials, and soil.

G. CONTRACTOR shall refinish entire surface as necessary to provide an even finish to match adjacent finishes:
   1. For continuous surfaces, refinish to nearest intersection.
   2. For an assembly, refinish entire unit.

3.04 DEMOLITION, CUTTING, AND REMOVAL

A. Cutting and removal of construction shall be performed by CONTRACTOR so as not to cut or remove more than is necessary and so as not to damage adjacent work.

B. CONTRACTOR shall cut out embedded anchorages and attachment items as required to properly provide for patching and repair of the respective finishes.

C. CONTRACTOR shall not cut structural work in a manner resulting in a reduction of load-carrying capacity or load/deflection ratio.

D. CONTRACTOR shall not cut operational elements and safety components in a manner resulting in decreased performance, shortened useful life, or increased maintenance.

E. CONTRACTOR shall not cut work exposed to view (exterior or interior) in a manner resulting in noticeable reduction of visual qualities as determined by OWNER.

F. Construction that is to remain which is loosened, cracked, or otherwise damaged or defaced as a result of careless cutting or demolition and is unsuitable for use intended shall be removed and replaced at no additional cost to OWNER.

G. CONTRACTOR shall clean demolished areas and remove debris, waste, and rubbish from the building at the conclusion of each day's work.

H. CONTRACTOR shall not let piled waste material endanger the structure.

3.05 PATCHING, EXTENDING, AND MATCHING

A. Patching work shall conform to the standards of the Specifications where applicable, and where not specified, work shall conform to the highest standards of the applicable trade.

B. CONTRACTOR shall patch construction to match adjacent work unless noted otherwise.

C. Patching or restoration shall be carried to natural breaks (e.g., corners) wherever possible.

D. CONTRACTOR shall provide adequate support to substrate for patching finishes.

END OF SECTION

SECTION 01 77 00

CONTRACT CLOSEOUT

PART 1–GENERAL

1.01 SUMMARY

A. Work Included:
   1. Closeout procedures.
   2. Final cleaning.
   3. Adjusting.
   4. Project record documents.
   5. Warranties.

1.02 CLOSEOUT PROCEDURES

A. CONTRACTOR shall provide submittals to ENGINEER that are required by governing or other authorities.

B. CONTRACTOR shall comply with General Conditions and Supplementary Conditions and complete the following before requesting ENGINEER's observation of the Work or designated portion thereof for substantial completion.
   1. Submit executed warranties, workmanship bonds, maintenance agreements, inspection certificates, and similar required documentation for specific units of Work, enabling OWNER's unrestricted occupancy and use.
   2. Submit record documentation, maintenance manuals, tools, spare parts, keys, and similar operational items.
   3. Complete on-site functional acceptance testing in accordance with Section 26 09 00.
   4. Submit consent of surety (if surety required in Contract).
   5. Complete final cleaning, touch-up work of marred surfaces, and remove temporary facilities and tools.

1.03 FINAL CLEANING

A. It is CONTRACTOR's responsibility to completely clean up the inside and outside of all buildings and the construction site at the completion of the Work.

B. CONTRACTOR shall clean areas of the building in which painting and finishing work is to be performed just prior to the start of this work and maintain these areas in satisfactory condition for painting and finishing. This cleaning includes:
   1. Removal of trash and rubbish from these areas.
   2. Broom cleaning of floors.
   3. Removal of any plaster, mortar, dust, and other extraneous materials from finish surfaces, including but not limited to exposed structural steel, miscellaneous metal, masonry, concrete, mechanical equipment, piping, and electrical equipment.

C. In addition to the cleaning specified above and the more specific cleaning that may be required in various technical sections of the Specifications, CONTRACTOR shall prepare

the Project for occupancy by a thorough cleaning throughout, which shall include the following:

1. Clean interior and exterior glass surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
2. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
3. Replace filters of operating equipment.
4. Clean debris from roofs, gutters, downspouts, and drainage systems.
5. Clean site; sweep paved areas, rake clean landscaped surfaces.
6. Remove waste and surplus materials, rubbish, and construction facilities from the Site.

1.04 ADJUSTING

A. CONTRACTOR shall adjust operating products and equipment to provide smooth and unhindered operation.

1.05 PROJECT RECORD DOCUMENTS

A. CONTRACTOR shall maintain on Site one set of the following record documents to record actual revisions to the Work:
   1. Drawings.
   2. Specifications.
   3. Addenda.
   4. Change orders and other modifications to the Contract.
   5. Reviewed shop drawings, product data, and samples.
   6. Manufacturer’s instruction for assembly, installation, and adjusting.

B. CONTRACTOR shall make entries that are complete and accurate, enabling future reference by OWNER.

C. CONTRACTOR shall store record documents separate from documents used for construction.

D. CONTRACTOR shall record information concurrent with construction progress.

E. Specifications: CONTRACTOR shall legibly mark and record at each Product section description of actual products installed, including the following:
   1. Manufacturer’s name and product model and number.
   2. Product substitutions or alternates utilized.
   3. Changes made by addenda and modifications.

F. Record Drawings: CONTRACTOR shall legibly mark each item to record actual construction including:
   1. Measured depths of foundations in relation to finish floor datum.
   2. Measured horizontal and vertical locations of underground utilities and appurtenances referenced to permanent surface improvements.
   3. Measured locations of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of the Work.
   4. Field changes of dimension and detail.
   5. Details not on original Contract drawings.

1.06 WARRANTIES

A. CONTRACTOR shall provide warranties beyond project one-year warranty as required by technical sections.

B. Submit warranty information as follows:
   1. Provide original copies bearing authorized signatures.
   2. Execute and assemble transferable warranty documents from Subcontractors, suppliers, and manufacturers, and provide Table of Contents and assemble in three-ring binder with durable cover.
   3. Submit with request for certificate of Substantial Completion.
   4. For items of work delayed beyond date of Substantial Completion, provide updated submittal within 10 days after acceptance listing date of acceptance as start of warranty period.

PART 2–PRODUCTS

NOT APPLICABLE

PART 3–EXECUTION

NOT APPLICABLE

END OF SECTION

SECTION 01 91 00

STARTING OF SYSTEMS

PART 1–GENERAL

1.01 SUMMARY

A. Work Included:
   1. General.
   2. Equipment and system installation.
   3. Demonstration, instructions, and operator training.
   4. Start-up and testing.
   5. Equipment systems requiring certification of proper installation.
   6. Equipment systems requiring additional documentation.

B. CONTRACTOR shall perform the Work described in the following subsections.

1.02 GENERAL

A. The number of days for manufacturer's services stated in the Specifications shall be considered as the minimum number of days. Should additional time be required for services because of equipment malfunction or other problem, such time shall be at the expense of CONTRACTOR, with no change in Contract Price.

B. "Days" specified shall consist of 8-hour days on-site, excluding travel time.

C. CONTRACTOR shall designate and provide one person to be responsible for scheduling, coordinating, and expediting the specified services. Scheduling the services shall be done in cooperation with, and with the prior approval of ENGINEER and OWNER. Such schedule shall be arranged with the appropriate subcontractors, manufacturers, and suppliers with sufficient time to allow their compliance with the service requirements.

D. CONTRACTOR shall manage equipment checkout such that checkout has been completed and deficiencies addressed prior to demonstration and training. Scheduling training prior to checkout may result in cancellation when checkout cannot be completed prior to training.

1.03 EQUIPMENT AND SYSTEM INSTALLATION

A. Competent and experienced technical personnel shall represent the manufacturers of all equipment and systems for as many days as may be necessary to provide proper installation and to resolve assembly or installation problems at the site that are attributable to, or associated with, the equipment furnished. This requirement applies to manufacturers for all equipment furnished, whether or not specifically set forth in the Specifications.

B. Where a Certificate of Proper Installation is called for in this Specification Section, the manufacturer's representative shall provide the attached Certificate of Proper

Installation stating that the equipment or system has been installed in accordance with the manufacturer's instructions and has been inspected by a manufacturer's authorized representative, that it has been serviced with the proper initial lubricants, that applicable safety equipment has been properly installed, that the proper electrical and mechanical connections have been made, and that any other manufacturer requirements have been met. This certification shall be provided to ENGINEER and OWNER prior to the start-up. This certificate is in addition to the manufacturer's standard startup reports, checklists, and other pertinent information.

C. Functional (or run) testing is required for all equipment and systems. The manufacturer's representative shall supervise the functional test, which shall include checking for proper rotation, alignment, speed, excessive vibration, and noisy operation. The Manufacturer's Certificate of Proper Installation shall state that proper adjustments have been made and that the equipment or system is ready for start-up.

D. Manufacturer shall demonstrate, using laser alignment equipment, if appropriate, that the installed equipment has been aligned properly. Final acceptance of equipment will not be granted until manufacturer has demonstrated to ENGINEER that acceptable alignment to tolerances have been achieved. For pumps with motors 7.5 hp and larger, the acceptable shaft alignment tolerances shall be as recommended in the pump manufacturer's written instructions and shall include parallel offset and angular gap measurements.

1.04 DEMONSTRATION, INSTRUCTIONS, AND OPERATOR TRAINING

A. Refer to the Specifications for additional training requirements.

B. CONTRACTOR shall coordinate the pre-start-up training periods with OWNER's operating personnel.
   1. Schedule training dates and times with OWNER, that are acceptable to OWNER, using equipment, startup, and O&M training form. Normal hours available for training are between 7:30 A.M. to 3 P.M., Monday through Friday, except for holidays.
   2. Submit outline and presentation to ENGINEER at least 7 days in advance of training.
   3. Provide name, contact information, and brief synopsis of qualifications of the trainer.
   4. If materials above are not provided at least 7 days in advance, training may be canceled.
   5. Failure of supplier's or manufacturer's representative to appear for scheduled training, failure to notify OWNER 24 hours in advance of need to cancel scheduled training or failure to arrive within 30 minutes of start of scheduled training shall result in reimbursement to OWNER for time lost by OWNER's personnel in waiting for arrival of manufacturer's representative. Except in case of failure to arrive on time, time will not exceed 1 hour for each employee scheduled to receive training. Failure to arrive on time will be reimbursed by actual time late, up to 1 hour, after 1 hour, training will be rescheduled. CONTRACTOR shall reimburse OWNER via a change order.
   6. During the training, instructor will dedicate its time solely to training and not start-up services.

7. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with OWNER's personnel in detail to explain all aspects of operation and maintenance.
8. Demonstrate start-up, operation, control, adjustment, troubleshooting, servicing, maintenance, and shutdown of each item of equipment.
9. Prepare and insert additional data in operation and maintenance manuals when need for additional data becomes apparent during instruction.
10. OWNER may video record the training for future internal use. Provide to OWNER paper and electronic copies of any media used as part of training.
11. Provide training handouts for each of OWNER's personnel present.

C. CONTRACTOR shall provide attached Certificate of Operator Training cosigned by OWNER and supplier's representative verifying training was accomplished to satisfaction of all parties.

D. Operation and maintenance manual submitted in accordance with Section 01 33 00–Submittals shall be provided prior to operator training.

E. For equipment or systems requiring seasonal operation, perform demonstration for dormant season at start of dormant season.

F. Final payment for various items of equipment will not be made by OWNER until the equipment is operating to OWNER's satisfaction.

G. Where items of equipment are placed into service at different times or sequence, manufacturer's services for start-up, field testing, and supervision shall be provided for each time or sequence. Training shall be provided prior to or at the time the first similar item of equipment is placed in service.

1.05 START-UP AND TESTING

A. Prior to acceptance of any portion of the Work, start-up and testing of all equipment and testing of all materials furnished on the Project by CONTRACTOR shall have been conducted in the presence of representatives of CONTRACTOR, OWNER, and ENGINEER and also manufacturer if requested by OWNER or ENGINEER.

B. CONTRACTOR shall provide whatever temporary installations and conditions are necessary in order to perform start-up and testing operations on all equipment and materials furnished under the Contract. Temporary connections and equipment necessary during start-up and testing operations shall include, but not be limited to, temporary piping and electrical power and control equipment and devices, temporary connection from various parts of the systems and any other labor, materials, fuel, devices, or items that may be required for start-up and testing operations. Temporary conditions shall include filling with water, if necessary, to check equipment and materials.

C. All temporary installations and conditions shall be removed by CONTRACTOR upon completion of start-up and testing.

PART 2–PRODUCTS

NOT APPLICABLE

PART 3–EXECUTION

3.01 EQUIPMENT SYSTEMS REQUIRING ADDITIONAL DOCUMENTATION

A. Section 26 09 00–Controls and Instrumentation: Documented date(s) of CONTRACTOR written request for Factory Acceptance Test.

B. Section 26 09 00–Controls and Instrumentation: Documented date(s) of CONTRACTOR written request for On-Site Acceptance Test.

END OF SECTION

WAGE RATES

Will County Prevailing Wage Rates posted on 5/22/2023

						Overtime								
Trade Title	**Rg**	**Type**	**C**	**Base**	**Foreman**	**M-F**	**Sa**	**Su**	**Hol**	**H/W**	**Pension**	**Vac**	**Trng**	**Other Ins**
ASBESTOS ABT-GEN	All	ALL		47.40	48.40	1.5	1.5	2.0	2.0	17.05	15.21	0.00	0.90	
ASBESTOS ABT-MEC	All	BLD		39.60	42.77	1.5	1.5	2.0	2.0	14.77	13.59	0.00	0.86	
BOILERMAKER	All	BLD		54.71	59.63	2.0	2.0	2.0	2.0	6.97	25.06	0.00	2.83	
BRICK MASON	All	BLD		49.81	54.79	1.5	1.5	2.0	2.0	12.10	21.56	0.00	1.10	
CARPENTER	All	ALL		52.01	57.21	2.0	2.0	2.0	2.0	11.79	28.57	0.25	0.80	
CEMENT MASON	All	ALL		45.25	47.25	2.0	1.5	2.0	2.0	12.15	30.65	0.00	0.55	
CERAMIC TILE FINISHER	All	BLD		44.18	44.18	1.5	1.5	2.0	2.0	12.25	14.77	0.00	1.00	
CERAMIC TILE LAYER	All	BLD		51.44	55.44	1.5	1.5	2.0	2.0	12.25	18.48	0.00	1.08	
COMMUNICATION TECHNICIAN	All	BLD		41.50	45.65	1.5	1.5	2.0	2.0	16.49	15.46	0.00	0.75	2.21
ELECTRIC PWR EQMT OP	All	ALL		58.25	63.91	1.5	1.5	2.0	2.0	13.08	19.67	0.00	3.19	
ELECTRIC PWR GRNDMAN	All	ALL		45.44	63.91	1.5	1.5	2.0	2.0	10.20	15.34	0.00	2.49	
ELECTRIC PWR LINEMAN	All	ALL		58.25	63.91	1.5	1.5	2.0	2.0	13.08	19.67	0.00	3.19	
ELECTRICIAN	All	BLD		50.00	54.50	1.5	1.5	2.0	2.0	16.94	21.05	0.00	1.23	4.47
ELEVATOR CONSTRUCTOR	All	BLD		62.47	70.28	2.0	2.0	2.0	2.0	16.03	20.21	5.00	0.65	
GLAZIER	All	BLD		48.75	50.25	1.5	2.0	2.0	2.0	15.19	24.43	0.00	1.70	
HEAT/FROST INSULATOR	All	BLD		52.80	55.97	1.5	1.5	2.0	2.0	14.77	16.76	0.00	0.86	
IRON WORKER	All	ALL		47.80	52.58	2.0	2.0	2.0	2.0	13.11	28.39	0.00	1.00	
LABORER	All	ALL		47.40	48.15	1.5	1.5	2.0	2.0	17.05	15.21	0.00	0.90	
LATHER	All	ALL		52.01	57.21	2.0	2.0	2.0	2.0	11.79	28.57	0.25	0.80	
MACHINIST	All	BLD		53.18	57.18	1.5	1.5	2.0	2.0	9.93	8.95	1.85	1.47	
MARBLE FINISHER	All	ALL		38.00	51.41	1.5	1.5	2.0	2.0	12.10	19.60	0.00	0.60	
MARBLE SETTER	All	BLD		48.96	53.86	1.5	1.5	2.0	2.0	12.10	21.03	0.00	0.78	
MATERIAL TESTER I	All	ALL		37.40		1.5	1.5	2.0	2.0	17.05	15.21	0.00	0.90	
MATERIALS TESTER II	All	ALL		42.40		1.5	1.5	2.0	2.0	17.05	15.21	0.00	0.90	
MILLWRIGHT	All	ALL		52.01	57.21	2.0	2.0	2.0	2.0	11.79	28.57	0.25	0.80	
OPERATING ENGINEER	All	BLD	1	55.10	59.10	2.0	2.0	2.0	2.0	22.15	19.30	2.00	2.55	
OPERATING ENGINEER	All	BLD	2	53.80	59.10	2.0	2.0	2.0	2.0	22.15	19.30	2.00	2.55	
OPERATING ENGINEER	All	BLD	3	51.25	59.10	2.0	2.0	2.0	2.0	22.15	19.30	2.00	2.55	
OPERATING ENGINEER	All	BLD	4	49.50	59.10	2.0	2.0	2.0	2.0	22.15	19.30	2.00	2.55	
OPERATING ENGINEER	All	BLD	5	58.85	59.10	2.0	2.0	2.0	2.0	22.15	19.30	2.00	2.55	
OPERATING ENGINEER	All	BLD	6	56.10	59.10	2.0	2.0	2.0	2.0	22.15	19.30	2.00	2.55	

OPERATING ENGINEER	All	BLD	7	58.10	59.10	2.0	2.0	2.0	2.0	22.15	19.30	2.00	2.55	
OPERATING ENGINEER	All	FLT	1	61.10	61.10	1.5	1.5	2.0	2.0	21.40	18.60	2.00	2.40	
OPERATING ENGINEER	All	FLT	2	59.60	61.10	1.5	1.5	2.0	2.0	21.40	18.60	2.00	2.40	
OPERATING ENGINEER	All	FLT	3	58.10	61.10	1.5	1.5	2.0	2.0	21.40	18.60	2.00	2.40	
OPERATING ENGINEER	All	FLT	4	53.60	61.10	1.5	1.5	2.0	2.0	21.40	18.60	2.00	2.40	
OPERATING ENGINEER	All	FLT	5	62.60	61.10	1.5	1.5	2.0	2.0	21.40	18.60	2.00	2.40	
OPERATING ENGINEER	All	FLT	6	41.00	61.10	1.5	1.5	2.0	2.0	21.40	18.60	2.00	2.40	
OPERATING ENGINEER	All	HWY	1	53.30	57.30	1.5	1.5	2.0	2.0	22.15	19.30	2.00	2.55	
OPERATING ENGINEER	All	HWY	2	52.75	57.30	1.5	1.5	2.0	2.0	22.15	19.30	2.00	2.55	
OPERATING ENGINEER	All	HWY	3	50.70	57.30	1.5	1.5	2.0	2.0	22.15	19.30	2.00	2.55	
OPERATING ENGINEER	All	HWY	4	49.30	57.30	1.5	1.5	2.0	2.0	22.15	19.30	2.00	2.55	
OPERATING ENGINEER	All	HWY	5	48.10	57.30	1.5	1.5	2.0	2.0	22.15	19.30	2.00	2.55	
OPERATING ENGINEER	All	HWY	6	56.30	57.30	1.5	1.5	2.0	2.0	22.15	19.30	2.00	2.55	
OPERATING ENGINEER	All	HWY	7	54.30	57.30	1.5	1.5	2.0	2.0	22.15	19.30	2.00	2.55	
PAINTER	All	ALL		50.30	56.59	1.5	1.5	1.5	2.0	14.26	14.99	0.00	1.72	
PAINTER - SIGNS	All	BLD		41.55	46.67	1.5	1.5	2.0	2.0	3.04	3.90	0.00	0.00	
PILEDRIVER	All	ALL		52.01	57.21	2.0	2.0	2.0	2.0	11.79	28.57	0.25	0.80	
PIPEFITTER	All	BLD		53.00	56.00	1.5	1.5	2.0	2.0	11.85	22.85	0.00	2.92	
PLASTERER	All	BLD		47.75	50.62	1.5	1.5	2.0	2.0	17.08	19.18	0.00	1.00	
PLUMBER	All	BLD		54.80	58.10	1.5	1.5	2.0	2.0	16.70	17.04	0.00	1.58	
ROOFER	All	BLD		48.00	53.00	1.5	1.5	2.0	2.0	11.83	15.26	0.00	0.99	
SHEETMETAL WORKER	All	BLD		53.33	56.00	1.5	1.5	2.0	2.0	11.85	19.43	0.00	1.59	2.54
SPRINKLER FITTER	All	BLD		54.55	57.30	1.5	1.5	2.0	2.0	14.20	18.70	0.00	0.75	
STONE MASON	All	BLD		49.81	54.79	1.5	1.5	2.0	2.0	12.10	21.56	0.00	1.10	
TERRAZZO FINISHER	All	BLD		45.57	45.57	1.5	1.5	2.0	2.0	12.25	17.14	0.00	1.03	
TERRAZZO MECHANIC	All	BLD		49.41	52.91	1.5	1.5	2.0	2.0	12.25	18.60	0.00	1.07	
TRAFFIC SAFETY WORKER I	All	HWY		39.30	40.90	1.5	1.5	2.0	2.0	9.65	9.10	0.00	0.10	
TRAFFIC SAFETY WORKER II	ALL	HWY		40.30	41.90	1.5	1.5	2.0	2.0	9.65	9.10	0.00	0.10	
TRUCK DRIVER	All	ALL	1	42.70	43.25	1.5	1.5	2.0	2.0	10.65	11.96	0.00	0.15	
TRUCK DRIVER	All	ALL	2	42.85	43.25	1.5	1.5	2.0	2.0	10.65	11.96	0.00	0.15	
TRUCK DRIVER	All	ALL	3	43.05	43.25	1.5	1.5	2.0	2.0	10.65	11.96	0.00	0.15	
TRUCK DRIVER	All	ALL	4	43.25	43.25	1.5	1.5	2.0	2.0	10.65	11.96	0.00	0.15	
TUCKPOINTER	All	BLD		49.53	50.53	1.5	1.5	2.0	2.0	9.04	21.06	0.00	1.07	

Legend
Rg Region

Type Trade Type - All,Highway,Building,Floating,Oil & Chip,Rivers
C Class
Base Base Wage Rate
OT M-F Unless otherwise noted, OT pay is required for any hour greater than 8 worked each day, Mon through Fri. The number listed is the multiple of the base wage.
OT Sa Overtime pay required for every hour worked on Saturdays
OT Su Overtime pay required for every hour worked on Sundays
OT Hol Overtime pay required for every hour worked on Holidays
H/W Health/Welfare benefit
Vac Vacation
Trng Training
Other Ins Employer hourly cost for any other type(s) of insurance provided for benefit of worker.

Explanations WILL COUNTY

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

EXPLANATION OF CLASSES

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

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

CERAMIC TILE FINISHER

The grouting, cleaning, and polishing of all classes of tile, whether for interior or exterior purposes, all burned, glazed or unglazed products; all composition materials, granite tiles, warning detectable tiles, cement tiles, epoxy composite materials, pavers, glass, mosaics, fiberglass, and all substitute materials, for tile made in tile-like units; all mixtures in tile like form of cement, metals, and other materials that are for and intended for use as a finished floor surface, stair treads, promenade roofs, walks, walls, ceilings, swimming pools, and all other places where tile is to form a finished interior or exterior. The mixing of all setting mortars including but not limited to thin-set mortars, epoxies, wall mud, and any other sand and cement mixtures or adhesives when used in the preparation, installation, repair, or maintenance of tile and/or similar materials. The handling and unloading of all sand, cement, lime, tile, fixtures, equipment, adhesives, or any other materials to be used in the preparation, installation, repair, or maintenance of tile and/or similar materials. Ceramic Tile Finishers shall fill all joints and voids regardless of method on all tile work, particularly and especially after installation of said tile work. Application of any and all protective coverings to all types of tile installations including, but not be limited to, all soap compounds, paper products, tapes, and all polyethylene coverings, plywood, masonite, cardboard, and any new type of products that may be used to protect tile installations, Blastrac equipment, and all floor scarifying equipment used in preparing floors to receive tile. The clean up and removal of all waste and materials. All demolition of existing tile floors and walls to be re-tiled.

COMMUNICATIONS TECHNICIAN

Installation, operation, inspection, maintenance, repair and service of radio, television, recording, voice, sound and vision production and reproduction, telephone and telephone interconnect, facsimile, equipment and appliances used for domestic, commercial, educational and entertainment purposes, pulling of wire through conduit but not the installation of conduit.

MARBLE FINISHER

Loading and unloading trucks, distribution of all materials (all stone, sand, etc.), stocking of floors with material, performing all rigging for heavy work, the handling of all material that may be needed for the installation of such materials, building of scaffolding, polishing if needed, patching, waxing of material if damaged, pointing up, caulking, grouting and cleaning of marble, holding water on diamond or Carborundum blade or saw for setters cutting, use of tub saw or any other saw needed for preparation of material, drilling of holes for wires that anchor material set by setters, mixing up of molding plaster for installation of material, mixing up thin set for the installation of material, mixing up of sand to cement for the installation of material and such other work as may be required in helping a Marble Setter in the handling of all material in the erection or installation of interior marble, slate, travertine, art marble, serpentine, alberene stone, blue stone, granite and other stones (meaning as to stone any foreign or domestic materials as are specified and used in building interiors and exteriors and customarily known as stone in the trade), carrara, sanionyx, vitrolite and similar opaque glass and the laying of all marble tile, terrazzo tile, slate tile and precast tile, steps, risers treads, base, or any other materials that may be used as substitutes for any of the aforementioned materials and which are used on interior and exterior which are installed in a similar manner.

MATERIAL TESTER I: Hand coring and drilling for testing of materials; field inspection of uncured concrete and asphalt.

MATERIAL TESTER II: Field inspection of welds, structural steel, fireproofing, masonry, soil, facade, reinforcing steel, formwork, cured concrete, and concrete and asphalt batch plants; adjusting proportions of bituminous mixtures.

OPERATING ENGINEER - BUILDING

Class 1. Asphalt Plant; Asphalt Spreader; Autograde; Backhoes with Caisson Attachment; Batch Plant; Benoto (requires Two Engineers); Boiler and Throttle Valve; Caisson Rigs; Central Redi-Mix Plant; Combination Back Hoe Front End-loader Machine; Compressor and Throttle Valve; Concrete Breaker (Truck Mounted); Concrete Conveyor; Concrete Conveyor (Truck Mounted); Concrete Paver Over 27E cu. ft; Concrete Paver 27E cu. ft. and Under: Concrete Placer; Concrete Placing Boom; Concrete Pump (Truck Mounted); Concrete Tower; Cranes, All; Cranes, Hammerhead; Cranes, (GCI and similar Type); Creter Crane; Spider Crane; Crusher, Stone, etc.; Derricks, All; Derricks, Traveling; Formless Curb and Gutter Machine; Grader, Elevating; Grouting Machines; Heavy Duty Self-Propelled Transporter or Prime Mover; Highlift Shovels or Front Endloader 2-1/4 yd. and over; Hoists, Elevators, outside type rack and pinion and similar machines; Hoists, One, Two and Three Drum; Hoists, Two Tugger One Floor; Hydraulic Backhoes; Hydraulic Boom Trucks; Hydro Vac (and similar equipment); Locomotives, All; Motor Patrol; Lubrication Technician; Manipulators; Pile Drivers and Skid Rig; Post Hole Digger; Pre-Stress Machine; Pump Cretes Dual Ram; Pump Cretes: Squeeze Cretes-Screw Type Pumps; Gypsum Bulker and Pump; Raised and Blind Hole Drill; Roto Mill Grinder; Scoops - Tractor Drawn; Slip-Form Paver; Straddle Buggies; Operation of Tie Back Machine; Tournapull; Tractor with Boom and Side Boom; Trenching Machines.

Class 2. Boilers; Broom, All Power Propelled; Bulldozers; Concrete Mixer (Two Bag and Over); Conveyor, Portable; Forklift Trucks; Highlift Shovels or Front Endloaders under 2-1/4 yd.; Hoists, Automatic; Hoists, Inside Elevators; Hoists, Sewer Dragging Machine; Hoists, Tugger Single Drum; Laser Screed; Rock Drill (Self-Propelled); Rock Drill (Truck Mounted); Rollers, All; Steam Generators; Tractors, All; Tractor Drawn Vibratory Roller; Winch Trucks with "A" Frame.

Class 3. Air Compressor; Combination Small Equipment Operator; Generators; Heaters, Mechanical; Hoists, Inside Elevators (remodeling or renovation work); Hydraulic Power Units (Pile Driving, Extracting, and Drilling); Pumps, over 3" (1 to 3 not to exceed a total of 300 ft.); Low Boys; Pumps, Well Points; Welding Machines (2 through 5); Winches, 4 Small Electric Drill Winches.

Class 4. Bobcats and/or other Skid Steer Loaders; Oilers; and Brick Forklift.

Class 5. Assistant Craft Foreman.

Class 6. Gradall.

Class 7. Mechanics; Welders.

OPERATING ENGINEERS - HIGHWAY CONSTRUCTION

Class 1. Asphalt Plant; Asphalt Heater and Planer Combination; Asphalt Heater Scarfire; Asphalt Spreader; Autograder/GOMACO or other similar type machines: ABG Paver; Backhoes with Caisson Attachment; Ballast Regulator; Belt Loader; Caisson Rigs; Car Dumper; Central Redi-Mix Plant; Combination Backhoe Front Endloader Machine, (1 cu. yd. Backhoe Bucket or over or with attachments); Concrete Breaker (Truck Mounted); Concrete Conveyor; Concrete Paver over 27E cu. ft.; Concrete Placer; Concrete Tube Float; Cranes, all attachments; Cranes, Tower Cranes of all types: Creter Crane: Spider Crane; Crusher, Stone, etc.; Derricks, All; Derrick Boats; Derricks, Traveling; Dredges; Elevators, Outside type Rack & Pinion and Similar Machines; Formless Curb and Gutter Machine; Grader, Elevating; Grader, Motor Grader, Motor Patrol, Auto Patrol, Form Grader, Pull Grader, Subgrader; Guard Rail Post Driver Truck Mounted; Hoists, One, Two and Three Drum; Heavy Duty Self-Propelled Transporter or Prime Mover; Hydraulic Backhoes; Backhoes with shear attachments up to 40' of boom reach; Lubrication Technician; Manipulators; Mucking Machine; Pile Drivers and Skid Rig; Pre-Stress Machine; Pump Cretes Dual Ram; Rock Drill - Crawler or Skid Rig; Rock Drill - Truck Mounted; Rock/Track Tamper; Roto Mill Grinder; Slip-Form Paver; Snow Melters; Soil Test Drill Rig (Truck Mounted); Straddle Buggies; Hydraulic Telescoping Form (Tunnel); Operation of Tieback Machine; Tractor Drawn Belt Loader; Tractor Drawn Belt Loader (with attached pusher - two engineers); Tractor with Boom; Tractaire with Attachments; Traffic Barrier Transfer Machine; Trenching; Truck Mounted Concrete Pump with Boom; Raised or Blind Hole Drills (Tunnel Shaft); Underground Boring and/or Mining Machines 5 ft. in diameter and over tunnel, etc; Underground Boring and/or Mining Machines under 5 ft. in diameter; Wheel Excavator; Widener (APSCO).

Class 2. Batch Plant; Bituminous Mixer; Boiler and Throttle Valve; Bulldozers; Car Loader Trailing Conveyors; Combination Backhoe Front Endloader Machine (Less than 1 cu. yd. Backhoe Bucket or over or with attachments); Compressor and Throttle Valve; Compressor, Common Receiver (3); Concrete Breaker or Hydro Hammer; Concrete Grinding Machine; Concrete Mixer or Paver 7S Series to and including 27 cu. ft.; Concrete Spreader; Concrete Curing Machine, Burlap Machine, Belting Machine and Sealing Machine; Concrete Wheel Saw; Conveyor Muck Cars (Haglund or Similar Type); Drills, All; Finishing Machine - Concrete; Highlift Shovels or Front Endloader; Hoist - Sewer Dragging Machine; Hydraulic Boom Trucks (All Attachments); Hydro-Blaster; Hydro Excavating (excluding hose work); Laser Screed; All Locomotives, Dinky; Off-Road Hauling Units (including articulating) Non Self-Loading Ejection Dump; Pump Cretes: Squeeze Cretes - Screw Type Pumps, Gypsum Bulker and Pump; Roller, Asphalt; Rotary Snow Plows; Rototiller, Seaman, etc., self-propelled; Self-Propelled Compactor; Spreader - Chip - Stone, etc.; Scraper - Single/Twin Engine/Push and Pull; Scraper - Prime Mover in Tandem (Regardless of Size); Tractors pulling attachments, Sheeps Foot, Disc, Compactor, etc.; Tug Boats.

Class 3. Boilers; Brooms, All Power Propelled; Cement Supply Tender; Compressor, Common Receiver (2); Concrete Mixer (Two Bag and Over); Conveyor, Portable; Farm-Type Tractors Used for Mowing, Seeding, etc.; Forklift Trucks; Grouting Machine; Hoists, Automatic; Hoists, All Elevators; Hoists, Tugger Single Drum; Jeep Diggers; Low Boys; Pipe Jacking Machines; Post-Hole Digger; Power Saw, Concrete Power Driven; Pug Mills; Rollers, other than Asphalt; Seed and Straw Blower; Steam Generators; Stump Machine; Winch Trucks with "A" Frame; Work Boats; Tamper-Form-Motor Driven.

Class 4. Air Compressor; Combination - Small Equipment Operator; Directional Boring Machine; Generators; Heaters, Mechanical; Hydraulic Power Unit (Pile Driving, Extracting, or Drilling); Light Plants, All (1 through 5); Pumps, over 3" (1 to 3 not to exceed a total of 300 ft.); Pumps, Well Points; Vacuum Trucks (excluding hose work); Welding Machines (2 through 5); Winches, 4 Small Electric Drill Winches.

Class 5. SkidSteer Loader (all); Brick Forklifts; Oilers.

Class 6. Field Mechanics and Field Welders

Class 7. Dowell Machine with Air Compressor; Gradall and machines of like nature.

OPERATING ENGINEER - FLOATING

Class 1. Craft Foreman; Master Mechanic; Diver/Wet Tender; Engineer; Engineer (Hydraulic Dredge).

Class 2. Crane/Backhoe Operator; Boat Operator with towing endorsement; Mechanic/Welder; Assistant Engineer (Hydraulic Dredge); Leverman (Hydraulic Dredge); Diver Tender.

Class 3. Deck Equipment Operator, Machineryman, Maintenance of Crane (over 50 ton capacity) or Backhoe (115,000 lbs. or more); Tug/Launch Operator; Loader/Dozer and like equipment on Barge, Breakwater Wall, Slip/Dock, or Scow, Deck Machinery, etc.

Class 4. Deck Equipment Operator, Machineryman/Fireman (4 Equipment Units or More); Off Road Trucks; Deck Hand, Tug Engineer, Crane Maintenance (50 Ton Capacity and Under) or Backhoe Weighing (115,000 pounds or less); Assistant Tug Operator.

Class 5. Friction or Lattice Boom Cranes.

Class 6. ROV Pilot, ROV Tender

TRAFFIC SAFETY Worker I

Traffic Safety Worker I - work associated with the delivery, installation, pick-up and servicing of safety devices during periods of roadway construction, including such work as set-up and maintenance of barricades, barrier wall reflectors, drums, cones, delineators, signs, crash attenuators, glare screen and other such items, and the layout and application or removal of conflicting and/or temporary roadway markings utilized to control traffic in construction zones, as well as flagging for these operations.

TRAFFIC SAFETY WORKER II

Work associated with the installation and removal of permanent pavement markings and/or pavement markers including both installations performed by hand and installations performed by truck.

TRUCK DRIVER - BUILDING, HEAVY AND HIGHWAY CONSTRUCTION

Class 1. Two or three Axle Trucks. A-frame Truck when used for transportation purposes; Air Compressors and Welding Machines, including those pulled by cars, pick-up trucks and tractors; Ambulances; Batch Gate Lockers; Batch Hopperman; Car and Truck Washers; Carry-alls; Fork Lifts and Hoisters; Helpers; Mechanics Helpers and Greasers; Oil Distributors 2-man operation; Pavement Breakers; Pole Trailer, up to 40 feet; Power Mower Tractors; Self-propelled Chip Spreader; Skipman; Slurry Trucks, 2-man operation; Slurry Truck Conveyor Operation, 2 or 3 man; Teamsters; Unskilled Dumpman; and Truck Drivers hauling warning lights, barricades, and portable toilets on the job site.

Class 2. Four axle trucks; Dump Crets and Adgetors under 7 yards; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment under 16 cubic yards; Mixer Trucks under 7 yeards; Ready-mix Plant Hopper Operator, and Winch Trucks, 2 Axles.

Class 3. Five axle trucks; Dump Crets and Adgetors 7 yards and over; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnatrailers or turnapulls when pulling other than self-loading equipment or similar equipment over 16 cubic yards; Explosives and/or Fission Material Trucks; Mixer Trucks 7 yards or over; Mobile Cranes while in transit; Oil Distributors, 1-man operation; Pole Trailer, over 40 feet; Pole and Expandable Trailers hauling material over 50 feet long; Slurry trucks, 1-man operation; Winch

trucks, 3 axles or more; Mechanic--Truck Welder and Truck Painter.

Class 4. Six axle trucks; Dual-purpose vehicles, such as mounted crane trucks with hoist and accessories; Foreman; Master Mechanic; Self-loading equipment like P.B. and trucks with scoops on the front.

TERRAZZO FINISHER

The handling of sand, cement, marble chips, and all other materials that may be used by the Mosaic Terrazzo Mechanic, and the mixing, grinding, grouting, cleaning and sealing of all Marble, Mosaic, and Terrazzo work, floors, base, stairs, and wainscoting by hand or machine, and in addition, assisting and aiding Marble, Masonic, and Terrazzo Mechanics.

Other Classifications of Work:

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

LANDSCAPING

Landscaping work falls under the existing classifications for laborer, operating engineer and truck driver. The work performed by landscape plantsman and landscape laborer is covered by the existing classification of laborer. The work performed by landscape operators (regardless of equipment used or its size) is covered by the classifications of operating engineer. The work performed by landscape truck drivers (regardless of size of truck driven) is covered by the classifications of truck driver.

MATERIAL TESTER & MATERIAL TESTER/INSPECTOR I AND II

Notwithstanding the difference in the classification title, the classification entitled "Material Tester I" involves the same job duties as the classification entitled "Material Tester/Inspector I". Likewise, the classification entitled "Material Tester II" involves the same job duties as the classification entitled "Material Tester/Inspector II".

"General Decision Number: IL20230008 06/09/2023

Superseded General Decision Number: IL20220008

State: Illinois

Construction Types: Building and Residential

Counties: Du Page, Grundy, Kane, Kendall, Lake, McHenry and Will Counties in Illinois.

BUILDING AND RESIDENTIAL PROJECTS (does not include landscape projects).

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	Executive Order 14026 generally applies to the contract. The contractor must pay all covered workers at least $16.20 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 2023.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	Executive Order 13658 generally applies to the contract. The contractor must pay all covered workers at least $12.15 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2023.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the

Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at http://www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/06/2023
1	01/13/2023
2	01/20/2023
3	05/12/2023
4	06/02/2023
5	06/09/2023

ASBE0017-005 06/01/2021

	Rates	Fringes
ASBESTOS WORKER/INSULATOR includes the application of all insulating materials, protective coverings, coatings, and finishes to all types of mechanical systems	$ 51.80	30.60
Fire Stop Technician	$ 41.44	27.85
HAZARDOUS MATERIAL HANDLER includes preparation, wetting, stripping, removal, scrapping vacuuming, bagging and disposing of all insulation materials from mechanical systems, whether they contain asbestos or not	$ 38.85	27.85

BOIL0001-003 05/01/2021

DU PAGE, GRUNDY, KANE, KENDALL, LAKE, MCHENRY, AND WILL COUNTIES

	Rates	Fringes
BOILERMAKER	$ 52.61	33.07

BRIL0014-001 06/01/2021

DU PAGE, GRUNDY, LAKE, and WILL COUNTIES

	Rates	Fringes

BRICKLAYER.....$ 48.56 34.05

BRIL0021-002 06/01/2021

Rates Fringes

MARBLE SETTER.....$ 47.71 33.20

BRIL0021-008 06/01/2021

Rates Fringes

TERRAZZO WORKER/SETTER.....$ 48.38 30.79
TILE FINISHER.....$ 42.80 26.97
TILE SETTER.....$ 49.75 30.79

BRIL0021-010 06/01/2017

Rates Fringes

MARBLE FINISHER.....$ 33.95 26.03

BRIL0027-002 06/01/2016

KANE, KENDALL, and MCHENRY COUNTIES

Rates Fringes

BRICKLAYER.....$ 44.88 26.62

CARP0555-003 06/01/2022

DUPAGE ANE LAKE COUNTIES

Rates Fringes

CARPENTER
Building.....$ 52.01 38.85
Heavy & Highway.....$ 52.01 38.85

CARP0555-004 10/01/2022

Residential

DU PAGE and LAKE COUNTIES

Rates Fringes

CARPENTER.....$ 44.11 34.47

CARP0555-006 06/01/2022

WILL COUNTY

BUILDING

	Rates	Fringes
Carpenter; Millwright; Piledrivermen	$ 52.01	41.41

CARP0555-007 10/01/2022

WILL COUNTY

RESIDENTIAL

	Rates	Fringes
CARPENTER	$ 44.11	34.47

CARP0555-009 06/01/2022

KANE, KENDALL, AND McHENRY COUNTIES

BUILDING

	Rates	Fringes
CARPENTER		
Carpenter, Floor Layer, Lather, Millwright, and Piledriver	$ 52.01	38.86

CARP0555-010 10/01/2022

KANE, KENDALL, and McHENRY COUNTIES

RESIDENTIAL

	Rates	Fringes
CARPENTER	$ 44.11	34.47

CARP0555-012 10/01/2022

GRUNDY COUNTY

	Rates	Fringes
CARPENTER		
Carpenter, Millwright, Piledriver, and Soft Floor Layer		
Building	$ 52.01	38.86
Residential	$ 44.11	34.47

ELEC0009-002 05/29/2022

WILL COUNTY

	Rates	Fringes
Line Construction		
Groundman	$ 45.44	61.70%
Lineman and Equipment Operator	$ 58.25	61.70%

ELEC0117-002 05/29/2023

KANE (Northern Half) and McHENRY COUNTIES

	Rates	Fringes
ELECTRICIAN		
Building	$ 54.61	39.63

ELEC0117-003 10/31/2022

KANE (Northern Half), and McHENRY COUNTIES

	Rates	Fringes
ELECTRICIAN		
ELECTRICAL TECHNICIAN	$ 44.56	32.11

Work includes the installation, maintenance and removal of telecommunication facilities (voice, sound, data and video), telephone, security, fire alarm systems that are a component of a multiplex system and share a common cable, and data inside wire, interconnect, terminal equipment, central office, PABX and equipment, micro waves, V-SAT, bypass, CATV, WAN, (wide area networks), LAN (Local area networks), and ISDN (integrated system digital network).The work shall cover the pulling of wire in raceways, but not the installation of raceways.

ELEC0117-004 08/29/2022

KANE (Northern Half) and McHENRY COUNTIES

	Rates	Fringes
ELECTRICIAN		
Residential	$ 44.40	34.00

ELEC0150-002 10/31/2022

LAKE COUNTY

	Rates	Fringes
ELECTRICIAN		
Building	$ 42.82	45.77
Residential	$ 43.02	35.02

ELEC0150-003 10/31/2022

LAKE COUNTY

	Rates	Fringes
ELECTRICIAN		
ELECTRICAL TECHNICIAN	$ 41.20	35.85

Work includes the installation, maintenance and removal of telecommunication facilities (voice, sound, data and video), telephone, security, fire alarm systems that are a component of a multiplex system and share a common cable, and data inside wire, interconnect, terminal equipment, central office, PABX and equipment, micro waves, V-SAT, bypass, CATV, WAN, (wide area networks), LAN (Local area networks), and ISDN (integrated system digital network).The work shall cover the pulling of wire in raceways, but not the installation of raceways.

ELEC0176-003 06/01/2021

Grundy and Will Counties

	Rates	Fringes
ELECTRICIAN		
Residential	$ 43.97	32.42

ELEC0176-008 06/21/2021

GRUNDY and WILL COUNTIES

	Rates	Fringes
ELECTRICIAN		
Building	$ 48.50	42.34

ELEC0176-015 06/01/2020

GRUNDY and WILL COUNTIES

	Rates	Fringes
ELECTRICIAN		
ELECTRICAL TECHNICIAN	$ 38.50	32.81

Work includes the installation, maintenance and removal of telecommunication facilities (voice, sound, data and video), telephone, security, fire alarm systems that are a component of a multiplex system and share a common cable, and data inside wire, interconnect, terminal equipment, central office, PABX and equipment, micro waves, V-SAT, bypass, CATV, WAN, (wide area networks), LAN (Local area networks), and ISDN (integrated system digital network).The work shall cover the pulling of wire in raceways, but not the installation of raceways.

ELEC0461-002 10/31/2022

KANE (Southern Half) AND KENDALL COUNTIES

	Rates	Fringes
ELECTRICIAN		
Building	$ 51.84	38.38
Residential	$ 46.44	31.43

ELEC0461-005 10/31/2022

KANE (Southern Half), AND KENDALL COUNTIES

	Rates	Fringes
ELECTRICIAN		
ELECTRICAL TECHNICIAN	$ 43.08	33.87

Work includes the installation, maintenance and removal of telecommunication facilities (voice, sound, data and video), telephone, security, fire alarm systems that are a component of a multiplex system and share a common cable, and data inside wire, interconnect, terminal equipment, central office, PABX and equipment, micro waves, V-SAT, bypass, CATV, WAN, (wide area networks), LAN (Local area networks), and ISDN (integrated system digital network).The work shall cover the pulling of wire in raceways, but not the installation of raceways.

ELEC0701-002 11/04/2019

DUPAGE COUNTY

	Rates	Fringes
ELECTRICIAN		
Building	$ 41.00	105.86%
Residential	$ 39.60	81.43%

ELEC0701-003 07/05/2021

DU PAGE COUNTY

	Rates	Fringes
ELECTRICIAN		
ELECTRICAL TECHNICIAN	$ 34.71	116.63%+.10

Work includes the installation, maintenance and removal of telecommunication facilities (voice, sound, data and video), telephone, security, fire alarm systems that are a component of a multiplex system and share a common cable, and data inside wire, interconnect, terminal equipment, central office, PABX and equipment, micro waves, V-SAT, bypass, CATV, WAN, (wide area networks), LAN (Local area networks), and ISDN (integrated system digital network).The work shall cover the pulling of wire in raceways, but not the installation of raceways.

ELEV0002-002 01/01/2023

DU PAGE, KANE, KENDALL, LAKE, & WILL COUNTIES

	Rates	Fringes
ELEVATOR MECHANIC	$ 65.12	37.335+a+b

FOOTNOTES:

a) PAID HOLIDAYS: New Year's Day; Memorial Day; Independence Day; Labor Day; Thanksgiving Day; Day after Thanksgiving Day; Veterans' Day and Christmas Day.

b) Employer contributes 8% of regular hourly rate as vacation pay credit for employee with more than 5 years of service, and 6% for employee with less than 5 years service

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ELEV0015-002 01/01/2023

McHENRY COUNTY

	Rates	Fringes
ELEVATOR MECHANIC	$ 56.97	37.335+a+b

FOOTNOTES:

a. Employer contributes 8% of regular basic hourly rate as vacation pay credit for employees with more than 5 years of service, and 6% for under 5 years of service.

b. Paid Holidays: New Year's Day, Memorial Day, Independence

Day, Labor Day, Thanksgiving Day, Friday after Thanksgiving Day, Veterans' Day and Christmas Day.

ELEV0055-001 01/01/2023

GRUNDY COUNTY

	Rates	Fringes
ELEVATOR MECHANIC	$ 53.26	37.335+a+b

FOOTNOTES:

A. Employer contributes 8% of regular basic hourly rate as vacation pay credit for employees with more than 5 years of service, and 6% for under 5 years of service.

B. Paid Holidays: New Year's Day; Memorial Day; Independence Day; Labor Day; Thanksgiving Day; Day after Thanksgiving; Veterans' Day & Christmas Day

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* ENGI0150-026 06/01/2022

BUILDING and RESIDENTIAL

	Rates	Fringes
OPERATOR: Power Equipment		
GROUP 1	$ 55.10	46.00
GROUP 2	$ 53.80	46.00
GROUP 3	$ 51.25	46.00
GROUP 4	$ 49.50	46.00

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Mechanic; Asphalt Plant*; Asphalt Spreader; Autograde*; Backhoes with Caisson attachment*:Batch Plant*; Benoto(Requires two Engineers); Boiler and Throttle Valve; Caisson Rigs*; Central Redi-Mix Plant*; Combination Backhoe Front Endloader Machine; Compressor and Throttle Valve; Concrete Breaker (Truck Mounted)*; Concrete Conveyor; Concrete Conveyor, Truck Mounted; Concrete Paver over 27E cu. ft.*; Concrete Paver 27E cu ft and Under*; Concrete Placer*; Concrete Placing Boom; Concrete Pump (Truck Mounted); Concrete Tower; Cranes*; Cranes, Hammerhead*; Cranes, (GCI and similar type Requires two operators only); Creter Crane; Crusher, Stone, etc; Derricks; Derricks, Traveling*; Formless Curb and Gutter Machine*; Grader, Elevating; Grouting Machines; Highlift Shovels or Front Endloader 2 1/4 yd. and over; Hoists, Elevators, Outside Type Rack and pinion and similar Machines; Hoists, One, Two, and Three Drum; Hoists, Two Tugger One Floor;

Hydraulic Backhoes*; Hydraulic Boom Trucks; Hydraulic Vac (and similar equipment);Locomotives; Motor Patrol*; Pile Drivers amd Skid Rig*; Post Hole Digger; Pre- Stress Machine; Pump Cretes Dual Ram(Requiring frequent Lubrication and Water); Pump Cretes; Squeeze Cretes-Screw Type Pumps Gypsum Bulker and Pump; Raised and Blind Hole Drill*; Roto Mill Grinder (36"" and Over)*; Roto Mill Grinder (Less Than 36"")*; Scoops-Tractor Drawn; Slip-Form Paver*; Straddle Buggies; Tournapull; Tractor with Boom, and Side Boom; and Trenching Machines*.

GROUP 2: Bobcat (over 3/4 cu yd); Boilers; Brick Forklift; Broom, Power Propelled; Bulldozers; Concrete Mixer (Two Bag and over); Conveyor, Portable; Forklift Trucks; Greaser Engineer; Highlift Shovels or Front End loaders under 2 1/4 cu yd; Aotomatic Hoists, Hoists, Inside Elevators; Hoists, Sewer Dragging Machine; Hoists, Tugger Single Drum; Laser Screed; Rock Drill (Self-Propelled); Rock Drill (Truck Mounted)*; Rollers; Steam Generators; Tractors; Tractor Drawn Vibratory Roller (Receives an additional $.50 per hour); Winch Trucks with ""A"" Frame.

GROUP 3: Air Compressor-Small 250 and Under (1 to 5 not to exceed a total of 300 ft); Air Compressor-Large over 250; Combination-Small Equipment Operator; Generator- Small 50 kw and under; Generator-Large over 50 kw; Heaters, Mechanical; Hoists, Inside Elevators (Remodeling or Renovatin work); Hydrualic Power Units (Pile Driving, Extracting, and Drilling); Low Boys; Pumps Over 3"" (1 To 3 not to exceed a total of 300 ft); Pumps, Well Points; Welding Machines (2 through 5); Winches, 4 Small Electric Drill Winches; Bobcat (up to and including 3/4 cu yd)

GROUP 4 - Bobcats and/or other Skid Steer Loaders; Brick Forklifts; Oilers *-Requires Oiler

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IRON0001-014 06/01/2021

DU PAGE (Eastern 1/4), LAKE, AND MCHENRY (Hebron, Woodstock, and East thereof) COUNTIES

	Rates	Fringes
IRONWORKER		
Sheeter	$ 54.76	41.45
Structural and Reinforcing	$ 54.51	41.45

IRON0063-003 06/01/2021

LAKE, DUPAGE (Eastern 1/4) and McHENRY (HEBRON, WOODSTOCK & EAST THEREOF) COUNTIES

	Rates	Fringes
IRONWORKER, ORNAMENTAL	$ 52.13	39.47

IRON0063-004 06/01/2020

LAKE, DUPAGE (Eastern 1/4), and McHENRY (HEBRON, WOODSTOCK & EAST THEREOF) COUNTIES

	Rates	Fringes
IRONWORKER		
Fence Erector	$ 44.42	29.73

IRON0136-002 07/01/2022

LAKE, DUPAGE (Eastern 1/4) and McHENRY (HEBRON, WOODSTOCK & East thereof) COUNTIES

	Rates	Fringes
IRONWORKER		
Machinery Movers; Riggers;		
Machinery Erectors	$ 47.00	40.54
Master Riggers	$ 49.50	40.54

IRON0393-002 06/01/2021

DUPAGE (REMAINDER), KANE, KENDALL (NORTHERN PART), and MCHENRY (SOUTHEAST 1/4) COUNTIES

	Rates	Fringes
IRONWORKER	$ 48.83	39.84

IRON0444-002 06/01/2022

DUPAGE (ARGONNE & VIC), GRUNDY, KENDALL (Southern Part), and WILL COUNTIES

	Rates	Fringes
IRONWORKER	$ 47.80	42.50

IRON0498-006 06/01/2021

McHENRY COUNTY (Northwest Part)

	Rates	Fringes

IRONWORKER.....$ 41.37 44.41

LABO0002-003 06/01/2022

DU PAGE COUNTY

	Rates	Fringes
LABORER		
GROUP 1	$ 47.40	33.16
GROUP 2	$ 47.40	33.16
GROUP 3	$ 47.48	33.16
GROUP 4	$ 47.50	33.16
GROUP 5	$ 47.55	33.16
GROUP 6	$ 47.60	33.16
GROUP 7	$ 47.63	33.16
GROUP 8	$ 47.73	33.16
GROUP 9	$ 47.75	33.16
GROUP 10	$ 47.85	33.16
GROUP 11	$ 47.68	33.16
GROUP 12	$ 48.40	33.16

LABORER CLASSIFICATIONS

GROUP 1: Building laborers, Plasterer tenders, Pumps for Dewatering & other Unclassified Laborers

GROUP 2: Fireproofing and fire shop laborers

GROUP 3: Cement gun laborers and hose

GROUP 4: Chimney over 40 feet; Scaffold laborers; Weldman-wreckers Burners

GROUP 5: Cement gun nozzle (gunite) laborers; Windlass and capstan person

GROUP 6: Stone derrickmen and handlers

GROUP 7: Jackhammermen, Power driven concrete saws and other power equipment

GROUP 8: Firebrick & boiler laborers

GROUP 9: Chimney on fire brick; Caisson Diggers; Well Point system men

GROUP 10: Boiler setter plastic laborers

GROUP 11: Jackhammermen on fire brick work only

GROUP 12: Dosimeter (any device) monitoring nuclear exposure); Asbestos abatement laborers; Toxic and Hazardous

waste removal laborers

LABO0075-001 06/01/2022

GRUNDY AND WILL COUNTIES

	Rates	Fringes
LABORER		
GROUP 1	$ 47.40	33.16
GROUP 2	$ 47.40	33.16
GROUP 3	$ 47.48	33.16
GROUP 4	$ 47.60	33.16
GROUP 5	$ 47.60	33.16
GROUP 6	$ 47.75	33.16
GROUP 7	$ 47.60	33.16

LABORER CLASSIFICATIONS

GROUP 1 - Mortar mixers, handling asphalt shingles; Scaffolds; Sewer and trench work (ground level down to 8 feet); Catch basin and manhole diggers, mesh handling on road work; Cement and mineral filler handler; Concrete puddlers; Batch dumpers (cement & asphalt); Vibrator operators; Sand and stone wheelers to mixer Handlers); Concrete wheelers; Airtamping hammermen; Concrete & paving breakers; Rock drillers/Jackhammermen; Chipping hammermen 1-Bag mixer; Asphalt laborer; Chain and power saws; Pit men; Fencing laborers; Mason tenders (mortar and brick wheeler); Kettlemen & tarmen, tank cleaners; Scaffold and staging laborers; Pot Firemen (tarmen); Heaters tender for any purpose; Water pumps (portable water pumps shall be tended by laborers if the employer determines tending is required); Rip rap; Handling of slab steel road forms in any manner, except road form setting, setting center strips, Contraction and expansion joints (road work); Unloading and handling of lumber, brick, transite materials, cast iron water pipe, reinforced concrete rods, sewer and drain tile, railroad tiles and all other creosoted materials; paving blocks and concrete forms; Handling of insulation of any type; all work involving the unloading of materials, fixtures, or furnishing, whether crated or uncrated; all mortar and composition mixers of sewer work; track laborers; Chimney and silo laborers working at a height of 1 to 48 feet; All laborers working on swinging suspended, or any type or make of scaffolding 1 to 48 feet; All laborers working inside a sphere or any type or make of tank; Working inside a sphere or any type or make of tank from bottom to a height of 48 feet; Form strippers (any type); Mechanical or motorized buggies, for concrete or masons employers; Use of skid steer loads or any other machinery which replaces the wheelbarrow or buggy; Handling multiple concrete duct or any other type of

pipe used in public utility work unless otherwise specified herein; Snapping of wall ties and removal of rods; drilling of anchor bolt holes; Concrete or asphalt clipper type saws and self-propelled saws; Shoulder and grade laborers; All hydraulic electric and air or any other type of tools; Grouting and caulking; Cleaning lumber, Nail pulling, Deck hand; Dredgehand; Shore laborer; Bankmen on Floating Plant; Tool and material checkers; Signalmen and Flagmen on all construction work; Cleaning of debris; Removal of trees; Concrete curing, temporary concrete protection regardless of manner or materials used; Laborers on Apsco; Janitorial; Wrecking and demolition laborers

GROUP 2 - Sewer and drain pipe layers and multiple concrete duct or any other type of pipe used, on public utility work (ground level to 8 feet); Pumpcrete pipe handlers

GROUP 3 - Asphalt rakers; Hod carriers; Plasterer laborers; Gunnite laborers, Slab for setters on roads, highways, streets, airport runaways, and radii (any type of form) stringline men for all aforementioned work; Wagon and tower drillers on land and floating plant used on dredging; Asphalt gunners and plug men (undercoating on road work); Mortar pump laborers; Plaster pump laborers

GROUP 4 - Tunnel miners, and all laborers inside tunnel; Air blow pipemen; Torchmen (burners); Mortaring men on sewer and drain pipe (the applying of mortar and composition mixes); All bottom men on sewer work-all sewer and drain pipelayers-multiple concrete duct or any other type of pipe used on public utility work-8 feet or more below ground level, and all other sewer and trench laborers 8 feet or more below ground level regardless of excavation area; All labor work inside cofferdam; Use of a 10 foot or more drill steel for hand held drills; Caisson laborers ground level down 15 feet; All air tools 8 feet or more below ground level; All laborers working on swinging-suspended or any type or make of scaffolds, 48 feet to 100 feet; All chimney and silo laborers working at a height of 48 to 100 feet; All tamping hammers over 150 lbs.; All laborers working inside of a sphere or any type or make of tank at a height of 48 feet to 100 feet; all hydraulic, electric and air tools or any other type 8 feet or more below ground level; Vibrators-any type-8 feet or more below ground level

GROUP 5 - Gunnite nozzle men; Caisson laborers and all tamping hammers from 150 lbs and over; from 15 feet below ground level down to 50 feet; and all laborers working inside of a sphere or any type of tank for every additional 50 feet or part thereof above 100 feet in height

GROUP 6 - All underground cavern laborers; Caisson laborers 50 feet or more below ground level; Laborers working under radio active conditions (suiting up); Blasting men

(Powdermen)
GROUP 7 - Dosimeter (any device) used for monitoring nuclear exposure; Asbestos abatement worker; Toxic and hazardous waste removal laborer; and chimney and silo laborers for every additional 50 feet or any part thereof above 100 feet high

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LABO0149-001 06/01/2022

KANE, KENDALL, AND McHENRY COUNTIES

	Rates	Fringes
LABORER		
GROUP 1	$ 47.40	33.16
GROUP 2	$ 47.65	33.16
GROUP 3	$ 47.40	33.16
GROUP 4	$ 47.65	33.16
GROUP 5	$ 47.65	33.16
GROUP 6	$ 48.10	33.16
GROUP 7	$ 48.10	33.16
GROUP 8	$ 47.80	33.16

LABORER CLASSIFICATIONS

GROUP 1 Common Laborer

GROUP 2 Power Vibrator

GROUP 3 Torchman (demolition only), Mortarmen

GROUP 4 Power Tamper

GROUP 5 Jackhammer & Airspade; Chainsaw, Swinging Stage and Boatswain Chair; Cement Gun Nozzleman; Hod Carrier; Plasterer Tender, and Tunnel Man

GROUP 6 Tile Layers; Bottom Men

GROUP 7 Caisson Laborers; Dynamiters

GROUP 8 Asbestos abatement laborers, Toxic and hazardous waste removal laborers, Dosimeter (any device) monitoring nuclear exposure

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LABO0152-001 06/01/2022

LAKE COUNTY

	Rates	Fringes
LABORER		

GROUP 1.....$ 47.40 33.16
GROUP 2.....$ 47.48 33.16
GROUP 3.....$ 47.50 33.16
GROUP 4.....$ 47.60 33.16
GROUP 5.....$ 47.60 33.16
GROUP 6.....$ 47.63 33.16
GROUP 7.....$ 47.73 33.16
GROUP 8.....$ 47.75 33.16
GROUP 9.....$ 47.60 33.16
GROUP 10.....$ 47.95 33.16
GROUP 11.....$ 47.60 33.16

LABORER CLASSIFICATIONS

GROUP 1: Building laborers; Plasterer tenders, General laborers (wrecking and demolition); Fireproofing and fire shop laborers

GROUP 2: Cement gun laborers and hose

GROUP 3: Chimney over 40 feet; Scaffold laborers; Wall men or wreckers

GROUP 4: Cement Gun nozzle (gunite) laborers

GROUP 5: Stone derrickmen and handlers

GROUP 6: Jackhammermen (tampers & vibrators); Power driven concrete saws

GROUP 7: Firebrick & boiler laborer setters

GROUP 8: Chimney laborers (on fire brick); Caisson Diggers; Well Point system men

GROUP 9: Windlass and capstan persons

GROUP 10: Boiler setter plastic laborers

GROUP 11: Dosimeter (any device) monitoring nuclear exposure; Asbestos abatement laborers; Toxic and hazardous waste removal laborers

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PAIN0014-002 06/01/2022

GRUNDY, LAKE, and WILL COUNTIES

	Rates	Fringes
PAINTER		
Brush, Decorator, and Paperhanger	$ 50.30	31.07

PAIN0027-003 06/01/2022

	Rates	Fringes
GLAZIER	$ 48.75	41.32

PAIN0030-001 06/01/2022

DE KALB, DU PAGE, KANE, KENDALL AND MCHENRY COUNTIES

	Rates	Fringes
PAINTER		
Brush, Drywall		
Taper/Finisher,		
Sandblaster, and Spray	$ 50.30	25.43

PLAS0005-003 07/01/2015

GRUNDY and WILL COUNTIES

	Rates	Fringes
PLASTERER	$ 42.25	26.65

PLAS0005-006 07/01/2015

DU PAGE COUNTY

	Rates	Fringes
PLASTERER	$ 42.25	26.65

PLAS0011-008 06/01/2022

DE KALB, KANE, KENDALL, AND McHENRY COUNTIES

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 49.70	38.94

PLAS0011-012 06/01/2020

GRUNDY AND WILL COUNTIES

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 44.19	39.41

PLAS0011-014 06/01/2022

LAKE COUNTY

	Rates	Fringes

CEMENT MASON/CONCRETE FINISHER...$ 48.00 40.66
PLASTERER.....$ 48.65 40.51

PLAS0803-002 08/01/2010

DUPAGE COUNTY

Rates Fringes

CEMENT MASON/CONCRETE FINISHER...$ 38.00 24.03

PLUM0093-001 06/01/2015

LAKE and McHENRY COUNTIES

Rates Fringes

PLUMBER.....$ 45.76 26.92

PLUM0130-002 06/01/2021

DUPAGE (Argonne National Laboratories and Fermi National Laboratory), GRUNDY & WILL COUNTIES

Rates Fringes

PLUMBER.....$ 52.80 34.67

PLUM0501-001 12/01/2013

DUPAGE (excluding Argonne National Laboratory and Fermi National Laboratory), KANE, and KENDALL (except the Mich-Wis Pumping Station in Milbrook, Silicas and Plant and Village of Newark, excludes Yorkville) COUNTIES

Rates Fringes

PLUMBER/PIPEFITTER.....$ 41.20 29.15

PLUM0597-001 06/01/2022

DUPAGE (Argonne National Laboratories, and Fermi National Laboratory), GRUNDY, LAKE, MCHENRY & WILL COUNTIES

Rates Fringes

PIPEFITTER.....$ 53.00 37.62
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* ROOF0011-004 06/01/2023

DUPAGE, KANE, KENDALL, LAKE, MCHENRY, and WILL COUNTIES

	Rates	Fringes
ROOFER	$ 49.00	28.38

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* ROOF0011-009 06/01/2023

	Rates	Fringes
ROOFER	$ 37.80	25.73

SFIL0281-002 01/01/2023

DuPAGE, KANE, KENDALL, LAKE, McHENRY, and WILL COUNTIES

	Rates	Fringes
SPRINKLER FITTER	$ 54.55	33.65

SHEE0073-003 06/01/2022

LAKE COUNTY

	Rates	Fringes
Sheet metal worker	$ 49.10	42.91

SHEE0073-004 06/08/2018

LAKE COUNTY

	Rates	Fringes
Sheet Metal Worker		
ALUMINUM GUTTER WORK	$ 31.32	37.02

SHEE0265-001 06/01/2022

DU PAGE, GRUNDY, KANE, KENDALL, McHENRY, and WILL COUNTIES

	Rates	Fringes
SHEET METAL WORKER	$ 53.33	35.41

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* TEAM0179-001 06/01/2017

GRUNDY, KENDALL, and WILL COUNTIES

	Rates	Fringes
TRUCK DRIVER		
2 or 3 Axle Trucks	$ 37.68	0.15+a
4 Axle Trucks	$ 37.83	0.15+a

5 Axle Trucks	$ 38.03	0.15+a
6 Axle Trucks	$ 38.23	0.15+a

FOOTNOTES:
a. $733.20 per week.
b. Lowboy rate based on number of axles

An additional $.20 per axle shall be paid for all vehicles with more than six (6) axles.

CLASSIFICATIONS:

Group 1 - Frame Truck when used for transportation purposes; Air Compressor and Welding Machines, including those pulled by cars, pick-up trucks and tractors; Ambulances; Articulated Dumps; Batch Gate Lockers; Batch Hopperman; Car and Truck Washers; Carry Alls; Forl Lifts and Hoisters; Helpers; Mechanics Helpers and Greasers; Oil Distributors, two-man operation; Pavement Breakers; Pole Trailer, up to 40 feet; Pothole Repair Trucks; Power Mower Tractors; Quick Change Barrier; Self-Propelled Chip Spreader; Shipping and Receiving Clerks and Checkers; Skipman; Slurry Trucks, two-man operation; Slurry Trucks, Conveyor Operated - 2 or 3 man operation; Teamsters; Unskilled Dumpmen; Warehousemen and Dockmen; Truck Drivers hauling warning lights, barricades, and portable toilets on the job site

Group 2 - Dispatcher; Dump Crets and Adgetators under 7 yards; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment under 16 cubic yards; Mixer Trucks under 7 yards; Ready-Mix Plant Hopper Operator; Winch Trucks, 2 Axles

Group 3 - Dump Crets and Adgetators, 7 yards and over; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment over 16 cubic yards; Explosives and/or Fission Material Trucks; Mixer Trucks 7 yards or over; Mobile Cranes while in transit; Oil Distributors, one-man operation; Pole Trailer, over 40 feet; Pole and Expandable Trailers hauling material over 50 feet long;
Slurry Trucks, one-man operation; Winch Trucks, 3 axles or more; Mechanic - *Truck Welder and *Truck Painter*These classifications shall only apply in areas where and when it has been a past area practice; Asphalt Plant Operators in areas where it has been past practice

Group 4 - Dual-purpose vehicels, such as mounted crane tucks with hoist and accessories; Foreman; Master Mechanic; Self-loading equipment like P.B. and trucks with scoops on the front

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* TEAM0301-001 06/01/2019

LAKE AND MCHENRY COUNTIES

	Rates	Fringes
TRUCK DRIVER		
2-3 AXLES	$ 39.34	10.75+a
4 AXLES	$ 39.49	10.75+a
5 AXLES	$ 39.69	10.75+a
6 AXLES	$ 39.89	10.75+a

FOOTNOTES:
a. 380.00 per week pension.
b. Lowboy rate based on number of axles

An additional $.20 per axle shall be paid for all vehicles with more than six (6) axles.

Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

900 straight time hours or more in 1 calendar year for the same employer shall receive 1 week paid vacation; 3 years - 2 weeks paid vacation; 10 years - 3 weeks paid vacation; 20 years - 4 weeks paid vacation.

CLASSIFICATIONS:

Group 1 - Frame Truck when used for transportation purposes; Air Compressor and Welding Machines, including those pulled by cars, pick-up trucks and tractors; Ambulances; Articulated Dumps; Batch Gate Lockers; Batch Hopperman; Car and Truck Washers; Carry Alls; Forl Lifts and Hoisters; Helpers; Mechanics Helpers and Greasers; Oil Distributors, two-man operation; Pavement Breakers; Pole Trailer, up to 40 feet; Pothole Repair Trucks; Power Mower Tractors; Quick Change Barrier; Self-Propelled Chip Spreader; Shipping and Receiving Clerks and Checkers; Skipman; Slurry Trucks, two-man operation; Slurry Trucks, Conveyor Operated - 2 or 3 man operation; Teamsters; Unskilled Dumpmen; Warehousemen and Dockmen; Truck Drivers hauling warning lights, barricades, and portable toilets on the job site

Group 2 - Dispatcher; Dump Crets and Adgetators under 7 yards; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment under 16 cubic yards; Mixer Trucks under 7 yards; Ready-Mix Plant Hopper Operator; Winch Trucks, 2 Axles

Group 3 - Dump Crets and Adgetators, 7 yards and over; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump

Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment over 16 cubic yards; Explosives and/or Fission Material Trucks; Mixer Trucks 7 yards or over; Mobile Cranes while in transit; Oil Distributors, one-man operation; Pole Trailer, over 40 feet; Pole and Expandable Trailers hauling material over 50 feet long;
Slurry Trucks, one-man operation; Winch Trucks, 3 axles or more; Mechanic - *Truck Welder and *Truck Painter*These classifications shall only apply in areas where and when it has been a past area practice; Asphalt Plant Operators in areas where it has been past practice

Group 4 - Dual-purpose vehicels, such as mounted crane tucks with hoist and accessories; Foreman; Master Mechanic; Self-loading equipment like P.B. and trucks with scoops on the front

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* TEAM0673-003 06/01/2019

DU PAGE and KANE COUNTIES

	Rates	Fringes
TRUCK DRIVER		
2-3 AXLES	$ 38.47	0.25+a
4 AXLES	$ 38.62	0.25+a
5 AXLES	$ 38.82	0.25+a
6 AXLES	$ 39.02	0.25+a

FOOTNOTE: a. $861.10 per week.

An additional $.20 per axle shall be paid for all vehicles with more than six (6) axles.

Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

900 straight time hours or more in 1 calendar year for the same employer shall receive 1 week paid vacation; 3 years - 2 weeks paid vacation; 10 years - 3 weeks paid vacation; 20 years - 4 weeks paid vacation.

CLASSIFICATIONS:

Group 1 - Frame Truck when used for transportation purposes; Air Compressor and Welding Machines, including those pulled by cars, pick-up trucks and tractors; Ambulances; Articulated Dumps; Batch Gate Lockers; Batch Hopperman; Car and Truck Washers; Carry Alls; Forl Lifts and Hoisters; Helpers; Mechanics Helpers and Greasers; Oil Distributors, two-man operation; Pavement Breakers; Pole Trailer, up to 40 feet; Pothole Repair Trucks; Power Mower Tractors; Quick

Change Barrier; Self-Propelled Chip Spreader; Shipping and Receiving Clerks and Checkers; Skipman; Slurry Trucks, two-man operation; Slurry Trucks, Conveyor Operated - 2 or 3 man operation; Teamsters; Unskilled Dumpmen; Warehousemen and Dockmen; Truck Drivers hauling warning lights, barricades, and portable toilets on the job site

Group 2 - Dispatcher; Dump Crets and Adgetators under 7 yards; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment under 16 cubic yards; Mixer Trucks under 7 yards; Ready-Mix Plant Hopper Operator; Winch Trucks, 2 Axles

Group 3 - Dump Crets and Adgetators, 7 yards and over; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment over 16 cubic yards; Explosives and/or Fission Material Trucks; Mixer Trucks 7 yards or over; Mobile Cranes while in transit; Oil Distributors, one-man operation; Pole Trailer, over 40 feet; Pole and Expandable Trailers hauling material over 50 feet long;
Slurry Trucks, one-man operation; Winch Trucks, 3 axles or more; Mechanic - *Truck Welder and *Truck Painter*These classifications shall only apply in areas where and when it has been a past area practice; Asphalt Plant Operators in areas where it has been past practice

Group 4 - Dual-purpose vehicels, such as mounted crane tucks with hoist and accessories; Foreman; Master Mechanic; Self-loading equipment like P.B. and trucks with scoops on the front

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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.

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

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

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average

calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

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

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations

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

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

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

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

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

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

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISIO"

"General Decision Number: IL20230020 05/12/2023

Superseded General Decision Number: IL20220020

State: Illinois

Construction Types: Building Landscape, Heavy Landscape, Highway Landscape and Residential Landscape

Counties: Boone, Cook, De Kalb, Du Page, Grundy, Henry, Kane, Kankakee, Kendall, Lake, McHenry, McLean, Ogle, Peoria, Rock Island, Tazewell, Will, Winnebago and Woodford Counties in Illinois.

LANDSCAPING WORK ON BUILDING, RESIDENTIAL, HEAVY AND HIGHWAY CONSTRUCTION PROJECTS.

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	Executive Order 14026 generally applies to the contract. The contractor must pay all covered workers at least $16.20 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 2023.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	Executive Order 13658 generally applies to the contract. The contractor must pay all covered workers at least $12.15 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2023.

|_____|_____|

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at http://www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/06/2023
1	05/12/2023

ENGI0150-013 06/01/2021

BUILDING AND HIGHWAY CONSTRUCTION (LANDSCAPE WORK): The landscape work for the Landscape Equipment Operator excludes the preparation of sub-grade prior to application of finish landscape materials and the utilization of any equipment over one cubic yard.

BOONE, COOK, DUPAGE, GRUNDY, KANE, KENDALL, LAKE, MCHENRY, AND WILL COUNTIES

	Rates	Fringes
Operators:	$ 34.55	8.00+A+B

Includes Angle Dozer, Small; Bobcat and other similar type machines, 1 cu yd or less; Chipping Machine; Combination Backhoe and Front End Loader 1 cu yd or less; Fork Lift Truck; Hi-Reach and High-Ranger;Hydraulic Boom with Clam;Log Skidder; Sttraw Blower and Seeder; Stump Machine;Tractors, Crawlers, Rubber Tire Tractors, Highlift Shovels or Front End Loaders 1 cu yd or less; Tree Spades, all; Utility Tractor and attachments, and Rubber Tire Front End loader or similar machine of 1 to 1.5 cu yd solely used for placement of large decorative boulders, trees with balled soil, and other decorative landscape material too large to be accommodated in a 1 cu yd bucket. All other equipment utilized for performing landscape work, tree trimming or removal of stees, and to install plants; transport trees; excavate plant pits; place soil and other landscape materials; and apply finish landscape material on subgrade prepared by others

FOOTNOTE:

A. Health and Welfare contribution is $1,496.00 per month.

B. Paid Holidays: New Year's Day; Memorial Day; Fourth of July; Labor Day; Thanksgiving Day; and Christmas Day provided that all such employees shall have in fact worked their regularly scheduled work day immediately preceding and the regularly scheduled work day immediately succeeding the occurrence of such holiday.

ENGI0150-023 06/01/2021

HIGHWAY CONSTRUCTION (LANDSCAPE WORK): The landscape work for the Landscape Equipment Operator excludes the preparation of sub-grade prior to application of finish landscape materials and the utilization of any equipment over one cubic yard.

HENRY, MCLEAN, OGLE, PEORIA, ROCK ISLAND, TAZEWELL, WINNEBAGO, and WOODFORD COUNTIES

	Rates	Fringes
Operators:	$ 34.55	8.00+A+B

Includes the following: Angle Dozer, Small; Bobcat and other similar type machines, 1 cu yd or less; Chipping Machine; Combination Backhoe and Front End Loader 1 cu yd or less; Fork Lift Truck; Hi-Reach and High-Ranger;Hydraulic Boom with Clam;Log Skidder; Sttraw Blower and Seeder; Stump Machine;Tractors, Crawlers, Rubber Tire Tractors, Highlift Shovels or Front End Loaders 1 cu yd or less; Tree Spades, all; Utility Tractor and attachments, and Rubber Tire Front End loader or similar machine of 1 to 1.5 cu yd solely used for placement of large decorative boulders, trees with balled soil, and other decorative landscape material too large to be accommodated in a 1 cu yd bucket. All other equipment utilized for performing landscape work, tree trimming or removal of stees, and to install plants; transport trees; excavate plant pits; place soil and other landscape materials; and apply finish landscape material on subgrade prepared by others

FOOTNOTE:

A. Health and Welfare contribution is $1,496.00 per month.

B. Paid Holidays: New Year's Day; Memorial Day; Fourth of July; Labor Day; Thanksgiving Day; and Christmas Day provided that all such employees shall have in fact worked their regularly scheduled work day immediately preceding and the regularly scheduled work day immediately succeeding the occurrence of such holiday.

LABO0032-004 05/01/2021

HIGHWAY CONSTRUCTION

WINNEBAGO COUNTY

	Rates	Fringes
Landscape Laborer	$ 38.75	34.91

LABO0362-003 05/01/2018

HIGHWAY CONSTRUCTION

MCLEAN COUNTY

	Rates	Fringes
Landscape Laborer	$ 31.08	24.43

LABO0751-004 05/01/2021

HIGHWAY CONSTRUCTION

KANKAKEE COUNTY

	Rates	Fringes
Landscape Laborer	$ 39.44	32.54

LABO0852-004 05/01/2006

HIGHWAY CONSTRUCTION

ROCK ISLAND AND HENRY COUNTIES

	Rates	Fringes
Landscape Laborer	$ 21.94	12.79

LABO0996-004 05/01/2018

HIGHWAY CONSTRUCTION

PEORIA, TAZEWELL, AND WOODFORD COUNTIES

	Rates	Fringes
Landscape Laborer	$ 32.73	23.74

TEAM0026-005 05/01/2020

MCLEAN (South of a straight line from where Route 24

intersects the Woodford County line in a Southeast direction to the South Southwest corner of Livingston County) COUNTY

	Rates	Fringes
TRUCK DRIVER		
Group 1	$ 38.93	20.39
Group 2	$ 39.50	20.39
Group 3	$ 39.77	20.39
Group 4	$ 40.14	20.39
Group 5	$ 41.21	20.39

CLASSIFICATIONS:

GROUP 1: Drivers on 2 axles hauling less than 9 tons; air compressor & welding machines and brooms, including those pulled by separate units; Truck Driver Helper, warehouse employees; Mechanic Helpers; greasers and tiremen; pick-up trucks when hauling material, tools, or workers to and from and on the job site; and forklifts up to 6,000 lb capacity.

GROUP 2: 2 or 3 axles hualing more than 9 tons but hauling less than 16 tons; A-frame winch trucks; hydrolift trucks; Vactor Trucks or similar equipment when used for transportation purposes; Forklift over 6,000 lb.capacity; winch trucks; and four axle combiation units.

GROUP 3: 2, 3 or 4 Axles hauling 16 tons or more; 5-Axles or more combination units; drivers on water pulls; articulated dump trucks; mechanics and working forepersons.

GROUP 4: Low Boy and Oil Distributors.

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

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* TEAM0179-004 06/01/2017

GRUNDY, KENDALL, MCLEAN (North of a straight line starting at the intersection of McLean-Woodford Counties line & Route 24 in a Southeastern direction to the South Southwest corner of Livingston County), WILL, and WOODFORD (Northeast corner east of Route 51/251 & North of Route 24) COUNTIES

	Rates	Fringes
TRUCK DRIVER		
2-3 AXLES	$ 37.68	0.15+a
4 AXLES	$ 37.83	0.15+a
5 AXLES	$ 38.03	0.15+a
6 AXLES	$ 38.23	0.15+a

FOOTNOTES:
a. $733.20 per week.
b. Lowboy rate based on number of axles

An additional $.20 per axle shall be paid for all vehicles with more than six (6) axles.

CLASSIFICATIONS:

Group 1 - Frame Truck when used for transportation purposes; Air Compressor and Welding Machines, including those pulled by cars, pick-up trucks and tractors; Ambulances; Articulated Dumps; Batch Gate Lockers; Batch Hopperman; Car and Truck Washers; Carry Alls; Forl Lifts and Hoisters; Helpers; Mechanics Helpers and Greasers; Oil Distributors, two-man operation; Pavement Breakers; Pole Trailer, up to 40 feet; Pothole Repair Trucks; Power Mower Tractors; Quick Change Barrier; Self-Propelled Chip Spreader; Shipping and Receiving Clerks and Checkers; Skipman; Slurry Trucks, two-man operation; Slurry Trucks, Conveyor Operated - 2 or 3 man operation; Teamsters; Unskilled Dumpmen; Warehousemen and Dockmen; Truck Drivers hauling warning lights, barricades, and portable toilets on the job site

Group 2 - Dispatcher; Dump Crets and Adgetators under 7 yards; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment under 16 cubic yards; Mixer Trucks under 7 yards; Ready-Mix Plant Hopper Operator; Winch Trucks, 2 Axles

Group 3 - Dump Crets and Adgetators, 7 yards and over; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment over 16 cubic yards; Explosives and/or Fission Material Trucks; Mixer Trucks 7 yards or over; Mobile Cranes while in transit; Oil Distributors, one-man operation; Pole Trailer, over 40 feet; Pole and Expandable Trailers hauling material over 50 feet long;
Slurry Trucks, one-man operation; Winch Trucks, 3 axles or more; Mechanic - *Truck Welder and *Truck Painter*These classifications shall only apply in areas where and when it has been a past area practice; Asphalt Plant Operators in areas where it has been past practice

Group 4 - Dual-purpose vehicels, such as mounted crane tucks with hoist and accessories; Foreman; Master Mechanic; Self-loading equipment like P.B. and trucks with scoops on the front

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* TEAM0179-008 06/01/2019

KANKAKEE COUNTY

	Rates	Fringes
TRUCK DRIVER		
2 or 3 axles	$ 39.20	0.25+a
4 axles	$ 39.35	0.25+a
5 axles	$ 39.55	0.25+a
6 axles	$ 39.75	0.25+a
All Lowboy Trucks	$ 39.75	0.25+a

FOOTNOTES:
a. $829.20 per week.

An additional $.20 per axle shall be paid for all vehicles with more than six (6) axles.

CLASSIFICATIONS:

Group 1 - Frame Truck when used for transportation purposes; Air Compressor and Welding Machines, including those pulled by cars, pick-up trucks and tractors; Ambulances; Articulated Dumps; Batch Gate Lockers; Batch Hopperman; Car and Truck Washers; Carry Alls; Forl Lifts and Hoisters; Helpers; Mechanics Helpers and Greasers; Oil Distributors, two-man operation; Pavement Breakers; Pole Trailer, up to 40 feet; Pothole Repair Trucks; Power Mower Tractors; Quick Change Barrier; Self-Propelled Chip Spreader; Shipping and Receiving Clerks and Checkers; Skipman; Slurry Trucks, two-man operation; Slurry Trucks, Conveyor Operated - 2 or 3 man operation; Teamsters; Unskilled Dumpmen; Warehousemen and Dockmen; Truck Drivers hauling warning lights, barricades, and portable toilets on the job site

Group 2 - Dispatcher; Dump Crets and Adgetators under 7 yards; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment under 16 cubic yards; Mixer Trucks under 7 yards; Ready-Mix Plant Hopper Operator; Winch Trucks, 2 Axles

Group 3 - Dump Crets and Adgetators, 7 yards and over; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment over 16 cubic yards; Explosives and/or Fission Material Trucks; Mixer Trucks 7 yards or over; Mobile Cranes while in transit; Oil Distributors, one-man operation; Pole Trailer, over 40 feet; Pole and Expandable Trailers hauling material over 50 feet long;
Slurry Trucks, one-man operation; Winch Trucks, 3 axles or more; Mechanic - *Truck Welder and *Truck Painter*These

classifications shall only apply in areas where and when it has been a past area practice; Asphalt Plant Operators in areas where it has been past practice

Group 4 - Dual-purpose vehicels, such as mounted crane tucks with hoist and accessories; Foreman; Master Mechanic; Self-loading equipment like P.B. and trucks with scoops on the front

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* TEAM0301-001 06/01/2019

LAKE AND MCHENRY COUNTIES

	Rates	Fringes
TRUCK DRIVER		
2-3 AXLES	$ 39.34	10.75+a
4 AXLES	$ 39.49	10.75+a
5 AXLES	$ 39.69	10.75+a
6 AXLES	$ 39.89	10.75+a

FOOTNOTES:
a. 380.00 per week pension.
b. Lowboy rate based on number of axles

An additional $.20 per axle shall be paid for all vehicles with more than six (6) axles.

Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

900 straight time hours or more in 1 calendar year for the same employer shall receive 1 week paid vacation; 3 years - 2 weeks paid vacation; 10 years - 3 weeks paid vacation; 20 years - 4 weeks paid vacation.

CLASSIFICATIONS:

Group 1 - Frame Truck when used for transportation purposes; Air Compressor and Welding Machines, including those pulled by cars, pick-up trucks and tractors; Ambulances; Articulated Dumps; Batch Gate Lockers; Batch Hopperman; Car and Truck Washers; Carry Alls; Forl Lifts and Hoisters; Helpers; Mechanics Helpers and Greasers; Oil Distributors, two-man operation; Pavement Breakers; Pole Trailer, up to 40 feet; Pothole Repair Trucks; Power Mower Tractors; Quick Change Barrier; Self-Propelled Chip Spreader; Shipping and Receiving Clerks and Checkers; Skipman; Slurry Trucks, two-man operation; Slurry Trucks, Conveyor Operated - 2 or 3 man operation; Teamsters; Unskilled Dumpmen; Warehousemen and Dockmen; Truck Drivers hauling warning lights, barricades, and portable toilets on the job site

Group 2 - Dispatcher; Dump Crets and Adgetators under 7 yards; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment under 16 cubic yards; Mixer Trucks under 7 yards; Ready-Mix Plant Hopper Operator; Winch Trucks, 2 Axles

Group 3 - Dump Crets and Adgetators, 7 yards and over; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment over 16 cubic yards; Explosives and/or Fission Material Trucks; Mixer Trucks 7 yards or over; Mobile Cranes while in transit; Oil Distributors, one-man operation; Pole Trailer, over 40 feet; Pole and Expandable Trailers hauling material over 50 feet long;
Slurry Trucks, one-man operation; Winch Trucks, 3 axles or more; Mechanic - *Truck Welder and *Truck Painter*These classifications shall only apply in areas where and when it has been a past area practice; Asphalt Plant Operators in areas where it has been past practice

Group 4 - Dual-purpose vehicels, such as mounted crane tucks with hoist and accessories; Foreman; Master Mechanic; Self-loading equipment like P.B. and trucks with scoops on the front

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* TEAM0325-004 06/01/2020

BOONE and WINNEBAGO COUNTIES

	Rates	Fringes
TRUCK DRIVER		
2 - 3 Axles	$ 39.87	22.60
4 Axles	$ 40.02	22.60
5 Axles	$ 40.22	22.60
6 Axles	$ 40.33	22.60

FOOTNOTE: An additional $.20 per axle shall be paid for all vehicles with more than six (6) axles.

CLASSIFICATIONS:

Group 1 - Frame Truck when used for transportation purposes; Air Compressor and Welding Machines, including those pulled by cars, pick-up trucks and tractors; Ambulances; Batch Gate Lockers; Batch Hopperman; Car and Truck Washers; Forl Lifts and Hoisters; Helpers;
Mechanics Helpers and Greasers; Oil Distributors, two-man operation; Pavement Breakers
Pole Trailer, up to 40 feet; Power Mower Tractors; Skipman; Slurry Trucks, two-man operation; Teamsters; Truck Drivers

hauling warning lights, barricades, and portable toilets on the job site

Group 2 - Dump Crets and Adgetators under 7 yards; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment under 16 cubic yards; Mixer Trucks under 7 yards; Ready-Mix Plant Hopper Operator; Winch Trucks, 2 Axles

Group 3 - Dump Crets and Adgetators, 7 yards and over; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment over 16 cubic yards; Explosives and/or Fission Material Trucks; Mixer Trucks 7 yards or over; Mobile Cranes while in transit; Oil Distributors, one-man operation
Pole Trailer, over 40 feet; Pole and Expandable Trailers hauling material over 50 feet long, additional $0.50 per hour; Slurry Trucks, one-man operation; Winch Trucks, 3 axles or more
*Mechanic*Truck Welder and Truck Painter; *Winter Rate: Between Dec. 15 and Feb. 28 the mechanic and welder rate shall be $2.00 less than the scheduled scale. Truck Painter and Truck Welder classifications shall only apply in areas where and when it has been a past area practice;
Dual-purpose vehicels, such as mounted crane tucks with hoist and accessories

Group 4 - Foreman; Master Mechanic; Self-loading equipment like P.B. and trucks with scoops on the front

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* TEAM0330-004 06/01/2017

DEKALB and OGLE (North of Route 72/East of Route 251, Adeline, Byron, Creston, Dement, Forreston North of Route 72, Leaf River North of Route 72, Lynnville, Monroe, Rochelle, & Scott) COUNTIES

	Rates	Fringes
TRUCK DRIVER		
2-3 AXLES	$ 36.64	0.15+a
4 AXLES	$ 36.79	0.15+a
5 AXLES	$ 36.99	0.15+a
6 AXLES	$ 37.19	0.15+a

FOOTNOTE: a. $780.90 per week

An additional $.20 per axle shall be paid for all vehicles with more than six (6) axles.

Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

900 straight time hours or more in 1 calendar year for the same employer shall receive 1 week paid vacation; 3 years - 2 weeks paid vacation; 10 years - 3 weeks paid vacation; 20 years - 4 weeks paid vacation.

CLASSIFICATIONS:

Group 1 - Frame Truck when used for transportation purposes; Air Compressor and Welding Machines, including those pulled by cars, pick-up trucks and tractors; Ambulances; Articulated Dumps; Batch Gate Lockers; Batch Hopperman; Car and Truck Washers; Carry Alls; Forl Lifts and Hoisters; Helpers; Mechanics Helpers and Greasers; Oil Distributors, two-man operation; Pavement Breakers; Pole Trailer, up to 40 feet; Pothole Repair Trucks; Power Mower Tractors; Quick Change Barrier; Self-Propelled Chip Spreader; Shipping and Receiving Clerks and Checkers; Skipman; Slurry Trucks, two-man operation; Slurry Trucks, Conveyor Operated - 2 or 3 man operation; Teamsters; Unskilled Dumpmen; Warehousemen and Dockmen; Truck Drivers hauling warning lights, barricades, and portable toilets on the job site

Group 2 - Dispatcher; Dump Crets and Adgetators under 7 yards; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment under 16 cubic yards; Mixer Trucks under 7 yards; Ready-Mix Plant Hopper Operator; Winch Trucks, 2 Axles

Group 3 - Dump Crets and Adgetators, 7 yards and over; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment over 16 cubic yards; Explosives and/or Fission Material Trucks; Mixer Trucks 7 yards or over; Mobile Cranes while in transit; Oil Distributors, one-man operation; Pole Trailer, over 40 feet; Pole and Expandable Trailers hauling material over 50 feet long;
Slurry Trucks, one-man operation; Winch Trucks, 3 axles or more; Mechanic - *Truck Welder and *Truck Painter*These classifications shall only apply in areas where and when it has been a past area practice; Asphalt Plant Operators in areas where it has been past practice

Group 4 - Dual-purpose vehicels, such as mounted crane tucks with hoist and accessories; Foreman; Master Mechanic; Self-loading equipment like P.B. and trucks with scoops on the front

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* TEAM0371-004 05/01/2022

HENRY and ROCK ISLAND COUNTIES

	Rates	Fringes
TRUCK DRIVER		
Group 1	$ 41.00	22.37
Group 2	$ 41.58	22.37
Group 3	$ 41.90	22.37
Group 4	$ 42.25	22.37
Group 5	$ 43.36	22.37

CLASSIFICATIONS:

GROUP 1: Drivers on 2 axles hauling less than 9 tons; air compressor & welding machines and brooms, including those pulled by separate units; Truck Driver Helper, warehouse employees; Mechanic Helpers; greasers and tiremen; pick-up trucks when hauling material, tools, or workers to and from and on the job site; and forklifts up to 6,000 lb capacity.

GROUP 2: 2 or 3 axles hualing more than 9 tons but hauling less than 16 tons; A-frame winch trucks; hydrolift trucks; Vactor Trucks or similar equipment when used for transportation purposes; Forklift over 6,000 lb.capacity; winch trucks; and four axle combiation units.

GROUP 3: 2, 3 or 4 Axles hauling 16 tons or more; 5-Axles or more combination units; drivers on water pulls; articulated dump trucks; mechanics and working forepersons.

GROUP 4: Low Boy and Oil Distributors.

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

TEAM0627-004 05/01/2019

PEORIA, TAZEWELL, and WOODFORD COUNTIES

	Rates	Fringes
TRUCK DRIVER		
Group 1	$ 38.06	19.62
Group 2	$ 38.61	19.62
Group 3	$ 38.87	19.62
Group 4	$ 39.23	19.62
Group 5	$ 40.27	19.62

CLASSIFICATIONS:

GROUP 1: Drivers on 2 axles hauling less than 9 tons; air compressor & welding machines and brooms, including those

pulled by separate units; Truck Driver Helper, warehouse employees; Mechanic Helpers; greasers and tiremen; pick-up trucks when hauling material, tools, or workers to and from and on the job site; and forklifts up to 6,000 lb capacity.

GROUP 2: 2 or 3 axles hualing more than 9 tons but hauling less than 16 tons; A-frame winch trucks; hydrolift trucks; Vactor Trucks or similar equipment when used for transportation purposes; Forklift over 6,000 lb.capacity; winch trucks; and four axle combiation units.

GROUP 3: 2, 3 or 4 Axles hauling 16 tons or more; 5-Axles or more combination units; drivers on water pulls; articulated dump trucks; mechanics and working forepersons.

GROUP 4: Low Boy and Oil Distributors.

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

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* TEAM0673-003 06/01/2019

DU PAGE and KANE COUNTIES

	Rates	Fringes
TRUCK DRIVER		
2-3 AXLES	$ 38.47	0.25+a
4 AXLES	$ 38.62	0.25+a
5 AXLES	$ 38.82	0.25+a
6 AXLES	$ 39.02	0.25+a

FOOTNOTE: a. $861.10 per week.

An additional $.20 per axle shall be paid for all vehicles with more than six (6) axles.

Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

900 straight time hours or more in 1 calendar year for the same employer shall receive 1 week paid vacation; 3 years - 2 weeks paid vacation; 10 years - 3 weeks paid vacation; 20 years - 4 weeks paid vacation.

CLASSIFICATIONS:

Group 1 - Frame Truck when used for transportation purposes; Air Compressor and Welding Machines, including those pulled by cars, pick-up trucks and tractors; Ambulances; Articulated Dumps; Batch Gate Lockers; Batch Hopperman; Car and Truck Washers; Carry Alls; Forl Lifts and Hoisters; Helpers; Mechanics Helpers and Greasers; Oil Distributors,

two-man operation; Pavement Breakers; Pole Trailer, up to 40 feet; Pothole Repair Trucks; Power Mower Tractors; Quick Change Barrier; Self-Propelled Chip Spreader; Shipping and Receiving Clerks and Checkers; Skipman; Slurry Trucks, two-man operation; Slurry Trucks, Conveyor Operated - 2 or 3 man operation; Teamsters; Unskilled Dumpmen; Warehousemen and Dockmen; Truck Drivers hauling warning lights, barricades, and portable toilets on the job site

Group 2 - Dispatcher; Dump Crets and Adgetators under 7 yards; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment under 16 cubic yards; Mixer Trucks under 7 yards; Ready-Mix Plant Hopper Operator; Winch Trucks, 2 Axles

Group 3 - Dump Crets and Adgetators, 7 yards and over; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment over 16 cubic yards; Explosives and/or Fission Material Trucks; Mixer Trucks 7 yards or over; Mobile Cranes while in transit; Oil Distributors, one-man operation; Pole Trailer, over 40 feet; Pole and Expandable Trailers hauling material over 50 feet long;
Slurry Trucks, one-man operation; Winch Trucks, 3 axles or more; Mechanic - *Truck Welder and *Truck Painter*These classifications shall only apply in areas where and when it has been a past area practice; Asphalt Plant Operators in areas where it has been past practice

Group 4 - Dual-purpose vehicels, such as mounted crane tucks with hoist and accessories; Foreman; Master Mechanic; Self-loading equipment like P.B. and trucks with scoops on the front

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TEAM0722-005 05/01/2015

OGLE (North of Route 72/East of Route 251) COUNTY

	Rates	Fringes
TRUCK DRIVER		
Group 1	$ 34.10	17.09
Group 2	$ 34.60	17.09
Group 3	$ 34.82	17.09
Group 4	$ 35.14	17.09
Group 5	$ 36.06	17.09

CLASSIFICATIONS:

GROUP 1: Drivers on 2 axles hauling less than 9 tons; air compressor & welding machines and brooms, including those

pulled by separate units; Truck Driver Helper, warehouse employees; Mechanic Helpers; greasers and tiremen; pick-up trucks when hauling material, tools, or workers to and from and on the job site; and forklifts up to 6,000 lb capacity.

GROUP 2: 2 or 3 axles hualing more than 9 tons but hauling less than 16 tons; A-frame winch trucks; hydrolift trucks; Vactor Trucks or similar equipment when used for transportation purposes; Forklift over 6,000 lb.capacity; winch trucks; and four axle combiation units.

GROUP 3: 2, 3 or 4 Axles hauling 16 tons or more; 5-Axles or more combination units; drivers on water pulls; articulated dump trucks; mechanics and working forepersons.

GROUP 4: Low Boy and Oil Distributors.

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

TEAM0731-001 06/01/2017

COOK COUNTY - HEAVY AND HIGHWAY

	Rates	Fringes
TRUCK DRIVER		
2 or 3 Axles	$ 35.60	22.10
4 Axles	$ 35.85	22.10
5 Axles	$ 36.05	22.10
6 Axles	$ 36.25	22.10

FOOTNOTES:

A. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

B. 900 straight time hours or more in 1 calendar year for the same employer shall receive 1 week paid vacation; 3 years - 2 weeks paid vacation; 10 years - 3 weeks paid vacation; 20 years - 4 weeks paid vacation.

C. An additional $.20 per axle shall be paid for all vehicles with more than six (6) axles.

TEAM0786-001 06/01/2017

COOK COUNTY - BUILDING AND RESIDENTIAL

	Rates	Fringes

TRUCK DRIVER
2 & 3 Axles.....$ 39.942 0.25+a
4 Axles.....$ 39.75 0.25+a
5 Axles.....$ 39.967 0.25+a
6 Axles.....$ 40.184 0.25+a

FOOTNOTES:

a. $719.00 per week.

An additional $.20 per axle shall be paid for all vehicles with more than six (6) axles.

Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

900 straight time hours or more in 1 calendar year for the same employer shall receive 1 week paid vacation; 3 years - 2 weeks paid vacation; 10 years - 3 weeks paid vacation; 20 years - 4 weeks paid vacation.

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* SUIL1993-001 01/19/1993

BUILDING CONSTRUCTION (LANDSCAPE WORK):

	Rates	Fringes
LABORER		
BOONE, GRUNDY, KANE, KENDALL, LAKE, MCHENRY, & WILL COUNTIES		
LANDSCAPE LABORERS	$ 7.25 **	
COOK COUNTY		
LANDSCAPE LABORERS	$ 7.25 **	
LANDSCAPE PLANTSMAN	$ 9.80 **	1.82
DE KALB COUNTY		
LANDSCAPE LABORERS	$ 7.25 **	
LANDSCAPE OPERATORS	$ 7.25 **	
LANDSCAPE PLANTSMAN	$ 9.66 **	.26
DU PAGE COUNTY		
LANDSCAPE LABORERS	$ 7.25 **	
LANDSCAPE PLANTSMAN	$ 9.04 **	1.16
GRUNDY, LAKE & WILL COUNTIES		
LANDSCAPE DRIVER 2 & 3 Axles	$ 11.86 **	2.81
LANDSCAPE PLANTSMAN	$ 12.00 **	3.32

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* SUIL1993-002 01/19/1993

HEAVY CONSTRUCTION (LANDSCAPE WORK)

	Rates	Fringes

LABORER
BOONE, GRUNDY, KANE,
KENDALL, LAKE, MCHENRY &
WILL COUNTIES:
LANDSCAPE DRIVER, 2 & 3
AXLES.....$ 11.94 ** 2.42
LANDSCAPE LABORERS.....$ 7.25 **
LANDSCAPE OPERATORS.....$ 13.11 ** 3.01
LANDSCAPE PLANTSMAN.....$ 9.73 ** 2.05
COOK COUNTY:
LANDSCAPE DRIVER, 2 & 3
AXLES.....$ 9.93 ** 1.89
LANDSCAPE LABORERS.....$ 7.25 **
LANDSCAPE OPERATORS.....$ 10.98 ** 2.12
LANDSCAPE PLANTSMAN.....$ 10.08 ** 2.06
DE KALB COUNTY:
LANDSCAPE LABORERS.....$ 7.25 **
LANDSCAPE OPERATORS.....$ 7.25 **
LANDSCAPE PLANTSMAN.....$ 9.66 ** .26
DU PAGE COUNTY:
LANDSCAPE DRIVER, 2 & 3
AXLES.....$ 8.32 ** 1.02
LANDSCAPE LABORERS.....$ 7.25 **
LANDSCAPE OPERATORS.....$ 10.75 **
LANDSCAPE PLANTSMAN.....$ 10.65 **

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* SUIL1993-003 01/19/1993

HIGHWAY CONSTRUCTION (LANDSCAPE WORK):

Rates Fringes

LABORER
DE KALB COUNTY
LANDSCAPE LABORERS.....$ 7.25 **
LANDSCAPE OPERATORS.....$ 7.25 **
LANDSCAPE PLANTSMAN.....$ 9.66 ** .26
KANKAKEE COUNTY:
LANDSCAPE DRIVER.....$ 8.75 ** .17
LANDSCAPE OPERATOR.....$ 16.57 3.56
PEORIA, TAZEWELL, &
WOODFORD COUNTIES:
TRUCK DRIVERS 2 & 3 AXLES..$ 17.58 5.88

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

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** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 ($16.20) or 13658 ($12.15). Please see the Note at the top of the wage

determination for more information.

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.

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

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

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

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

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on

a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

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

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

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

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

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

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

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISIO"

AMERICAN IRON AND STEEL SAMPLE CERTIFICATION

Sample Certification

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

USEPA DE MINIMIS WAIVER

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF WATER

DECISION MEMORANDUM

SUBJECT: De Minimis Waiver of Section 436 of P.L. 113-76, Consolidated Appropriations Act (CAA), 2014

FROM: Nancy K. Stoner
Acting Assistant Administrator

The EPA is hereby granting a nationwide waiver pursuant to the "American Iron and Steel (AIS)" requirements of P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), section 436 under the authority of Section 436(b)(1) (public interest waiver) for de minimis incidental components of eligible water infrastructure projects. This action permits the use of products when they occur in de minimis incidental components of such projects funded by the Act that may otherwise be prohibited under section 436(a). Funds used for such de minimis incidental components cumulatively may comprise no more than a total of 5 percent of the total cost of the materials used in and incorporated into a project; the cost of an individual item may not exceed 1 percent of the total cost of the materials used in and incorporated into a project.

P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an "American Iron and Steel" (AIS) requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use specific domestic iron and steel products that are produced in the United States if the project is funded through an assistance agreement executed beginning January 17, 2014 (enactment of the Act), through the end of Fiscal Year 2014, unless the agency determines it necessary to waive this requirement based on findings set forth in Section 436(b). The Act states, "[the requirements] shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency...finds that— (1) applying subsection (a) would be inconsistent with the public interest" 436(b)(1).

In implementing section 436 of the Act, the EPA must ensure that the section's requirements are applied consistent with congressional intent in adopting this section and in the broader context of the purposes, objectives, and other provisions applicable to projects funded under the SRF. Water infrastructure projects typically contain a relatively small number of high-cost components incorporated into the project. In bid solicitations for a project, these high-cost components are generally described in detail via project specific technical specifications. For these major components, utility owners and their contractors are generally familiar with the conditions of availability, the potential alternatives for each detailed specification, the approximate cost, and the country of manufacture of the available components.

Every water infrastructure project also involves the use of thousands of miscellaneous, generally low-cost components that are essential for, but incidental to, the construction and are incorporated into the physical structure of the project. For many of these incidental components, the country of manufacture and the availability of alternatives is not always readily or reasonably identifiable prior to procurement in the normal course of business; for other incidental components, the country of manufacture may be known but the miscellaneous character in conjunction with the low cost, individually and (in total) as typically procured in bulk, mark them as properly incidental. Examples of incidental components could include small washers, screws, fasteners (i.e., nuts and bolts), miscellaneous wire, corner bead, ancillary tube, etc. Examples of items that are clearly not incidental include significant process fittings (i.e., tees, elbows, flanges, and brackets), distribution system fittings and valves, force main valves, pipes for sewer collection and/or water distribution, treatment and storage tanks, large structural support structures, etc.

The EPA undertook multiple inquiries to identify the approximate scope of de minimis incidental components within water infrastructure projects during the implementation of the American Reinvestment and Recovery Act (ARRA) and its requirements (Buy American provisions, specifically). The inquiries and research conducted in 2009 applies suitably for the case today. In 2009, the EPA consulted informally with many major associations representing equipment manufacturers and suppliers, construction contractors, consulting engineers, and water and wastewater utilities, and performed targeted interviews with several well-established water infrastructure contractors and firms who work in a variety of project sizes, and regional and demographic settings to ask the following questions:

- What percentage of total project costs were consumables or incidental costs?

- What percentage of materials costs were consumables or incidental costs?

- Did these percentages vary by type of project (drinking water vs. wastewater treatment plant vs. pipe)?

The responses were consistent across the variety of settings and project types, and indicated that the percentage of total costs for drinking water or wastewater infrastructure projects represented by these incidental components is generally not in excess of 5 percent of the total cost of the materials used in and incorporated into a project. In drafting this waiver, the EPA has considered the de minimis proportion of project costs generally represented by each individual type of these incidental components within the many types of such components comprising those percentages, the fact that these types of incidental components are obtained by contractors in many different ways from many different sources, and the disproportionate cost and delay that would be imposed on projects if the EPA did not issue this waiver.

Assistance recipients who wish to use this waiver should in consultation with their contractors determine the items to be covered by this waiver and must retain relevant documentation (i.e., invoices) as to those items in their project files.

If you have any questions concerning the contents of this memorandum, please contact Timothy Connor, Chemical Engineer, Municipal Support Division, at connor.timothy@epa.gov or (202) 566-1059 or Kirsten Anderer, Environmental Engineer, Drinking Water Protection Division, at anderer.kirsten@epa.gov or (202) 564-3134.

Issued on: APR 15 2014

Approved by: _____

Nancy K. Stoner
Acting Assistant Administrator

SECTION 07 84 00

FIRESTOPPING

PART 1–GENERAL

1.01 SUMMARY

A. Work Included:
   1. Silicone firestopping foam for sealing annular spaces around ductwork penetrations through fire-rated assemblies.
   2. Silicone firestopping sealant for sealing annular spaces around piping and conduit penetrations through fire-rated assemblies and to seal gaps at intersections of walls and floors/ceilings.

B. Related Sections and Divisions: Applicable provisions of Division 01 shall govern work in this section.

1.02 REFERENCES

A. UL 1479–Fire Tests of Through-Penetration Fire Stops.

B. UL–Fire Hazard Classifications.

1.03 REGULATORY REQUIREMENTS

A. Firestopping materials and installation shall conform to the local building code requirements, including fire-resistance ratings and surface-burning characteristics.

B. Provide certificate of compliance from local building inspector indicating approval of firestopping materials and installation.

1.04 ENVIRONMENTAL REQUIREMENTS

A. A small amount of hydrogen gas is released as the firestopping foam cures. Use forced-air ventilation when installing if areas of installation have less than 2 cubic feet of free air for each pound of liquid mixture being formed.

PART 2–PRODUCTS

2.01 FIRESTOPPING FOAM

A. Firestopping foam for duct penetrations through fire-rated assemblies shall be a foamed-in-place silicone elastomer produced from two liquid components.

B. Acceptable products include the following, or equal: Fire Barrier Rated Foam, FIP 1 Step by 3M Corporation.

2.02 FIRESTOPPING SEALANT

A. Firestopping sealant for piping and conduit penetrations through fire-rated assemblies shall be a single-component silicone elastomer.

B. Acceptable products include the following, or equal: Fire Barrier Silicone Sealant 2000 by 3M Corporation.

2.03 DAMMING MATERIAL

A. Damming material shall be fire-resistant mineral fiber (if left in place) or other combustible material (if removed), as directed by the appropriate fire-tested designs.

2.04 PRIMER AND WRAP STRIP

A. Primer for firestopping sealant shall be 3M Corporation, or equal.

B. Wrap strip for firestopping sealant shall be 3M Fire Barrier FS-195 Wrap/Strip, or equal.

PART 3–EXECUTION

3.01 INSTALLATION

A. Firestopping foam and sealant shall be applied according to manufacturer's written instructions and shall achieve a fire rating equal to rating of construction which is penetrated. Substrate shall be free of all combustible materials (except damming material for later removal), loose impediment, oil, and other free liquids.

B. Install damming material to establish the thickness and hold the firestopping foam/sealant in place. Follow the manufacturer's installation instructions. All gaps or cracks left after damming materials are in place must be sealed.

C. Firestopping Foam: Immediately after mixing, dispense liquid foam into the penetration opening in accordance with manufacturer's installation instructions. Do not overfill penetration openings with liquid foam. Foam expands approximately three times its original volume during cure. Follow manufacturer's guidelines. If the opening is not filled when the cured foam has completed its expansion, repeat the installation and cure procedure until the opening is filled to the desired level. Allow 15 minutes between application of each shot.

D. Firestopping Sealant: Apply primer and wrap strip in accordance with manufacturer's instructions prior to installing sealant. Apply sealant to a minimum depth of 1 1/2 inches and with uniform density and texture.

E. Remove combustible damming material after foam/sealant has cured. Noncombustible damming material may be left in place.

3.02 QUALITY CONTROL

A. Firestopping Foam:
   1. Perform manufacturer's four-step in-line quality control check at least once daily and upon changing to a new lot of material in order to review performance of both dispensing equipment and foam product prior to installing penetration seals. The four-step quality check includes evaluation for: snap time (cure rate); foam color and uniformity; foam cell structure; and foam density (weight).
   2. Check cured penetration seal after 24-hour cure by removing damming materials to examine seal.
   3. Cured foam should completely fill penetration. Fill all remaining gaps with freshly mixed foam or firestopping sealant.
   4. Recheck after added material has cured 24 hours.
   5. Damming materials required to achieve a fire rating must be returned to the penetration.
   6. Clean up spills of liquid components with high-flash mineral spirit solvent, following manufacturer's instructions.
   7. If necessary, trim excess cured foam with a sharp knife or blade.

B. Firestopping Sealant:
   1. Check completed work for complete adhesion and seal 48 hours after sealant application.
   2. Clean adjacent surfaces of excess sealant using a compatible solvent in accordance with the manufacturer's instructions.

END OF SECTION

SECTION 26 05 00

GENERAL ELECTRICAL REQUIREMENTS

PART 1–GENERAL

1.01 SUMMARY

A. Work includes general requirements for all electrical work.

B. Related Sections and Divisions: Applicable provisions of Division 01 shall govern Work in this section.

1.02 REFERENCES

A. ANSI/NFPA 70–National Electrical Code (NEC).

B. ANSI/IEEE C2–National Electrical Safety Code.

1.03 CONTRACT DOCUMENTS

A. Any equipment roughed in improperly and/or not positioned on implied centerlines or as dictated by good practice shall be repositioned at no cost to OWNER.

B. The Drawings are generally diagrammatic, and CONTRACTOR shall coordinate the Work so that interferences are avoided. Provide all offsets in conduit, fittings, etc., necessary to properly install the work. All offsets, fittings, etc., shall be provided without additional expense to OWNER.

1.04 REGULATORY REQUIREMENTS

A. Conform to ANSI/NFPA 70.

B. Conform to ANSI/IEEE C2.

C. The rules and regulations of the federal, state, local, and civil authorities and utility companies in force at the time of execution of the Contract shall become a part of this specification.

D. Obtain electrical permits and inspections from authority having jurisdiction. Costs for permits and inspections shall be paid by CONTRACTOR.

1.05 CODES AND ORDINANCES

A. CONTRACTOR is expected to know or to ascertain, in general and in detail, the requirements of all codes and ordinances applicable to the construction and operation of systems covered by this Contract. CONTRACTOR shall know or ascertain the rulings and interpretations of code requirements being made by all authorities having jurisdiction over the work to be performed by them.

B. In preparing a Bid, CONTRACTOR shall include the cost of all items and procedures necessary to satisfy the requirements of all applicable codes, ordinances, and authorities, whether or not these are specifically covered by the Drawings and Specifications. All cases of apparent conflicts between the Drawings, Specifications, and codes shall be brought to ENGINEER's attention, as herein before specified. CONTRACTOR shall carry out work and complete construction as required by applicable codes and ordinances and in such a manner as to obtain approval of all authorities whose approval is required.

C. When requested by ENGINEER, CONTRACTOR shall provide written calculations to show compliance with applicable codes or the Contract Documents. This shall include, but not be limited to, conduit and wire sizing, junction and pull box fill and sizing, manhole/handhole sizing, conductor derating, and voltage drop. CONTRACTOR shall indicate calculation method used as well as compliance with applicable code, drawing, or specification.

1.06 ELECTRICAL DISTRIBUTION SYSTEM

A. Provide a complete electrical distribution system consisting of components indicated on the Drawings or specified herein including, but not limited to:
   1. Branch wiring and electrical distribution equipment.
   2. All control wiring.
   3. Access panels and access doors for access to equipment installed by Division 26.
   4. Support system design and supports for electrical raceways.

B. CONTRACTOR shall connect all equipment furnished by other Divisions consisting of components indicated on the Drawings or specified herein.

C. Provide balancing and adjusting of electrical loads.

D. CONTRACTOR shall instruct OWNER's representative in the operation and maintenance of all equipment. The instruction shall include a complete operating cycle on all apparatus.

E. Provide miscellaneous items for a complete and functioning system as indicated on the Drawings and specified herein.

F. A partial list of work not included in Division 26 is as follows: Painting (except as otherwise specified herein).

1.07 NOISE

A. Eliminate any abnormal noises that are not considered by ENGINEER to be an inherent part of the systems as designed. Abnormal buzzing in equipment components will not be acceptable.

1.08 DRAWINGS

A. The Drawings indicate approximate locations of the various items of the electrical systems. These items are shown approximately to scale and attempt to show how these items should be integrated with building construction. Locate all the various items by on-the-job measurements in conformance with Contract Documents and cooperation with other trades.

B. Prior to locating equipment, confer with ENGINEER as to desired location in the various areas. In no case should equipment locations be determined by scaling drawings. Relocate equipment and bear cost of redoing work or other trades' work necessitated by failure to comply with this requirement.

C. In certain instances, electrical devices and equipment, etc., may be relocated. Where relocation is within 10 feet of location shown on the Drawings, and when CONTRACTOR is informed of necessary relocation before work is begun on this portion of the job, the relocation shall be at CONTRACTOR's expense.

D. The Drawings are schematic in nature and are not intended to show exact locations of conduit, but rather to indicate distribution, circuitry, and control.

1.09 EXISTING UNDERGROUND UTILITIES

A. Record drawings of existing underground utilities are not available. CONTRACTOR shall excavate and verify the location of all underground utilities prior to installing new electrical equipment and prior to making modifications to existing electrical. This shall include, but not be limited to, feeders to structures and equipment, branch circuit wiring, phone and communication cabling, instrument wiring, and control wiring. CONTRACTOR shall temporarily relocate existing underground utilities to keep the existing facility in operation and for any new construction, and all costs for relocating existing electrical shall be included in the Bid.

1.10 SUBMITTALS

A. CONTRACTOR shall submit to ENGINEER for approval prior to beginning work, shop drawings on the equipment and materials proposed to be furnished and installed. See Section 01 33 00–Submittals for requirements.

B. CONTRACTOR shall, in addition, submit drawings and/or diagrams for review and for job coordination in all cases where deviation from the Contract drawings are contemplated because of job conditions, interference or substitution of equipment, or when requested by ENGINEER for purposes of clarification of CONTRACTOR's intent. CONTRACTOR shall also submit detailed drawings, rough-in sheets, etc., for all special or custom-built items or equipment. Drawings and details under this section shall include, but not be limited to, electrical interconnection wiring diagrams (see Section 26 09 00–Controls and Instrumentation), where applicable to this project.

C. These drawings and diagrams shall show applicable electrical switch and breaker sizes as well as the manufacturer's name and catalog number for each piece of equipment used.

D. Equipment and material submittals must show sufficient data to indicate complete compliance with Contract Documents as follows:
   1. Proper sizes and capacities.
   2. That the item will fit in the available space in the manner that will allow proper service.
   3. Construction materials and finishes.

E. When the manufacturer's reference numbers are different from those specified, provide correct cross-reference number for each item. The shop drawings shall be clearly marked and noted accordingly.

F. When equipment and items specified include accessories, parts, and additional items under one designation, shop drawings shall be complete and include all components.

G. See additional requirements of shop drawings under Division 01–General Requirements.

PART 2–PRODUCTS

2.01 STANDARD PRODUCTS

A. All equipment and products shall be of new manufacture per applicable specifications.

B. All equipment shall be UL and NEMA approved.

C. All equipment and wiring shall be selected and installed for conditions in which it will perform (e.g., general purpose, weatherproof, raintight, explosionproof, dustproof, or any other special type).

2.02 SUBSTITUTION OF MATERIALS AND EQUIPMENT

A. While it is not the intention of OWNER to discriminate against any manufacturer of equipment which may be equivalent to specified equipment, a strict interpretation of such equivalency will be exercised in considering any equipment offered as a substitute for specified equipment. CONTRACTOR shall submit with each request for approval of substitute material or equipment sufficient data to show conclusively that it is equivalent to that specified in the following respects:
   1. Performance:
      a. Capacity at conditions and operating speeds scheduled shall be equal to or greater than that of the specified equipment.
      b. Energy consumption at the point of rating shall not exceed that of the specified equipment.
      c. Vibration and noise production at the point of rating shall not exceed that of the specified equipment.
   2. Materials of construction.
   3. Gauges, weights, and sizes of all portions and component parts.
   4. Design arrangements, methods of construction, and workmanship.
   5. Coatings, finishes, and durability of wearing parts.
   6. National reputation of the manufacturer as a producer of first quality equipment of the type under consideration.
   7. Availability of prompt, reliable, and efficient service facilities franchised by or affiliated with the equipment manufacturer. This shall include the maintenance of local stocks of critical replacement parts equal to those maintained for the specified equipment.

B. Requests for substitution shall include CONTRACTOR’s reason for the request.

C. If ENGINEER does not consider the items equivalent to those specified, CONTRACTOR shall provide those specified.

D. See General Conditions for additional requirements.

PART 3–EXECUTION

3.01 CONTINUITY OF SERVICE

A. CONTRACTOR shall provide and maintain continuous services (power, controls, alarms, etc.) during the entire construction period.

B. No service shall be interrupted or changed without permission from OWNER. Written permission shall be obtained before any work is started.

C. When interruption of service is required, all persons concerned shall be notified and a prearranged time agreed upon. Notice shall be a minimum of 72 hours prior to the interruption.

3.02 CLEANUP AND REMOVAL OF RUBBISH

A. All lighting and appliance panelboards, switchboards, MCCs, VFD enclosures, motor starter and disconnect switch enclosures, junction boxes, and pullboxes shall be cleaned of debris and wires neatly arranged with surplus length cut off before installation of covers.

B. Where air filters are provided in equipment such as control panels, CONTRACTOR shall replace all filters with new at the time of final completion.

C. Equipment shall be thoroughly cleaned of all stains, paint spots, dirt, and dust. All temporary labels not used for instruction or operation shall be removed.

3.03 CONCRETE WORK

A. All cast-in-place concrete for new electrical equipment bases shown on the Drawings shall be provided by CONTRACTOR, except where specifically noted to be provided by others. All new equipment shall be set on 3 1/2-inch minimum leveling slabs including MCCs, free-standing enclosures, switchgear, etc. Pads shall be 3 inches larger than equipment being supported.

B. Concrete shall be minimum six bag per cubic yard, 4,000 psi at 28 days, 4% to 7% air-entrained, cast-in-place concrete. Slump range shall be between 2 inches and 4 inches with a maximum of 5 gallons of water per bag of cement. All concrete work shall conform to all requirements of ACI 301. Reinforcing shall be ASTM A615 grade 60.

C. Provide all anchor bolts, metal shapes, and templates to be cast in concrete or used to form concrete for support of electrical equipment.

3.04 PAINTING

A. All painting of electrical equipment shall be done by CONTRACTOR unless equipment is specified to be furnished with factory-applied finish coats.

B. All electrical equipment shall be provided with factory-applied prime finish, unless otherwise specified.

C. If the factory finish on any equipment furnished by CONTRACTOR is damaged in shipment or during construction, the equipment shall be refinished by CONTRACTOR.

D. One can of touch-up paint shall be provided for each different color factory finish which is to be the final finished surface of the product.

3.05 CAULKING

A. Caulk with a caulking sealant where indicated on the electrical drawings or hereinafter specified.

B. Caulking sealant shall be silicone construction sealant as manufactured by General Electric or two-part polysulfide conforming to the requirements and bearing the seal of the Thiokol Chemical Corporation.

C. Caulking sealant shall contain no acid or ingredients that will stain stone, corrode metal, or have injurious effect on painting. It shall be colored to match adjacent surroundings.

3.06 BUILDING ACCESS

A. CONTRACTOR shall arrange for the necessary openings in the building to allow for admittance of all apparatus.

B. When the installation requires openings and access through existing construction and the openings are not provided, CONTRACTOR shall provide the necessary openings.

3.07 COORDINATION

A. Provide wiring for all electrically powered or electrically controlled equipment.

B. All starters, relays, wire, conduit, push buttons, pilot lights, and other devices for the power and control of motors or electrical equipment shall be provided by CONTRACTOR except as specifically noted elsewhere in these specifications or on the Drawings.

C. Where starters or other devices are provided by others, they shall be connected and wired by CONTRACTOR.

D. CONTRACTOR shall provide all power and control wiring.

E. CONTRACTOR shall connect and wire all apparatus according to approved wiring diagrams furnished by the various trades.

3.08 EXCAVATION AND BACKFILL

A. Backfill of exterior trenches shall be compacted granular fill, unless otherwise noted. Refer to Section 26 05 33–Conduit for additional requirements associated with PVC conduit installed in earth.

B. Lines passing under foundation walls shall have a minimum of 1 1/2-inch clearance.

C. Care shall be taken so that there is no disturbance of bearing soil under foundations.

D. CONTRACTOR shall follow underground pipe runs where possible to avoid additional rock excavation.

3.09 EQUIPMENT ACCESS AND LOCATION

A. CONTRACTOR shall coordinate work of this division with that of other divisions so that all systems, equipment, and other components of the building will be installed at the proper time, will fit the available space, and will allow proper service access to those items requiring maintenance. This means adequate access to all equipment not just that installed under this division. Any components for the electrical systems that are installed without regard to the above shall be removed and relocated as required to provide adequate access at CONTRACTOR's expense.

B. Where various items of equipment and materials are specified and scheduled, the purpose is to define the general type and quality level, not to set forth the exact trim to fit the various types of ceiling, wall, or floor finishes. Provide materials that will fit properly the types of finishes actually installed.

C. All equipment, junction and pull boxes, and accessories shall be installed to permit access to equipment for maintenance. Any relocation of conduits, equipment, or accessories to provide maintenance access shall be accomplished by CONTRACTOR at no additional cost.

D. Electrical equipment, devices, instruments, hardware, etc., shall be installed with ample space allowed for removal, repair, calibration or changes to the equipment. Ready accessibility to equipment and wiring shall be provided without moving other equipment that is to be installed or that is already in place.

E. Locate electrical equipment to fit the details, panels, decorating, or finish of the space. ENGINEER shall reserve the right to make minor position changes before the work has been installed.

3.10 WORKMANSHIP

A. All work shall be performed in compliance with the NEC.

B. Install work using procedures defined in NECA Standard of Installation.

C. Location of process equipment as shown on the Drawings is approximate.

D. Utilization equipment and control devices required under these specifications shall be mounted in a code-approved manner.

E. Locations of utilization equipment and control devices as shown on the Drawings are within 10 feet of actual positions. Any mounting of this equipment within this 10-foot distance shall be performed at no additional cost to OWNER.

F. Unless otherwise noted, conduit shall be fastened to building structure or equipment framework and not placed on the floor.

G. Where materials, equipment apparatus, or other products are specified by manufacturer, brand name, and type or catalog number, such designation is to establish standards of desired quality and style and shall be the basis of the Bid.

H. Materials and equipment of the types for which there are National Board of Fire Underwriters Laboratories (UL) listings shall be so labeled and shall be used by CONTRACTOR.

3.11 AREA CLASSIFICATION

A. As noted on the Drawings.

B. Where referenced herein, damp and wet locations shall include, but not be limited to, all NEMA 4X areas, structures and areas below grade, and exterior locations.

3.12 MODIFICATIONS TO EXISTING CONSTRUCTION

A. Alterations:
   1. Alter, extend, and reconnect conduits as necessary.
   2. Reconnect existing conduits that were reused, cut, or exposed because of construction as quickly as possible.
   3. Where wiring is involved, new wires shall be “pulled in” between the nearest available accessible reused outlets to the extent allowed by the governing code.
   4. Provide new conduits for wires if they cannot be “pulled in” to existing conduits.
   5. All new conduits, wiring, and electrical items shall be connected to the existing systems so as to function as a complete unit.
   6. Where existing electrical equipment, devices, fixtures, electrically operated items, etc., interfere with any remodeling work, they shall be removed and reinstalled in another location to avoid such interferences. All existing and relocated equipment shall be left in good operating condition.

B. CONTRACTOR shall remove all electrical equipment, conduit, and wiring associated with the structures, equipment, and control systems specified herein and/or shown on the Drawings to be removed.

C. Include in Bid removal of existing electrical material and equipment as specified hereinafter, as noted on the Drawings, or as needed by field conditions.

D. Provide stainless steel cover plates for all existing recessed outlet and junction boxes not being reused. Seal or cap all existing conduit penetrations not being reused.

END OF SECTION

SECTION 26 05 19

WIRE

PART 1–GENERAL

1.01 SUMMARY

A. Work Included:
   1. Wire.
   2. Terminal blocks and accessories.
   3. Wiring connections and terminations.

B. Related Sections and Divisions: Applicable provisions of Division 01 shall govern work in this section.

1.02 QUALITY ASSURANCE

A. Manufacturers of Wire: Firms regularly engaged in the manufacture of electrical wire products of the types and ratings needed whose products have been in satisfactory use in similar service for not less than 5 years.

B. Installer: A firm with at least 5 years of successful installation experience on projects with electrical wiring installation work similar to that in this project.

C. Code Compliance: Comply with National Electrical Code (NFPA 70) and any and all local codes as applicable to construction and installation of electrical wiring devices, material, and equipment herein specified.

D. UL Labels: Provide electrical material, which has been listed and labeled by Underwriters Laboratories.

E. NECA Standard: Comply with applicable portions of National Electrical Contractor's Association's "Standard of Installation."

1.03 SUBMITTALS

A. Submit shop drawings and product data under the provisions of Section 01 33 00–Submittals.

B. Submit shop drawings for wiring system including layout of distribution devices, branch circuit conduit and cables, circuiting arrangement, and outlet devices.

C. Submit manufacturer's instructions.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Provide factory-wrapped, waterproof, flexible-barrier material for covering wire on wood reels, where applicable, and weather-resistant fiberboard containers for factory-packaging

of wire, connectors, outlets, boxes, lamps, fuses, etc., to protect against physical damage in transit. Do not install damaged wire or other material; remove from project site.

B. Store wire and other material in factory-installed coverings in a clean, dry, indoor space which provides protection against the weather.

PART 2–PRODUCTS

2.01 WIRE

A. All wire for permanent installation shall be new stranded copper delivered to project in unopened cartons or reels, except where specifically noted and be UL listed for the use intended. No wire smaller than 12 AWG shall be used unless specifically noted. The use of multiconductor cable is not allowed.

B. Motor circuit branch wiring and associated control wiring:
   1. Insulation type shall be THHN (indoors).
   2. Minimum size for motor control wiring shall be 14 AWG.
   3. Control wiring for supervisory equipment shall be shielded, sized per equipment manufacturer's recommendations, or as shown on Drawings.

C. All wiring within control panels, supervisory control centers, and motor control centers that does not extend outside of the enclosure or the motor control center bucket shall be insulation-type MTW, minimum size 16 AWG.

D. Wiring in dry locations shall be THHN. Wiring in damp and wet locations shall be XHHW-2.

E. Refer to Section 26 05 53–Electrical Identification for required wire insulation color coding and conductor labeling requirements. Initial phase color shall be used throughout the run, even for switch legs. Colors must meet code requirements for each class voltage. Do not duplicate colors, including neutral, on different voltages.

2.02 LOW-VOLTAGE WIRING (LESS THAN 100 VOLTS)

A. Low-voltage wiring specified in this section shall be applicable to all systems installed that utilize low-voltage wiring where such wiring is not specified in other technical sections.

B. All wiring shall have copper conductors with 300-volt insulation rating and meet the requirements of NEC Article 725.

C. All conductors must be suitable for the application intended. Conductors 16 AWG and larger shall be stranded. Conductors 18 AWG and smaller may be solid or stranded.

D. Control Cable for Class 1 Remote Control and Signal Circuits: Individual conductors twisted together, shielded, and covered with an overall PVC jacket. Cable shall be UL listed, temperature rated, and plenum or nonplenum rated for the application as required in the National Electrical Code.

E. Control Cable for Class 2 or Class 3 Remote Control and Signal Circuits shall be constructed, UL listed, temperature rated, and plenum or nonplenum rated for the application as required in the NEC Article 725.

2.03 WIRING CONNECTIONS AND TERMINATIONS

A. Provide crimp type UL or ETL listed terminations for 6 AWG and smaller stranded conductor connections to electrical devices and equipment such as receptacles, switches, and terminal strips. Crimp devices shall be Sta-kon, or equal.

B. Provide insulated, silicone-filled spring wire connectors with plastic caps for 8 AWG conductors and smaller. Connectors shall be King Silicone-Filled Safety Connectors, or equal. Spring wire connectors shall only be allowed in junction, outlet, or switch boxes. Spring wire connectors are not allowed for terminating motor conductors.

C. No splices will be allowed unless reviewed by ENGINEER. Where allowed, provide in-line splices for all conductor connections, 6 AWG and larger. Splice crimp component shall be Burndy UGSKIT2 or equal. Splice shall be made with crimp tool by manufacturer that allows expanded conductor ranges. Splice insulation component shall be Raychem heavy-wall, low-voltage tubing, type WCSM, or equal.

2.04 TERMINAL BLOCKS AND ACCESSORIES

A. Terminal Blocks: ANSI/NEMA ICS 4: UL listed or UL recognized under UL 467, UL 486E, UL1059, and UL 1953 (power terminals only).

B. Power Terminal Blocks: Unit construction type, closed-back type, tin-plated copper, with tubular pressure screw connectors, rated 600 volts as manufactured by Allen-Bradley 1492-PDL, or equal.

C. 600-Volt Fuse Holders: Fuse holders for circuit rated up to 30 amps and 600 volts AC shall be finger safe, UL Listed, DIN-rail mountable, and shall include blown-fuse indicating lights. Fuse holders shall be as manufactured by Allen-Bradley Bulletin 1492-FB, or equal.

D. Signal and Control Terminal Blocks:
   1. General-Purpose Terminal Blocks:
      a. Terminal blocks shall be rated up to 600 volts AC/DC.
      b. Terminal blocks shall accept center-mounted jumper bars without increasing the installed space.
      c. Terminal blocks shall be Allen-Bradley Bulletin 1492-J, or equal.
      d. Terminal block color shall be gray.
   2. Grounding Terminal Blocks:
      a. Terminal blocks shall be Allen-Bradley Bulletin 1492-JG, or equal.
      b. Terminal block color shall be green/yellow.
   3. Fuse-type Terminal Blocks with Indicator (300-Volt Class):
      a. Terminal blocks for applications from 100 to 300 volts AC shall be Allen-Bradley Bulletin 1492-H4, or equal, with neon blown-fuse indicator.
      b. Terminal blocks for applications from 10 to 50 volts AC/DC shall be Allen-Bradley Bulletin 1492-H5, or equal, with LED blown-fuse indicator.
      c. Terminal block color shall be black.

4. Terminal blocks shall have self-locking screw compression clamps rated for the size of conductors being terminated and upstream overcurrent protection for each application.
5. The same manufacturer and style of terminal block shall be used throughout the entire project for all applications.
6. Terminal blocks shall have tin-plated copper current bars and tin-plated steel screws. Terminal housings shall be completely finger safe from all live circuits and be constructed of self-extinguishing material with minimum UL 94-V0 flammability rating.
7. Terminal blocks shall accept pre-printed, snap-in labeling cards on both sides without increasing the installed space. Provide terminal block manufacturer's end barriers and screw-type retainers for all terminal block groupings.
8. Terminal blocks shall mount on standard DIN rail and shall be able to be removed without removing adjacent terminal blocks.
9. Multi-level terminal blocks and stacked, single-level terminal block installations are not acceptable.

E. Refer to Section 26 05 53–Electrical Identification for terminal block labeling requirements.

PART 3–EXECUTION

3.01 GENERAL WIRING METHODS

A. Install electrical wire and connectors in accordance with the manufacturer's written instructions, applicable requirements of the NEC, the National Electrical Contractors Association's "Standard of Installation," and in accordance with recognized industry practices so that products serve the intended functions. Use appropriate wiring methods and materials for the equipment or environment.

B. Stranded conductors shall be terminated using crimp-type devices specified herein. Conductors may not be wrapped around a terminal screw.

C. Place an equal number of conductors for each phase of a circuit in the same raceway.

D. Torque conductor connections and terminations with calibrated torque wrench to manufacturer's recommended values. Provide permanent marking on lug, bolt, nut, or connection for conductors larger than 4 AWG.

E. Splice only in junction or outlet boxes. Splicing is not allowed in disconnects, manholes, motor control centers, panelboards, control panels, equipment, etc. Avoid splices between terminals of interconnecting power and control wiring.

F. Spring wire connectors shall only be used in junction, outlet, or switch boxes. Equipment wireways (e.g., motor control centers, panelboards, disconnects, switchgear, etc.), and control panels shall not have any spring-wire connectors installed; all terminations shall be on terminal strips.

G. Neatly train, lace, and tie wrap all wiring inside boxes, equipment, control panels, MCCs, and panelboards.

H. Make conductor lengths for parallel circuits equal.

I. The same color shall be used for each numbered wire throughout its entire length.

J. Terminate all wiring on terminal blocks in control panels, VFD enclosures, starter cubicles, and similar equipment. This shall include all spare or unused wires.

K. Provide a dedicated neutral for each branch circuit or feeder requiring a neutral. Ampacity of neutral conductor shall match that of the branch circuit or feeder.

L. Do not use a pulling means that can damage the raceway.

M. Signal wiring (below 100 volts) must be in a conduit separate from power and/or control wiring (over 100 volts). Signal wire shall include, but not be limited to, loop-powered devices, voice and data communications, and communication wiring (i.e., Ethernet, serial, etc.). Analog wiring shall be in a conduit separate from all other wiring.

N. Control wiring (e.g., internal thermal overloads, lockout stops, etc.) to motors utilizing VFDs shall be in a conduit separate from motor power wiring.

O. Provide junction or pull boxes to facilitate the “pulling in” of wires or to make necessary connections. All raceways and apparatus shall be thoroughly blown out and cleaned of foreign matter prior to pulling in wires.

P. Thoroughly clean wires before installing lugs and connectors.

Q. Make splices, taps, and terminations to carry full capacity of conductors without perceptible temperature rise.

R. Terminate spare conductors within equipment, MCCs, control panels, etc., on terminal strips and label as “SPARE.” Spare wiring in pull or junction boxes may be terminated with electrical tape and labeled as “SPARE.” All spare conductor labels shall indicate where the conductors terminate. Refer to Section 26 05 53–Electrical Identification, for additional requirements.

3.02 GENERAL LOW-VOLTAGE WIRING METHODS (LESS THAN 100 VOLTS)

A. Low-voltage wiring installation requirements specified herein shall be applicable to all systems installed that utilize low-voltage wiring where such wiring installation is not specified in other technical sections.

B. Low-voltage wiring shall be installed in conduit. Unless noted in other specification sections, low-voltage wiring located in office buildings above suspended ceilings shall be allowed to be installed free air, as specified herein if the cable meets NEC requirements for the application.

C. Do not use wire smaller than 14 AWG for control wiring greater than 60 volts, or 18 AWG for voltages less than 60 volts. All sizes subject to NEC 725 requirements.

D. Low-voltage cable splices shall only be allowed in junction boxes.

3.03 LOW-VOLTAGE CABLE FREE-AIR CABLE INSTALLATION

A. Free-air cabling may be installed above suspended ceilings and cabling shall be installed parallel and perpendicular to the structure. Raceways shall be provided in wall cavities and chases with nylon bushings at each conduit end.

B. Cabling shall be supported at a maximum of 5-foot intervals utilizing J-hook-type supports anchored to ceiling concrete, piping supports, or structural steel beams. Maximum fill for supports shall be 50%. Cable sag at midspan shall not exceed 12 inches. Mounting hooks shall be installed to maintain NEC-required minimum cable bending radii.

C. Cabling shall not be attached to, or supported by, existing cabling, plumbing or steam piping, ductwork, suspended ceiling supports or electrical conduit. Cabling shall not be laid directly on the ceiling grid or woven through building structural members.

D. To reduce or eliminate Electro-Magnetic Interference (EMI), the following minimum separation distances for 'Free-Air' cabling installations shall be adhered to:
   1. Twelve inches from power lines of less than 5 kV.
   2. Forty-eight inches from power lines of 5 kV or greater.
   3. Eighteen inches from lighting fixtures.
   4. Forty-eight inches from transformers and motors.

E. A coil of 2 feet in each cable shall be placed in the ceiling at each 'free-air' wired device. These coils shall be secured (wire tied) at the last cable support before the cable reaches the device and shall be coiled from 100% to 200% of the cable recommended minimum bend radius.

F. Splices for low-voltage devices, including devices installed through suspended ceiling tiles, or free-air cabling installed in suspended ceilings shall be made in junction boxes. Junction boxes shall be supported as specified in Section 26 05 35–Boxes.

G. All cable shall be free of tension at both ends. Nylon strain relief connectors shall be provided at each device and junction box where cables enter.

H. Care shall be taken when using cable ties so that they are not overtightened compressing the cable jacket.

I. All exposed vertical cable extensions to devices located below the finished ceiling shall be in conduit.

3.04 WIRING INSTALLATION IN RACEWAYS

A. Pull all conductors into a raceway at the same time. Use UL-listed wire-pulling lubricant for pulling 4 AWG and larger wires. Wax-based pulling lubricant is not allowed unless it includes a Teflon additive.

B. Install wire in raceway after interior of building is enclosed, watertight, and dry, and all mechanical work likely to injure conductors has been completed.

C. Completely and thoroughly swab raceway system before installing conductors.

D. Conductors No. 6 AWG and larger shall be pulled into conduits by hand or by utilizing a tugger with built-in tension meter. Other motorized machines of any type are not allowed for any wire pulling. CONTRACTOR shall provide a report to ENGINEER for each pull indicating maximum tension reached during the pull along with manufacturer's maximum pulling tension.

E. Conductors shall be installed in conduit system in such a manner that insulation is not damaged, conductors are not overstressed in pulling, and walls are not damaged. No splices are permitted except in junction boxes or outlet boxes.

F. CONTRACTOR shall observe code limitation on the number and size of wires in an outlet box. CONTRACTOR shall either lay out work so that the wires do not exceed the particular box limitation or provide larger boxes approved for additional capacity.

G. Panel riser feeder conductors shall be identified with colored tape at panel lugs. The same phase relation shall be maintained throughout.

H. Circuiting is indicated diagrammatically on the Drawings.

3.05 TERMINAL BLOCK INSTALLATION

A. A maximum of one conductor shall be installed on the field-wired side of each terminal block. If rated to accept more than one conductor, a maximum of two conductors shall be installed on the enclosure-wired side of each terminal block. Provide additional terminal blocks and shorting jumpers as required.

B. Provide a separate ground-type terminal block for each shielded-cable drain conductor.

C. Provide ten percent spare terminal blocks for each type of connected terminal block, minimum five spare terminal blocks total. For each grouping of terminal blocks, provide 25% spare DIN rail space.

D. Maintain a minimum of 1 1/2 inches between terminal blocks and adjacent devices and enclosure wireways.

3.06 FIELD QUALITY CONTROL

A. Inspect wire for physical damage and proper connection.

B. Prior to energizing, check conduit, raceways, outlet boxes, and wire for continuity of circuitry and for short circuits. Correct malfunction when detected.

C. Subsequent to wire hookups, energize circuitry and demonstrate functionality in accordance with these specifications.

D. Perform continuity test on all power and equipment branch circuit conductors. Verify proper phasing connections.

E. Perform field inspection and testing according to provisions of this section.

3.07 ACCEPTANCE TESTS

A. CONTRACTOR shall furnish all materials, labor, and equipment necessary for the acceptance tests specified herein. Acceptance tests shall be performed in the presence of OWNER or OWNER's representative and must be passed before final acceptance of the work.

B. CONTRACTOR shall be responsible for powered tests of each field-installed device unless specifically noted otherwise. CONTRACTOR shall be responsible for device operation as powered from its power source and signals as received at the I/O modules.

C. Operation Test: By operational testing, OWNER will give final acceptance of the wiring system when all of the wiring is considered a complete system. All equipment shall function and operate in the proper manner as indicated in the details of the specifications and on the Drawings. All motors shall be properly connected to protective devices, and motor rotation shall be in the correct direction.

D. At the request of OWNER's representative, demonstrate by test the compliance of the installation with these specifications and Drawings, the National Electrical Code, and the accepted standards of good workmanship. These tests shall include operation of equipment, continuity of the conduit system, grounding resistance and insulation resistance.

E. A written record of performance tests on electrical and control and instrumentation systems and equipment shall be supplied to OWNER. Such tests shall show compliance with governing codes.

F. The transformer, feeder, and subfeeds to the lighting panels shall be completely phased out as to sequence and rotation. Phase sequence shall be A-B-C as follows:
   1. Front-to-rear, top-to-bottom, or left-to-right when facing equipment.
   2. Phasing shall be accomplished by using distinctive colors for the various phases. The same color or variation of it shall be used for a particular phase throughout the building and project.

3.08 WIRE INSTALLATION SCHEDULE

A. Install all wiring in raceways except as otherwise noted. This includes all low-voltage wiring such as temperature control, instruments, phone, network, fiber optic, etc.

END OF SECTION

SECTION 26 05 23

INSTRUMENT AND COMMUNICATION WIRE AND CABLE

PART 1–GENERAL

1.01 SUMMARY

A. Work Included: This specification contains the requirements for instrument wire and cable as opposed to electrical power wire and cable.

B. Related Sections and Divisions: Applicable provisions of Division 01 shall govern work in this section.

1.02 QUALITY ASSURANCE

A. Standards: Comply with standards specified in this section as listed in Division 01.

B. Qualifications of Installers: Workers who are thoroughly trained and experienced in the necessary crafts, and who are completely familiar with the specified requirements and the methods needed for proper performance of the work.

1.03 PRODUCT HANDLING

A. Instrument cable shall be furnished in lengths as necessary.

B. Reels, coils, or package rolls of instrument cable shall be identified with the project name and other tagging identification as called for.

1.04 SUBMITTALS

A. Submit shop drawings and product data in accordance with provisions of Section 01 33 00–Submittals.

B. Submit an electronic copy of the fiber optic cable testing report.

C. Furnish three hard copies and one electronic copy of the final approved fiber optic cable test report to OWNER.

1.05 QUALIFICATIONS

A. CONTRACTOR shall have at least 10 years of experience in the installation of similar systems. CONTRACTOR shall provide documentation upon request to certify that all assigned staff have attended training courses corresponding to the type of cabling and equipment specified herein.

B. CONTRACTOR shall currently be licensed to install low voltage electronic cabling systems in the state of the project.

C. CONTRACTOR shall currently meet all manufacturer's requirements for the provision and installation of all equipment specified herein.

D. CONTRACTOR shall utilize and have technicians trained in the utilization of fiber optic cable certification equipment.

PART 2–PRODUCTS

2.01 SHIELDED PAIR CABLING FOR ELECTRONIC INSTRUMENTS

A. Shielded pair cabling shall have stranded, tinned-copper conductors, No. 16 AWG, twisted with 2-inch lay.

B. Insulation of conductors shall be 15 mil, 90°C minimum PVC, rated for 300 volts. Materials shall equal or exceed UL 13 requirements for physical properties.

C. Color coding shall be manufacturer's standard or as stated.

D. The outer jacket shall be flame-retardant and weather- and ultraviolet-resistant PVC, 35 mils thick, and 80°C minimum rating. The outer jacket shall contain a ripcord and shall equal or exceed the requirements of UL 1277. Cable shall be UL labeled as power-limited circuit cable.

E. A 100% coverage shield shall be applied over the insulated conductors. The shield shall consist of a 0.85 mil minimum thickness aluminum mylar tape. A stranded, tinned-copper drain wire shall be furnished in continuous electrical contact with the shield.

F. Single-pair shielded cables shall be Belden 9316, or equal.

2.02 INDUSTRIAL ETHERNET CABLE

A. 600-Volt Rated Shielded Cable:
   1. For communication with plant SCADA Systems and equipment in supervisory control centers, motor control centers, switchgear, switchboards, control panels, etc., over 300 volts, and other areas or raceways with power wiring over 300 volts, provide 600-volt-rated, 4-pair, shielded (F/UTP), twisted-pair cables. Transmission characteristics of the cables shall meet full Category 6 performance criteria as defined by the ANSI/TIA-568-C.2 standard.
   2. Cable conductors shall be minimum 23 AWG with PVC jacket and aluminum foil shield with 100% coverage. The cable outer jacket shall be industrial-grade PVC with a maximum overall cable diameter of 0.34 inch. Cable shall be CMR rated, UL listed, 600 V UL AWM rated, and be Belden 7953A or equal.
   3. Cable jacket color shall be red.
   4. Provide a shielded RJ45 connector on one end of each cable and an unshielded RJ45 connector on the other end of each cable. Connector shall be field-installed.

B. Below-Grade 300-Volt Rated Shielded Cable:
   1. Communication cables routed in underground conduit and raceways with power wiring under 300 volts shall be 300 volt-rated, 4-pair, shielded (F/UTP), twisted-pair cables.

Transmission characteristics of the cables shall meet full Category 6 performance criteria as defined by the ANSI/TIA-568-C.2 standard.

2. Cable conductors shall be minimum 23 AWG with polyolefin jacket and aluminum foil shield with 100% coverage. The cable outer jacket shall be OSP-grade polyethylene. Cable shall be OSP-rated, UL-listed, and shall be Superior Essex Model 04-001-64, or equal.
3. Cable jacket color shall be black.
4. Provide a shielded RJ45 connector on one end of each cable and an unshielded RJ45 connector on the other end of each cable.

C. 300-Volt Rated Unshielded Cable:
1. For communication with plant SCADA Systems and equipment in communication racks, supervisory control centers, and control panels without VFDs, etc., under 300 volts, and other areas or raceways with power wiring under 300 volts, provide 300-volt safety voltage rated, 80-volt operating voltage rated, 4-pair, unshielded (U/UTP), twisted-pair cables. Transmission characteristics of the cables shall meet full Category 6 performance criteria as defined by the ANSI/TIA-568-C.2 standard.
2. Industrial Ethernet cable shall be minimum 23 AWG with PVC jacket. The cable outer jacket shall be industrial-grade PVC with a maximum overall cable diameter of 0.24 inch. Cable shall be CMR rated, UL listed, and shall be Systimax Solutions 1071E, or equal.
3. Cable jacket color shall be light blue.
4. Provide unshielded RJ45 connectors on both ends of each cable.

D. Patch cables shall be provided premanufactured by the cable manufacturer or connector manufacturer in sufficient length to connect the associated equipment to any port on the equipment, patch panel, or switch. Field-attached plugs shall be insulation displacement type and shall be by the same manufacturer as the cable.

2.03 FIBER OPTIC PATCH CABLES

A. Fiber optic patch cables shall be multimode 62.5/125 microns, and shall meet UL 1666 (OFNR) flame ratings for standard compliant safety as required by the installation environment. All fiber patch cables shall be pre-terminated and tested for insertion loss. Cable performance shall meet or exceed requirements of the TIA/EIA-568.3-D standard for OM1 fiber optic cables. Factory certification test information shall be provided with each cable.

B. Fiber patch cable insulation color shall be orange.

C. Fiber connectors shall be ST-type, and shall exceed the requirements of TIA/EIA-455-21A for 500 mating cycles. Field-coordinate connector types for cables interfacing with existing equipment and existing patch panels. The insertion loss for each connector shall not exceed 0.35 dB for multimode cables.

D. Fiber connector and strain-relief color shall be orange per the TIA/EIA-568.3-D standard. Strain-relief color shall match connector color.

E. Fiber optic patch cables shall be provided in sufficient length to connect associated equipment to any port on the network equipment.

2.04 FIBER OPTIC CABLE

A. Multimode Cables:
   1. Provide indoor/outdoor fiber optic cables with fiber counts in each cable as shown on the Drawings. Cable shall be type OFNR and shall be suitable for use inside building and outside plant applications, including duct and conduit installation in accordance with ICEA S-104-696. Installation in building risers shall be in accordance with NEC 770. Cable shall be DX-Series Distribution Riser as manufactured by Optical Cable Corporation, FREEDM One Tight-Buffered Cable Riser as manufactured by Corning, or equal.
   2. Individual fibers shall be multimode, 62.5/125 microns, meeting TIA/EIA 492AAAC and ISO/IEC 11801 type OM3 standards for laser optimized fibers. Primary fiber coating diameter shall be 250 um ±15 and the secondary tight buffer coating diameter shall be 900 microns (nominal). All coatings shall be mechanically strippable without damaging the optical fiber. Optical performance shall meet the following requirements:

Wavelength	850 nm	1310 nm
Gigabit Ethernet Distance	1000 m	600 m
10-Gigabit Ethernet Distance	300 m	300 m
Maximum Attenuation	3.0 dB/km	1.0 dB/km

   3. Cable shall be all dielectric, tight-buffered, dry water blocking, gel-free, and shall meet UL 1666 and be RoHS compliant. The PVC outer sheath shall be flame-retardant and marked with the manufacture's name, date of manufacture, fiber type, flame rating, and sequential length information. Outer jacket shall be black.
   4. Connectors shall be provided on all fibers of each fiber optic cable.
   5. All cables shall be installed in continuous lengths from endpoint to endpoint. Splices in fiber optic cables shall be allowed only where shown on the Drawings.

2.05 FIBER OPTIC CABLE CONNECTORS

A. Fiber connectors shall be ST-type and shall exceed the requirements of TIA/EIA-455-21A for 500 mating cycles. Field-coordinate connector types for cables interfacing with existing equipment and existing patch panels. The insertion loss for each connector shall not exceed 0.35 dB for multimode cables.

B. Fiber connector and strain-relief color shall be orange per the TIA/EIA-568.3-D standard. Strain-relief color shall match connector color.

C. Fiber patch panels or termination enclosures shall be provided as specified under Section 26 09 00–Controls and Instrumentation.

PART 3–EXECUTION

3.01 INSTALLATION REQUIREMENTS AND SPECIAL CONSIDERATIONS

A. Shielded pair and industrial Ethernet cabling specified in this section shall be installed in conduit, and may not be run free-air or in nonmetallic tubing such as innerduct.

3.02 FIBER OPTIC CABLE INSTALLATION

A. Use cable tie tool to install cable ties to manage cable slack. Cable tie tool shall apply appropriate pressure to the cable bundles to prevent damaging cables and provide a smooth cut of excess cable tie. Cable ties shall be able to be turned freely around the bundle of cable. Cable bundles shall be limited to a 3-inch diameter.

B. Use Velcro bands to secure cable bundles within interior pull boxes and fiber patch panels.

C. Avoid excessive and sharp bends. Manufacturer's recommended bend radius and pulling tensions shall not be exceeded.

D. Fittings or connections are allowed only at the input and output of devices. Splicing is not acceptable in any cable, unless noted otherwise on the Drawings for existing cables. The entire cable run shall be replaced in all such instances.

E. All fiber-optic cables shall be installed in conduit.

F. A minimum of 15 feet of cable slack shall be provided at end of each fiber-optic cable and coiled at the bottom of the panel. This slack shall be exclusive of the length of fiber required to accommodate terminations and is intended to provide for cable repair and/or equipment relocation. The cable slack shall be stored to prevent damage and secure cable in the patch panel or a separate enclosure designated for this purpose. Multiple cables may share a common enclosure. Exact cable termination locations shall be field verified with OWNER and ENGINEER.

G. Fiber optic cables shall be pulled into conduits utilizing a tugger with built-in tension meter. CONTRACTOR shall provide a report to ENGINEER for each pull indicating maximum tension reached during the pull along with manufacturer's maximum pulling tension. Motorized machines of any type are not allowed for any fiber optic cable pulling.

H. All spare fibers shall be terminated on spare fiber patch panel ports with protective plugs.

3.03 GROUNDING

A. The shielded connection for shielded network cabling shall be connected at the network switch or patch panel and not at the field device connection. Ground patch panels and network switches accepting shielded network cables.

B. Shielded cabling shall be installed in accordance with manufacturer's instructions and to minimize electrical noise and interference to associated instruments. Refer to instrument manufacturer's instructions for additional requirements.

C. Ends of signal wires shall be sealed to prevent the migration of moisture into the cable and to prevent unintentional grounding of the shield at the open end. Seal signal wires using a minimum 1-inch piece of heat-shrink tubing installed over PVC jacket and individual wires, and heat-shrink to a watertight fit.

D. All shields must be grounded.

E. Shields shall be grounded at one point only. Shielded cabling shall be isolated and left open at the instrument. The single-pair electronic instrument cable shields shall be connected to the multipair electronic instrument cable overall shield in the field junction box. The multipair electronic cable overall shield shall be grounded to the control room instrument ground.

F. Cable shield grounds shall be isolated from control system signal grounds, except at instrument system grounding electrodes.

G. The control room instrument ground shall be separate and isolated from the electrical power grounding system.

3.04 FIBER OPTIC TESTING

A. Prior to installation, CONTRACTOR shall perform tests to demonstrate integrity of all fiber optic cables.

B. Upon completion of cable installation and termination, the fiber optic cabling shall be tested to include:
   1. Optical Attenuation (“Insertion Loss” Method).
   2. Verification of Link Integrity (OTDR).

C. Optical Attenuation shall be measured on all terminated optical fibers in both directions of transmission using the “Insertion Loss” method. Measurement shall be inclusive of the optical connectors and couplings installed at the system endpoints. Access jumpers shall be used at both the transmit and receive ends so that an accurate measurement of connector losses is made. Fibers shall be tested in accordance with the IEC 61280-4-1 standard, utilizing 1, 2, or 3 reference cables, as needed.

D. Attenuation of optical fibers shall not exceed the values calculated as follows: Attenuation (max.) = 2*C+L*F+S dB, where C is the maximum allowable connector loss (in dB), L is the length of the run (in kilometers), and F is the maximum allowable fiber loss (in dB/km). S is the total splice loss (number of splices* max. attenuation per splice). Values referenced herein shall be determined by manufacturer’s specifications for approved products.

E. All fiber optic cables shall be tested for Verification of Link Integrity (OTDR). All fibers, even those that are left unterminated, shall be documented in one direction of transmission using an Optical Time Domain Reflectometer. Multimode fibers shall be tested at 850 nm (nominal). The OTDR tests shall incorporate high-resolution optics optimized for viewing of short cable sections. Access jumpers of adequate length to allow viewing of the entire length of the cable, including the connectors at the launch and receive ends shall be used.

F. OTDR traces revealing a point discontinuity in the fiber greater than 0.2 dB in a multimode fiber, at any of the tested wavelengths, or any discontinuity showing a reflection at that point shall be a valid basis for rejection of that fiber by OWNER. The installation of that cable shall be reviewed in an effort to remove any external stress that may be causing the fault. If such efforts do not remove the fault, that cable and the associated terminations shall be replaced at CONTRACTOR’s expense.

G. Upon completion of the installation, CONTRACTOR shall provide complete test reports to ENGINEER for review. Documentation shall include the following items:

1. Test results submitted in the format specified for submissions under Section 01 33 00–Submittals. Where documentation provided in electronic form requires unique software for viewing test results, CONTRACTOR shall provide one licensed copy of the software along with the above documentation.
2. Insertion loss test data, including a record of test wavelengths, cable type, fiber and cable (or Outlet) I.D., measurement direction, test equipment type, model and serial number, date, reference setup, and crew member name(s).
3. OTDR traces including individual optical fiber “signatures” obtained as specified above. Trace files shall be named to identify each individual fiber by its location in the cable system and fiber number or color. For OTDR traces, the vertical and horizontal scales shall be set so as to maximize the detail in each backscatter trace. The portion of the trace which depicts the fiber under test shall extend a minimum of 50% of the display area.

END OF SECTION

SECTION 26 05 26

SECONDARY GROUNDING

PART 1–GENERAL

1.01 SUMMARY

A. Work Included: Electrical equipment and raceway grounding and bonding.

B. Related Sections and Divisions: Applicable provisions of Division 01 shall govern work in this section.

1.02 SUBMITTALS

A. Submit shop drawings and product data in accordance with provisions of Section 01 33 00–Submittals.

PART 2–PRODUCTS

2.01 MATERIALS

A. Ground Fittings: O-Z/Gedney, Type ABG, CG, TG, GBL, or equal.

PART 3–EXECUTION

3.01 INSTALLATION

A. Compression-type connectors shall be installed with the manufacturer recommended tools. Compression dies shall emboss index on the connector when installed correctly. An indenter crimp shall be made on ground rods prior to connection of grounding conductor.

B. Provide a separate insulated equipment grounding conductor for each feeder and branch circuit. Terminate each end on a grounding lug, bus, or bushing.

C. Bond together system neutrals, service equipment enclosures, exposed noncurrent carrying metal parts of electrical equipment, metal raceway systems, grounding conductor in raceways and cables, receptacle ground connectors, and cold water plumbing systems.

D. Ground system, transformer neutrals, and equipment as required by code and local ordinances.

E. Include ground for grounded receptacles and equipment items shown on the Drawings.

F. Flexible connections do not qualify for ground. All flexible connections must have separate green ground wire from motor base, lighting fixture, or equipment frame to conduit system.

G. Provide a separate grounding conductor system for the grounding of all devices installed in the same conduit as the branch circuit conductors. Ground conductors shall be individually connected at each fixture or device.

H. Refer to Section 26 05 23–Instrument and Communication Wire and Cable for additional grounding requirements.

3.02 TESTING

A. Inspect grounding and bonding system conductors and connections for tightness and proper installation.

END OF SECTION

SECTION 26 05 29

SUPPORTING DEVICES

PART 1–GENERAL

1.01 SUMMARY

A. Work Included:
   1. Conduit and equipment support members.
   2. Fastening hardware.

B. Related Sections and Divisions: Applicable provisions of Division 01 shall govern work in this section.

1.02 QUALITY ASSURANCE

A. Support systems shall be adequate for weight of equipment and conduit, including wiring, which they carry.

1.03 SUBMITTALS

A. Submit shop drawings and product data in accordance with provisions of Section 01 33 00–Submittals.

PART 2–PRODUCTS

2.01 MATERIAL

A. Support Members:
   1. 316 stainless steel in exterior locations, NEMA 4X areas, and damp and wet locations.
   2. Fiberglass in NEMA 4X chemical rooms where noted on the Drawings.
   3. Hot-dipped galvanized steel in all other areas.

B. Hardware:
   1. Stainless steel in exterior locations, NEMA 4X areas, and damp and wet locations.
   2. Fiberglass in NEMA 4X chemical rooms where noted on the Drawings.
   3. PVC-coated steel clamps and stainless steel hardware with stainless steel members where used to support PVC-coated rigid steel conduits.
   4. Hot-dipped galvanized steel in all other areas.

C. Manufacturers: Unistrut P-1000, B-line, Superstrut, or equal.

PART 3–EXECUTION

3.01 INSTALLATION

A. All supporting devices and support structures shall be constructed such that the structure adequately supports the load of the equipment installed on it including any wind and/or snow

loads. Provide additional support members to those shown on the Drawings to adequately support load.

B. Fasten hanger rods, conduit clamps, and outlet and junction boxes to building structure using expansion anchors or support members. Do not use spring steel clips and clamps. Provide standoffs or suspended ceiling grid bridge supports as specified in other technical sections.

C. Use toggle bolts or hollow wall fasteners in hollow masonry, plaster, or gypsum board partitions and walls; expansion anchors or preset inserts in solid masonry walls; self-drilling anchors or expansion anchors on concrete surfaces; sheet metal screws in sheet metal studs; and wood screws in wood construction.

D. The ends of all support members shall be ground smooth.

E. Do not fasten supports to piping, ductwork, mechanical equipment, or conduit.

F. Do not use powder-actuated anchors.

G. Do not drill structural steel members.

H. Fabricate supports with welded end caps and all welds and surfaces ground smooth for neat appearance. Use hexagon head bolts with steel spring-lock washers under all nuts.

I. In wet locations, install free-standing electrical equipment on concrete pads. Anchor all equipment to adjacent walls with standoffs and caulk.

J. Install surface-mounted cabinets and panelboards with a minimum of four anchors.

K. Bridge studs top and bottom with channels to support flush-mounted cabinets and panelboards in stud walls.

L. Do not use chain, wire rope, or perforated strap hangers.

M. All welds shall be continuous and ground smooth.

END OF SECTION

SECTION 26 05 33

CONDUIT

PART 1–GENERAL

1.01 SUMMARY

A. Work Included:
   1. Rigid metal conduit and fittings.
   2. Rigid aluminum conduit and fittings.
   3. PVC externally and internally coated galvanized rigid metal conduit and fittings.
   4. Polyvinyl chloride conduit and fittings.
   5. Liquidtight flexible metal conduit and fittings.
   6. Conduit seals and special fittings.

B. Related Sections and Divisions: Applicable provisions of Division 01 shall govern work in this section.

1.02 REFERENCES

A. ANSI C80.1–Electrical Rigid Steel Conduit (ERSC).

B. ANSI C80.5–Electrical Rigid Aluminum Conduit (ERAC).

C. ANSI/NEMA FB 1–Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable.

D. NEMA RN 1–Polyvinyl-Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal.

1.03 QUALITY ASSURANCE

A. Manufacturers of Raceways: Firms regularly engaged in the manufacture of electrical raceways of the types and capacities required whose products have been in satisfactory use in similar service for not less than 5 years.

B. Installer: A firm with at least 5 years of successful installation experience on projects with electrical wiring installation work similar to that for the project.

C. Code Compliance: Comply with National Electrical Code (NFPA 70) and any and all local codes as applicable to construction and installation of electrical wiring devices, material, and equipment herein specified.

D. UL Labels: Provide electrical materials, which have been listed and labeled by Underwriters Laboratories.

E. Prior to shipment to the site, all conduit provided shall be new, unused material, and shall not have been stored outdoors or exposed to weather.

F. NECA Standard: Comply with applicable portions of National Electrical Contractor's Association's "Standard of Installation."

1.04 SUBMITTALS

A. Submit shop drawings and product data in accordance with provisions of Section 01 33 00–Submittals.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Provide color-coded thread protectors on the exposed threads of threaded rigid metal conduit.

B. Handle conduit carefully to prevent end damage and to avoid scoring the finish.

C. Store conduit inside and protect from weather. When necessary to store outdoors, elevate well above grade and enclose with durable, waterproof wrapping.

PART 2–PRODUCTS

2.01 RIGID METAL CONDUIT AND FITTINGS

A. Rigid Steel Conduit: ANSI C80.1 and UL6. Heavy wall seamless tubing with hot-dipped galvanized coating.

B. Conduit bodies for rigid steel conduit shall be as manufactured by Appleton, Form 35, or equal, and be constructed of stamped steel for sizes 2 inches and under, and cast malleable iron for sizes over 2 inches. Conduit bodies shall have domed gasketed covers and stainless steel screws. Conduit bodies sizes 1 1/4-inch and larger shall have built-in pulling rollers. Covers for conduit bodies must have bolts that thread into the conduit body. Snaptight and wedgenut covers are not allowed. CONTRACTOR shall select body style and size according to application.

C. Rigid Aluminum Conduit: ANSI C80.5 and UL6A. Heavy wall.

D. Conduit bodies for rigid aluminum conduit shall be as manufactured by Appleton, Form 85, or equal, and be constructed of pressure-cast, copper-free aluminum for sizes 2 inches and under, and sand-cast, copper-free aluminum for sizes over 2 inches. Conduit bodies shall have domed gasketed covers, and stainless steel screws. Covers for conduit bodies must have bolts that thread into the conduit body. Snaptight and wedgenut covers are not allowed. CONTRACTOR shall select body style and size per application.

E. PVC-coated conduit and fittings shall be internally and externally hot dipped galvanized rigid metal conduit with hot dipped galvanized threads and PVC coating. PVC coating shall be UL listed with rigid metal conduit as the primary means of corrosion protection for the conduit, and PVC coating shall have an external 40 mil thickness with an internal 2 mil urethane coating. Acceptable manufacturers shall be Plasti-bond RedH_2OT by Robroy Industries, Ocal-Blue by ABB (Thomas & Betts), Calbond, or equal. All installers shall be field-certified from the factory for installation and shall provide proof of certification.

PVC-coated conduit and fittings shall meet the following listings and manufacturing standards, without exception:

1. ANSI C80.1.
2. UL6.
3. NEMA RN1.

F. Conduit bodies for PVC-coated rigid conduit shall be as manufactured by Plasti-bond RedH_2OT by Robroy Industries, Ocal-Blue by ABB (Thomas & Betts), Calbond, or equal, and have a 40 mil PVC exterior coating and 2 mil red urethane interior coating. Conduit bodies shall be Form 8 style or pulling elbow and include domed, gasketed covers and stainless steel screws. Covers for conduit bodies must have bolts that thread into the conduit body. Snaptight and wedgenut covers are not allowed. CONTRACTOR shall select body style and size according to application.

G. Fittings and Conduit Bodies: ANSI/NEMA FB 1 and UL 514B; threaded-type material to match conduit. For hazardous locations, fittings and conduit bodies shall meet the requirements of UL 886. Split couplings are not allowed.

H. Supports: One-hole straps with conduit clamps and backspacers shall be used for surface-mounted conduit. Where standoffs are required, provide conduit clamps and supporting devices as specified in Section 26 05 29–Supporting Devices. One-hole straps with conduit clamps and backspacers for PVC-coated rigid steel conduit shall be PVC-coated rigid steel material.

2.02 POLYVINYL CHLORIDE CONDUIT (PVC) AND FITTINGS

A. Conduit: Heavy wall rigid, Schedule 40, Schedule 80 where noted, UL listed for underground, encased, and aboveground applications. PVC conduit installed in exterior locations shall be UV resistant.

B. Conduit bodies for PVC conduit shall be as manufactured by Carlon, or equal, and be suitable for use with Schedule 40 or Schedule 80 PVC conduit. Conduit bodies shall have smooth hubs, textured lids, and foam-in-place gaskets. CONTRACTOR shall select body style and size per application.

C. Supports: Two-hole nonmetallic clamps shall be used for surface-mounted conduit. Where standoffs are required, provide pipe straps and supporting devices as specified in Section 26 05 29–Supporting Devices. Support material shall match that of the conduit type being provided.

2.03 LIQUIDTIGHT FLEXIBLE CONDUIT AND FITTINGS

A. Liquidtight Flexible Metal Conduit:
   1. Conduit: Spiral-wound, electrogalvanized, single-strip steel with integral grounding conductor continuously enclosed within the entire length of the convolutions. The flexible PVC jacket shall be sunlight-resistant, flame-retardant, and resistant to damage from mild acids. Conduit shall be UL Listed and be rated for installation in Class I, Division 2, Groups C and D locations. Conduit shall be Liquatite Type LA, or equal.
   2. Fittings: UL listed with thermoplastic elastomer sealing gasket.
      a. Provide stainless-steel fittings in exterior, NEMA 4X, and damp and wet locations, unless noted otherwise.

b. Provide electro-zinc plated steel fittings in all other areas, unless noted otherwise.

2.04 CONDUIT SEALS AND SPECIAL FITTINGS

A. Conduit Seals: Duct sealing compound, OZ Gedney Type DUX, or equal.

B. Expansion Fittings: Crouse Hinds or Robroy Type XJG (non-hazardous location) or Type UNY/UNF (hazardous location), or equal, for rigid, IMC, or PVC-coated rigid conduit. Carlon E945 Series, or equal for PVC conduit.

C. Expansion Deflection Fittings: O-Z type “DX,” Crouse Hinds, type XD (PVC conduit only), or Appleton.

D. Ground Bushings: Crouse Hinds Model GLL, or equal.

E. Mechanical Seals: 316 stainless steel, Link Seal, or equal. Link seals shall be provided with 316 stainless steel bolts, nuts, and fasteners.

F. Watertight Hubs: Diecast, insulated and gasketed, rated for wet or dry locations indoors or outdoors. Watertight hubs shall be Appleton HUBXXXDN, Crouse-Hinds Myers Hubs, or equal.

G. Conduit Plugs: Kwik N Sure pipe plug as manufactured by Cherne Industries, or equal. Plug shall include natural rubber O-ring with galvanized wing nut and hex nut.

H. Conduit Threads Joint Compound: Kopr-shield conductive, anti-corrosion joint compound as manufactured by Thomas & Betts, or equal.

PART 3–EXECUTION

3.01 CONDUIT SIZING, ARRANGEMENT, AND SUPPORT

A. Size conduits for branch circuit conductors, control wires, and instrumentation cables so as to have not less than 25% spare capacity after installation; 3/4 inch minimum size. Minimum size for liquidtight flexible metal conduit is 1/2 inch.

B. Maintain at least 1 inch of separation between conduit sizes to 1 1/2 inches and 2 inches between conduits 1 1/2 inches or larger. Maintain 1 foot of separation between signal conduits (below 100 volts) and power conduits (100 volts and above).

C. All conduit shall be supported in accordance with the NEC and as specified herein. This shall apply to all conduit types, including flexible conduit.

D. Provide for the proper application, installation, and location of inserts, supports, and anchor bolts for a satisfactory raceway system. Where any component of the raceway system is damaged, replace or provide new raceway system.

E. Run conduits concealed to avoid adverse conditions such as heat and moisture, to permit drainage, and to avoid all materials and equipment of other trades. Maintain a minimum

clearance of 6 inches from all hot water pipes, flues, or any high-temperature piping or ductwork.

F. Conduits shall be attached to building surfaces and not suspended unless installed in a Unistrut-type conduit rack as specified herein. Individual conduits shall not be suspended. Clevis hangers are not allowed.

G. Independently support or attach the raceway system to structural parts of construction in accordance with good industry practice. Conduits through roofs shall be rigid metal conduit and be equipped with pitch pockets.

H. Conduit installed in metal stud walls must be secured to prevent rattling.

I. Conduit attached to building surfaces that may be damp or wet shall be spaced out to avoid rust and/or corrosion using fittings approved for the use. Use back straps on all conduit in damp and wet locations, or mount conduit with Unistrut straps, or equal. Watertight hubs shall be used in all damp and wet locations.

J. Conduits shall be securely fastened to building structure at intervals not exceeding 8 feet or closer, if necessary. Where hangers are necessary, 3/8-inch rod/eyelets/rings/or trapeze type in Unistrut channel and pipe clamps shall be used. Wire or perforated strap iron is not acceptable. PVC conduit shall be securely fastened to building structure at intervals not exceeding 3 feet.

K. Vertical conduit runs 1 1/4 inches and larger passing through floors shall be supported at each floor with conduit riser grips.

3.02 GENERAL CONDUIT INSTALLATION REQUIREMENTS

A. Exterior conduit shall be buried below grade. Conduit may be run exposed where required.

B. Conduit may be run exposed on the underside of precast or poured concrete floor slabs or in basements. Run exposed conduit grouped and parallel or perpendicular to construction. Do not route exposed conduits over boilers or other high-temperature machinery nor in contact with such equipment. All conduit shall be run exposed in structures below grade.

C. All conduit installed below grade shall be buried a minimum of 2 feet 0 inch.

D. PVC-coated rigid steel conduit and PVC conduit installed in earth (interior and exterior) shall be bedded in compacted sand with a minimum of 6-inch cover on all sides.

E. In all PVC conduit runs below grade 200 feet and longer, PVC coated rigid steel conduit shall be used for all 90 degree bends.

F. Ream conduit smooth at ends, cap upon installation, rigidly attach to structural parts of the building, and securely fasten to all outlet boxes, panel cabinets, junction boxes, pull boxes, splicing chambers, disconnect switches, and all other components of the raceway system.

G. Provide all empty raceways 2 1/2 inches and over with No. 10 galvanized fishwire, and nylon cord for conduits smaller than 2 1/2 inches. Empty raceways and fishwire/nylon cord shall be identified with permanent label, and label shall include conduit termination point. All empty

conduits shall be threaded, capped and flush with finished floor or wall. Exposed conduits shall be threaded and capped.

H. Provide conduit raceway for exposed cables that are not UV resistant. This shall include, but not be limited to, instrument wiring, motor terminators, pump cables, float cables, etc.

I. Conduit seals shall be provided where conduits pass from the interior to exterior of the building, where conduits enter a room which at any time is a low or high temperature room, where conduits enter a room which at any time is subject to internal air pressures above or below normal, any conduit entering a wet location, and any conduit entering a NEMA 4X area.

J. Liquidtight flexible conduit shall be installed in such a manner that liquids tend to run off the surfaces and not drain toward the fittings.

K. All runs of flexible conduit and flexible conduit couplings to equipment and devices shall be as short as practicable, of the same size as the conduit it extends, and with enough slack to reduce the effects of vibration to a minimum. A minimum of 18 inches of flexible conduit shall be installed for each motor.

L. Provide conduit expansion-deflection fittings as specified herein in all conduit runs where movement perpendicular to axis of conduit may be encountered.

M. Conduits shall be pitched so that drainage is away from all structures.

N. Conduit bends for PVC conduit shall be made using a hot box, heat blanket, or glycol bender. Open flame or point heat sources of any type are not allowed.

O. The PVC-coated rigid conduit manufacturer’s touch-up compound shall be used on all conduit interior and exterior bare steel exposed because of nicks, cuts, abrasions, thread cutting, and reaming; minimum six coats.

P. Where below-grade PVC conduit is connected to rigid metal conduit, the length of PVC conduit shall be a minimum of 10 feet. For short, below-grade conduit runs where required lengths of rigid metal conduit limit the length of PVC conduit to less than 10 feet, rigid metal conduit shall be used for the entire run.

Q. Conduit bodies shall not be used for antenna cable and fiber optic cable routing. Provide pull boxes sized as required for antenna cable and fiber optic cable bending radius.

R. Routing of conduits on exterior of buildings shall be avoided to the extent possible and shall not cover or interfere with lighting, signage, windows, louvers, or other openings. All conduit routing on exterior walls shall be reviewed with ENGINEER for approval prior to installation.

S. Conduits installed in damp and wet locations shall have all threads coated with conduit threads joint compound.

3.03 CONDUIT PENETRATIONS AND TERMINATIONS

A. Where fittings are brought into an enclosure with a knockout, a gasket assembly consisting of an O-ring and retainer shall be installed on the outside. Fittings shall be insulated throat type.

B. Conduit penetrations for control panels or enclosures containing electronic equipment shall utilize watertight hubs and, if entering the top of the enclosure, shall be located at the front of the enclosure and not over any electronic equipment (e.g., PLC, power supplies, etc.).

C. Conduit penetrations for all exterior enclosures (e.g., disconnects, junction boxes, control panels) shall utilize watertight hubs and enter the sides or bottom of the enclosure. Conduits shall not penetrate the top of the enclosure.

D. Provide conduit expansion fittings as specified herein in all conduit runs that cross a structural expansion joint, for conduits protruding from duct banks that are routed above grade and into structures, and for conduits protruding from earth.

E. Provide firestopping for all conduits penetrating fire barriers as specified in Section 07 84 00–Firestopping.

F. All conduits that protrude from poured concrete shall be PVC-coated rigid conduit. Conduit shall extend continuously (i.e., no joints) a minimum of 4 feet beyond the poured concrete (both sides). Where an underground conduit joint or coupling is located within 4 feet of the face of the penetration, the conduit shall be provided with reinforced concrete encasement doweled into the structure wall and continuing a minimum of 1 foot past the connection. The encasement construction shall conform with the encasements indicated for duct banks. PVC-coated rigid conduit 4-foot minimum projection requirement shall begin at, and extend from, the end of the encasement. The intent of this paragraph is to permit CONTRACTOR to use couplings at the inside face of the formwork.

G. Conduits passing through masonry, concrete, or similar construction shall be cast in place using PVC-coated rigid conduit extending completely through the construction.

H. Where above-grade conduits pass through cores in existing structures or through masonry walls, grout openings between conduit and walls or floors with sand cement mortar.

I. Where wall penetrations through existing walls are below grade, cored openings shall be sealed with waterproof mechanical seals. Cores shall be pitched slightly such that conduit slopes away from building. Sleeve diameter shall be provided and mechanical seals installed as recommended by the manufacturer. Conduit shall extend continuously (i.e., no joints) a minimum of 4 feet beyond the wall (exterior).

J. All spare conduits that terminate in a building or structure below grade shall be plugged with conduit plugs as specified herein.

3.04 CONDUIT INSTALLATION SCHEDULE

A. The following schedule lists specific conduit types allowed in designated areas. Those areas not listed under a specific conduit type shall not have that type of conduit installed:
   1. Rigid steel:
      a. Interior locations requiring mechanical protection.
      b. All exposed interior locations.
      c. All concealed interior locations.
   2. Rigid aluminum:
      a. All exposed interior locations.

b. Interior locations requiring mechanical protection.
c. Exterior locations (except in earth) and locations exposed to weather.
d. Above suspended ceilings.
e. All locations where attached to aluminum railings or aluminum structural members.
f. Where noted on the Drawings.

3. PVC-coated rigid steel:
   a. Conduits protruding from concrete.
   b. Interior and exterior locations requiring mechanical protection.
   c. Earth.
   d. Exterior locations and locations exposed to weather.
   e. Within 4 feet of building or structure footing, wall, or manhole/handhole.
4. PVC:
   a. Earth, except within 4 feet of a building or structure footing, wall, or manhole/handhole. PVC conduit under pavement or roadways shall be Schedule 80.
   b. NEMA 4X areas (indoors only).
5. Liquidtight flexible metal conduit not over 3 feet in length for final connections to:
   a. Equipment in wet locations.
   b. Equipment with sliding bases or flexible positioning.
   c. Equipment with vibration isolation mounting.
   d. Equipment housing ferromagnetic cores or with integral moving components capable of generating noise or vibrations, including transformers and motors.
   e. All pumps and associated equipment.

END OF SECTION

SECTION 26 05 35

BOXES

PART 1–GENERAL

1.01 SUMMARY

A. Work Included:
   1. Switch, outlet, and small junction boxes.
   2. Pull and junction boxes.

B. Related Sections and Divisions: Applicable provisions of Division 01 shall govern Work in this section.

1.02 REFERENCES

A. ANSI/NEMA OS 1–Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.

B. ANSI/NEMA OS 2–Nonmetallic Outlet Boxes, Device Boxes, Covers, and Box Supports.

C. NEMA 250–Enclosures for Electrical Equipment (1000 Volts Maximum).

1.03 QUALITY ASSURANCE

A. Manufacturers of switches, outlets, boxes, lamps, fuses, lugs, etc.: Firms regularly engaged in the manufacture of these products, of the types and ratings required, whose products have been in satisfactory use in similar service for not less than 5 years.

B. Installer: A firm with at least 5 years of successful installation experience on projects with electrical wiring installation Work similar to that in this project.

C. Code Compliance: Comply with National Electrical Code (NFPA 70) and any and all local codes as applicable to construction and installation of electrical wiring devices, material, and equipment herein specified.

D. UL Labels: Provide electrical cable, boxes, raceways, wire, connectors, outlets, switches, etc. that have been listed and labeled by Underwriters Laboratories.

E. NECA Standard: Comply with applicable portions of National Electrical Contractor's Association's "Standard of Installation."

1.04 SUBMITTALS

A. Submit shop drawings and product data in accordance with provisions of Section 01 33 00–Submittals.

PART 2–PRODUCTS

2.01 SWITCH, OUTLET, AND SMALL JUNCTION BOXES

A. Masonry and Partition Boxes: Galvanized steel, nongangable. ABB (Thomas & Betts), MB Series, or equal. Provide number of gangs for devices shown on the Drawings.

B. Cast Boxes: Aluminum or cast feraloy, deep-type, gasketed cover, threaded hubs, Eaton FD Series, or equal.

C. PVC-Coated Cast Boxes: Boxes shall be deep type and be by the same manufacturer as the conduit.

D. NEMA 4X Boxes:
   1. Switch and Outlet Boxes: PVC or FRP, Carlon FD Series, or equal with proper cover and gasket. 316 stainless steel, Calbrite FDC Series, or equal where specified herein.
   2. Small Junction Boxes: PVC or FRP, Carlon HS Series, or equal with proper cover and gasket.

E. Covers for switch and outlet boxes used as junction boxes shall have covers that match box type.

2.02 PULL AND JUNCTION BOXES

A. Cast Boxes: NEMA 250; Type 4, surface-mounted junction box, UL-listed as watertight. Cast aluminum or feraloy box and cover with ground flange, neoprene gasket, and stainless steel cover screws, Crouse-Hinds WCB Series, or equal. Boxes larger than 12 inches in any dimension shall have hinged cover.

B. PVC-Coated Cast Boxes: Provide PVC-coated cast boxes in areas where PVC-coated conduit is used. Boxes shall be by the same manufacturer as the conduit. Boxes larger than 12 inches in any dimension shall have hinged cover.

C. NEMA 4X Boxes: PVC or FRP, Carlon HS Series, or equal with proper cover and gasket. 316 stainless steel with hinged cover, recessed quarter-turn latches, and gasket, Saginaw Control and Engineering Enviroline Series, or equal, where specified herein.

D. NEMA 12 Boxes: Painted steel with hinged cover, recessed quarter-turn latches, and gasket. Boxes shall be Hoffman CSD, or equal.

E. Where terminal blocks or other devices are mounted in a pull or junction box, provide a 14-gauge steel back panel with a white enamel finish for mounting.

F. All enclosures with double doors or that are free-standing shall have a three-point latch.

G. Boxes specified in this section are not allowed to have knockouts and are not allowed to be used as enclosures for control panels.

PART 3–EXECUTION

3.01 COORDINATION OF BOX LOCATIONS

A. Provide electrical boxes as necessary for splices, taps, wire pulling, cable bending radii, equipment connections, and code compliance.

B. Where dedicated raceways are provided for different voltage systems or wiring, (e.g., motor power wiring and motor space heaters), separate boxes shall also be provided unless acceptable to ENGINEER. Where acceptable to ENGINEER, combined boxes shall be physically divided to separate the wiring.

C. Locate and install boxes to allow access. Where installation is inaccessible, coordinate locations and sizes of access doors.

D. Locate and install to maintain headroom and to present a neat appearance.

E. All boxes attached to building surfaces that may be damp or wet shall be spaced to avoid rust and/or corrosion. All boxes in damp and wet locations shall be on 1/2-inch standoffs.

3.02 SWITCH, OUTLET, AND SMALL JUNCTION BOX INSTALLATION

A. Provide knockout closures for unused openings.

B. Support boxes independently of conduit.

C. Use multiple gang boxes where more than one device is mounted together; do not use sectional boxes. Provide barriers to separate wiring of different voltage systems.

D. Install boxes in walls without damaging wall insulation.

E. Switch and outlet boxes provided for branch circuits and feeders shall not contain control wiring. Control wiring shall have dedicated pull and junction boxes provided. Wiring for different voltage systems (e.g., 24 V, 120 V, 480 V) shall have dedicated pull and junction boxes for each voltage.

F. Align wall-mounted outlet boxes for switches, thermostats, and similar devices.

G. For weatherproof switches, devices, and exterior fixtures, use cast boxes with proper cover and gasket.

H. All interior exposed wall and ceiling outlet boxes shall be cast boxes, unless otherwise noted.

I. Knockout punches or saws shall be used for holes; boxes with prepunched holes are not acceptable, except for masonry boxes.

J. Boxes shall be of a depth to accommodate wires and splices and shall be equipped with both fixture hanging studs and tapped fixture ears. Boxes shall be installed so that they will support the weight of the fixture. Conduit will not be considered as adequate supports.

K. Cast boxes with 3/4-inch hubs and aluminum fittings and enclosures may be used with all conduit types.

L. Provide PVC-coated cast boxes in all areas where PVC-coated conduit is used. Boxes shall be by the same manufacturer as the PVC-coated conduit.

3.03 PULL AND JUNCTION BOX INSTALLATION

A. Locate pull boxes and junction boxes above accessible ceilings or in unfinished areas.

B. Support pull and junction boxes independent of conduit.

C. Knockout punches or saws shall be used for holes; boxes with prepunched holes are not acceptable.

D. Refer to Section 26 05 53–Electrical Identification for junction box labeling requirements.

E. All interior exposed junction and pull boxes shall be NEMA 12, unless noted otherwise.

F. All exterior junction and pull boxes shall be NEMA 4X. Boxes in areas subject to damage shall be stainless steel.

END OF SECTION

SECTION 26 05 53

ELECTRICAL IDENTIFICATION

PART 1–GENERAL

1.01 SUMMARY

A. Work Included:
   1. Nameplates.
   2. Labeling tags.
   3. Wire markers.

B. Related Sections and Divisions: Applicable provisions of Division 01 shall govern work in this section.

1.02 SUBMITTALS

A. Submit shop drawings and product data in accordance with provisions of Section 01 33 00–Submittals.

B. Provide schedule for nameplates and labeling tags with shop drawings. Reference Drawings for type used.

PART 2–PRODUCTS

2.01 NAMEPLATES

A. Type “A”:
   1. Use:
      a. Each device on Supervisory Control Center exterior.
      b. Cabinets, enclosures, pull, and junction boxes.
      c. Field devices (flowmeter transmitters, level transmitters, chemical scales, chemical leak detectors, etc.).
   2. Size: As required.
   3. Material: 2-layer laminated Micarta.
   4. Background Color: Black.
   5. Character Color: White.
   6. Character Size: 1/2-inch.
   7. Engraving: See I/O list for labels, or as requested by ENGINEER. Label shall include equipment number and description (i.e., SCAL-60-01, Fluoride Scale).
   8. Mounting Location: Front exterior.

B. Type “B”:
   1. Use:
      a. Supervisory Control Centers.
   2. Size: As required.
   3. Material: 2-layer laminated Micarta.
   4. Background Color: Black.
   5. Character Color: White.

6. Character Size: 2 1/4 inches.
7. Engraving: Label shall include equipment number and description as shown on the SCADA Riser, (i.e., SCC-023-0-1, Well 23D).
8. Mounting Location: Equipment: Top wire way.

2.02 LABELING TAGS

A. Use: Field-mounted devices without surfaces suitable for mounting fixed nameplates (Valves, Limit Switches, Level Transmitters, Flow Transmitters, etc.).
1. Size: 3/8-inch by 2 inches.
2. Material: 2-layer laminated Micarta.
3. Character Size: 1/4-inch.
4. Engraving: As requested by ENGINEER.

2.03 WIRE AND CABLE MARKERS

A. Wire and cable markers shall be permanently-attached, heat-shrink type labels.
1. Sleeve: Permanent, PVC, white, with legible machine-printed black markings.
2. Acceptable Manufacturers: Raychem Model D-SCE or ZH-SCE, Brady Model 3PS, or equal.
3. Grounding Conductor: Provide green wire marker; minimum 2 inches wide.

B. Wire or cable numbering preprinted on the conductor or cable insulation, flag-type labels, and individual wraparound numbers (such as Brady preprinted markers) are not acceptable. All wire markers shall be the same throughout the project.

PART 3–EXECUTION

3.01 INSTALLATION

A. Degrease and clean surfaces to receive nameplates.

B. Install nameplates parallel to equipment lines.

C. Affix nameplates with weatherproof, UV-resistant adhesive in outdoor locations and sticky back adhesive in indoor locations.

D. Affix labeling tags with stainless steel leaders; vinyl locking wire ties are not acceptable. Provide 3/8-inch hole to accommodate wire tie.

E. Prepare and install neatly-typed circuit directories and schedules in all panels, including, but not limited to, fiber optic patch panels, and existing panels where Work is done under this Contract.

F. Labeling tags shall only be used for equipment enclosures without surfaces suitable for mounting fixed nameplates.

3.02 WIRE IDENTIFICATION

A. Provide wire markers on each conductor, including neutral and spare conductors, in panelboard gutters, pull boxes, outlet and junction boxes, and at load connection. Neutral

conductor labels shall include the associated branch circuit number. Identify with branch circuit or feeder number for power and lighting circuits, and with control wire number as indicated on schematic and interconnection diagrams for control wiring. Spare conductors shall have control wire number or shall indicate termination point of wire.

B. Conductors in pull boxes, motor control centers, supervisory control panels, control panels, cabinets, and panelboards shall be grouped as to circuits and arranged in a neat manner. All conductors of a feeder or branch circuit shall be grouped, bound together with nylon ties, and identified. Phase identification shall be consistent throughout the system. All wiring labels shall be able to be read without removing wire management (i.e., wiring trough covers, spiral windings, etc.) or twisting the wire/cable.

C. Where terminal blocks are factory provided with non-project-specific labels by equipment manufacturers in MCC buckets, combination starters, VFDs, motor control panels, control panels, and similar equipment and are wired to terminal blocks in control panels with project-specific labels, the interconnecting wiring shall be labeled at both ends to match the project-specific terminal blocks in the control panel. Provide an additional label on the end of each wire that is connected to a terminal block with a non-project-specific label to indicate the associated terminal block.

D. Power Conductor Insulation Color Code:
   1. 6 AWG and Larger: Provide general-purpose, flame-retardant, permanent tape at each termination and at accessible locations such as manholes, handholes, junction and pull boxes, panelboards, motor control centers, switchboards, switchgear, etc. Apply tape with at least six full, overlapping wraps; minimum 2 inches wide.
   2. 8 AWG and Smaller: Provide conductors with color-coded insulation.
   3. Colors:

System	Conductor	Color
All Systems	Equipment Grounding	Green
120/240 Volts Single-Phase, Three-Wire	Grounded Neutral One Hot Leg Other Hot Leg	White* Black Red
120/208 Volts Three-Phase, Four-Wire	Grounded Neutral Phase A Phase B Phase C	White* Black Red Blue
Note: Phase A, B, C implies direction of positive phase rotation.		
* When installed as part of a 120-volt or 277-volt branch circuit, provide a color-coded stripe on the white neutral conductor insulation matching the branch circuit insulation.		

E. Control Panel and Field-Installed Control Conductor Insulation Color Code:
   1. All conductors shall have color-coded insulation.
   2. Colors:

System	Conductor	Color
Supply Voltage	Ungrounded Circuit Conductors Neutral	Black White
Discrete 120-volt AC Input/Output	Control Circuit Conductor Neutral	Red White

System	Conductor	Color
Discrete 12/24-volt DC Input/Output	Control Circuit Conductor Common	Blue White with Blue Stripe
Conductors energized when the main disconnect is in the "off" position (e.g., foreign supply voltages)	Control Circuit Conductor AC Neutral DC Common Ground	Orange White White with Blue Stripe Green

F. Circuit Identification:
   1. Identify power, instrumentation, and control conductors at each termination and at accessible locations such as manholes, handholes, junction and pull boxes, panelboards, motor control centers, switchboards, switchgear, etc.
   2. Conductors for panelboard circuits shall identify circuit matching the circuit directory designations, including the neutral conductor.
   3. Control conductor identification shall match the associated terminal block label.
   4. Circuits Not Listed in Circuit Directories:
      a. Assign circuit name based on unique device or equipment at load end of circuit.
      b. Where unique device or equipment names are not available or apparent, add a unique number or letter modifier to each otherwise identical circuit name.

3.03 DATA CABLE AND COMMUNICATION EQUIPMENT IDENTIFICATION

A. Individual labels shall be placed on all patch panels, racks and communications cabinets, and both ends of all cables.
   1. Patch Panels:
      a. Rack/cabinet number, patch panel type (C=copper, F=fiber) and top position of patch panel in rack units from bottom of rack/cabinet.
      b. For example: “R-80-01:C07” represents a copper patch panel mounted in top RU space 7 of Rack No. 1, which is located in Structure 80.
      c. For structures with a total of one rack or cabinet installed, the patch panel labels shall not include a preceding rack number.
   2. Cables:
      a. Patch panel number, cable type (D=data, V=voice)-jack number.
      b. For example: “R-80-01:C07.D-001” represents the first data jack served from a copper patch panel mounted in top RU space 7 of Rack No. 1, which is located in Structure 80.
      c. For structures with a total of one rack or cabinet installed, the cable labels shall not include a preceding rack number.
   3. All labels shall comply with ANSI/TIA/EIA-606-A-1.

B. Refer to Section 26 05 23–Instrument and Communication Wire and Cable for cable insulation and jack color requirements.

3.04 JUNCTION BOX IDENTIFICATION

A. All junction boxes shall be labeled with permanent nameplates. Nameplates shall indicate circuit or load served, as well as the power source and highest voltage present on any conductor.

3.05 CONDUIT FITTINGS IDENTIFICATION

A. All conduit fittings that contain splices of any kind shall be labeled with permanent nameplates indicating “splice within.” Nameplates shall be clearly visible at location installed. Nameplates shall be fastened to each conduit fitting with heavy duty, UV-resistant, cold weather cable ties.

3.06 TERMINAL BLOCK IDENTIFICATION

A. Terminal blocks shall be labeled on both sides of each terminal block. Terminal block numbering shall match the numbers shown on the project-specific wiring diagrams.

B. Fused terminal blocks labels shall be located on top of the terminal blocks and include the fuse voltage and ampere rating.

3.07 COMPONENT IDENTIFICATION

A. All components (e.g., relays, timers, power supplies, transformers, etc.) within enclosures shall be identified with sticky-back adhesive, self-laminating, machine-printed marking labels. Labels shall be installed on the enclosure back panel and not on the device itself, wireway covers, or any other removable devices. Labels shall be included on the as-built drawings.

3.08 LABELING FONT REQUIREMENTS

A. The font for all conductor, cable, and device labels shall be Arial with black characters on white background, and minimum font size 12.

B. The text for all conductor, cable, and device labels shall be machine printed. Handwritten labels are not acceptable.

END OF SECTION

SECTION 26 09 00

CONTROLS AND INSTRUMENTATION

PART 1–GENERAL

1.01 SUMMARY

A. Allowances: System Supplier shall include in the Bid the cost of the following items specified in this section. Refer to the individual sections listed below for a complete description of the work required. Telemetry Modifications Allowance, Paragraph 3.05.C.

B. Related Sections and Divisions:
1. Applicable provisions of Division 01 shall govern work in this section.
2. Section 26 09 10–Controls and Instrumentation Drawings.
3. All other sections of Division 26.

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1.02 SYSTEM DESCRIPTION

A. The work includes furnishing, delivering, installing all items furnished, and placing into operation, including modifications to the Supervisory Control and Data Acquisition (SCADA) System for the City of Joliet, Illinois, Water System.

B. System Supplier shall be defined as the fabricator, assembler, and supplier of all system components. This shall include, but not be limited to, all instrumentation as specified, all PAC cabinets and required interface hardware and internal wiring, the SCADA System HMI computers (thin clients), hardware, system drawings, system software, and MCC modification drawings as necessary.

C. System Supplier shall be responsible for development of the SCADA System HMI computer graphics as specified herein. System supplier shall be responsible for all OIT graphics programming.

D. CONTRACTOR shall inspect all work. The Bid shall include everything necessary to obtain a complete installation operating in accordance with these specifications and the Bidder's proposal, whether necessary items and equipment are contained in, or are remote from the enclosures furnished under this Contract. All responsibility for this system ultimately lies with CONTRACTOR.

E. CONTRACTOR shall be responsible for the placing of circuits and making of electrical and hydraulic connections in accordance with System Supplier-furnished drawings, instructions, and field supervision to provide proper connection. CONTRACTOR shall include the services of a System Supplier factory engineer to supervise making of connections to power

supplies, motor leads, communication circuits, existing control equipment, and any other connections external to the new control equipment; adjust the equipment; initiate and check operation; instruct OWNER's electrician on operation and maintenance of the equipment; and place the equipment in operation in an acceptable manner. This shall include on-site review of software/hardware controls from the central control point.

F. Any auxiliary interface relays and controls needed for completion of this project, if not specifically called for, shall be by System Supplier. All switches and control and indicating lights associated with the control panels shall be new and installed in the starter panels. All new telemetry equipment and controls shall be installed in new or existing supervisory control panels as necessary by System Supplier at locations where space allows for the new equipment.

1.03 QUALITY ASSURANCE

A. System Suppliers: Firms regularly engaged in the design and manufacture of SCADA systems of the size and complexity specified herein, and whose systems have been in satisfactory use in similar service for not less than 10 years.

B. Installer: A firm with at least 10 years of successful installation experience on projects with SCADA System design and installation work similar to that required for the project.

C. Code Compliance: Comply with National Electrical Code (NFPA 70) and any and all local codes as applicable to construction and installation of electrical wiring devices, material, and equipment herein specified.

D. UL Labels: Provide control panels, power supplies, controllers, relays, wire, and connectors that have been listed and labeled by Underwriters Laboratories.

E. NECA Standards: Comply with applicable portions of National Electrical Contractor's Association's Standard of Installation.

1.04 SUBMITTALS

A. Manufacturer's Data: Submit manufacturer's data, specifications, and installation recommendations for each item specified herein.

B. Submit shop drawings and product data in accordance with provisions of Section 01 33 00–Submittals.

C. Provide product data on all equipment and devices specified herein as well as wiring schematics for all systems.

D. Shop drawing submittals shall be assembled in phases.
   1. The first submittal shall include the following:
      a. Detailed catalog information, descriptive literature, and specifications of hardware and software. All items being provided must be specifically noted on this literature, including all field devices and instruments.
      b. Project implementation plan, including information on project organization, project management, engineering, programming, configuration, training, startup, and maintenance services. Plan shall include key personnel on project, point of contact, and communication protocol.

c. Overall network schematic showing all controllers, radios, network switches, fiber-optic patch panels, fiber-optic patch cables, and hardware addresses applicable to the system.
d. Wiring diagrams for all control panels and MCCs, including modification drawings for existing equipment. Modification drawings shall be completed using electronic CAD software. Handwritten or PDF markups of any kind will not be allowed.
e. IP address segmentation scheme.

2. Subsequent submittals shall include the following:
   a. Control narratives.
   b. Database with PAC addresses.

1.05 OPERATION AND MAINTENANCE DATA

A. Submit operation and maintenance data under provision of Section 01 33 00–Submittals.

B. Include spare parts data listing, source and current prices of replacement parts and supplies, and recommended maintenance procedures and intervals.

C. Submit Operation and Maintenance Manuals in accordance with Division 01. The following additional information shall apply:
   1. Manuals shall contain, but not be limited to, the following:
      a. System Hardware.
      b. System Software.
   2. Hardware section shall include:
      a. Safety precautions, physical description, functional description, operating procedures, theory of operation, maintenance instructions, checkout procedures, troubleshooting procedures, servicing, and removal and replacement procedures.
      b. Wiring schematic and logic diagrams, parts list, and point-to-point wiring.
   3. Software section shall include:
      a. Software manual shall describe system techniques, general philosophies, list, and description of all standard software.
      b. Program documentation (i.e., PACs, radios, OITs) shall include programs, documentation files, database and configuration as installed. Provide two USB flash drives with this information. Usernames and passwords for all programmable devices (i.e., PACs, radios, OITs) shall be turned over to OWNER at the time of final completion.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.

B. Handle in accordance with manufacturer’s written instructions. Lift only with lugs provided for the purpose. Handle carefully to avoid damage to SCC components, enclosure, and finish.

1.07 SYSTEM ENGINEERING

A. System Supplier shall provide all engineering necessary to accomplish and document the requirements of this specification and be in accordance with the system configuration. The engineering to be performed by System Supplier on this project shall include, but not be limited to, the following categories:
   1. PAC system layouts.

2. Panel layouts.
3. I/O configuration and wiring drawings.
4. PAC programming.
5. Network configuration.

B. Installation: CONTRACTOR shall install all the system equipment including PACs and interconnecting cabling as required. This work shall include all interconnection wiring from new and existing equipment as required for the completion of the system.

C. It shall be the responsibility of System Supplier to ascertain that all field devices are compatible and consistent with the new system design. This includes reviewing drawings and data to ascertain the compatibility and consistency of the system with the field devices on such considerations as:
1. Equipment size and available space.
2. Power levels.
3. Power sources.
4. Logic schemes.
5. Signal types and levels.
6. Interface devices where required.
7. All other aspects of field devices impacting the design of the system.

D. The system shall be programmed to implement the control sequences and to provide the monitoring according to this specification. It shall be the responsibility of System Supplier to include all the inputs and outputs required to meet all aspects of this specification, regardless of whether they are specifically included in the I/O listing in this specification.

E. System Supplier shall provide a complete list of spare parts required and the supplier from which they may be purchased for operating the system for 3 years from startup.

1.08 DESCRIPTION OF THE CITY OF JOLIET WATER SCADA SYSTEM

A. System Supplier shall be responsible for the development of all required process control functions based on the Control Narratives described in this specification.

B. Included as part of the project shall be the monitoring of remote wells, water treatment plants, booster stations, reservoirs, elevated tanks and standpipes as shown on the SCADA riser via radio telemetry as specified herein. CONTRACTOR shall be responsible for reviewing each site and include in price bid all services, equipment, and devices required to provide the monitoring and control functions described herein and shown in Section 26 09 90–SCADA System I/O Listing.

C. System Supplier will be able to obtain a copy of shop drawings from OWNER for the existing control system wiring diagrams for development of the required loop drawings, interface requirements, and wiring requirements.

1.09 CONTRACTOR AND SYSTEM SUPPLIER GENERAL REQUIREMENTS

A. This specification, along with the Contract Drawings, defines the requirements of a PAC-based process monitoring and control system. System Supplier shall construct a process monitoring and control system specifically for the demanding requirements of a real-time municipal water system.

B. It is the intent of this specification to define modifications to an existing a fully integrated open-type process monitoring and control system, with all new equipment, factory-tested, delivered to the site, ready to function upon connection of power source and field instrument wiring. Components, peripherals, interconnections, cabling, power supplies, software, and services necessary to form a complete, integrated system shall be identified and provided by CONTRACTOR. CONTRACTOR shall be responsible for coordinating all interface requirements. CONTRACTOR shall submit to ENGINEER, in writing, any deficiencies noted during this review. Any changes required by CONTRACTOR because of failure to complete this review shall be the responsibility of CONTRACTOR, at no increase in cost to OWNER.

C. CONTRACTOR shall be responsible for complete coordination in providing all equipment, sensors, and meters supplied with input and output signals, and contacts that are compatible with the systems as specified herein and existing systems. The Contract Drawings and I/O Listing are symbolic representatives of the required work. It is not intended that the Drawings show all appurtenances. CONTRACTOR shall provide a complete and working system according to the true intent and meaning of the Drawings, Specifications, and standard industry practices.

D. To provide a complete and totally integrated system, a single manufacturer who has experience in furnishing similar networked PAC-based monitoring and control systems of the same complexity and size for municipal water distribution facilities shall provide the specified equipment and services. The system proposed to meet this specification shall be of field-proven design, incorporating manufacturer's standard equipment and software. Service of all peripheral devices shall be provided by the manufacturer of the process monitoring and control system.

E. Design and specification of devices and completed system shall conform to applicable portions of the National Electrical Code (NEC).

F. Control panels shall bear a serialized UL label indicating that it is UL approved as an assembled unit. Panels that have individual components that are UL labeled, but do not have UL approval as an assembled unit are not acceptable.

G. Training Program:
   1. Submit training plan including course syllabus, personnel who will be conducting the training, and schedule.
   2. Provide materials, instructors, and workbooks to complete the training.
   3. Training courses shall include:
      a. Operator training. Course length minimum 16 hours. Training shall use equipment specified herein following installation and field testing. (Four 4-hour sessions shall be provided at the Westside WWTP. Training sessions shall occur at a minimum of two-week intervals.) Sessions shall cover, at a minimum, the use of SCADA HMI graphics at Westside WWTP, OIT graphics and local control at each site, and an in-depth explanation of all SCADA alarms, notifications, and viewing historical data.
      b. Maintenance training. Course length minimum 12 hours. Three 4-hour sessions shall be provided at the Westside WWTP. Training sessions shall occur at a minimum of two-week intervals. Sessions shall cover, at a minimum, troubleshooting of common issues and the recommended regular maintenance of all equipment and devices provided or modified as part of this project including, but not limited to, all radios, antennas, instrumentation, control panels, and associated devices.
   4. Manufacturer's training shall be directed to system and equipment operation, maintenance, troubleshooting, and equipment and system-related areas other than the process itself.

H. System Supplier shall meet the following minimum requirements:
   1. System Supplier shall have a full-time staff of qualified programmers who are knowledgeable in the configuration of networked computer systems and the PACs being provided.
   2. System Supplier shall have a minimum of one Microsoft-certified engineer.
   3. System Supplier shall have training capabilities and shall have conducted training courses in programming and maintenance.
   4. System Supplier shall have an adequate inventory of spare parts.
   5. System Supplier shall have a full-time staff of qualified service technicians.
   6. System Supplier shall be responsible for the programming and documentation of the system.
   7. System Supplier shall be responsible for all details that may be necessary to properly install, wire, adjust, and place in operation a complete and working system.
   8. System Supplier shall be responsible for all coordination between the system and the field devices, instrumentation equipment, motor control centers, and equipment furnished with other divisions of this specification. This shall include interface with existing equipment.
   9. System Supplier shall have a UL 508A panel shop located inside the System Supplier's own facilities.
   10. System Supplier shall have experience with the existing HMI on past projects of similar size and complexity.

I. All components shall be standard make acceptable to OWNER, with one manufacturer to provide all similar components. The Base Bid System Supplier shall be Toric Engineering, (317) 922-1645, Integrated Process Solutions, (608) 849-4375, or Wunderlich-Malec (952) 933-3222. See General Conditions and Supplementary Conditions regarding substitutions to the Base Bid system suppliers.

J. System supplier shall obtain the services of Dahme Mechanical (Kris Komorn, (847) 212-1147) for all piping and mechanical installation work including, but not limited to, limit switch installation and magnetic flow meter installation.

1.10 FACTORY ACCEPTANCE TESTING, SYSTEM STARTUP, AND SUPPORT SERVICES

A. Permit ENGINEER and OWNER to observe vendor's staging records or other quality assurance records relating to system(s) supplied. System Supplier shall assemble the system components as a complete process monitoring and control system and demonstrate that the system is operational before shipment from System Supplier factory to the job site. This testing shall be as an integrated assembly by simulating each of the specified I/O points and all specified algorithms.

B. This test shall be witnessed by OWNER and ENGINEER (two personnel). System Supplier shall provide lodging, meals, and transportation in the Bid for two days and two nights as a minimum for this witness test. Travel costs shall include all rental car fees and refueling fees for each person attending where the driving distance is less than 250 miles, one way. Travel costs shall include all airplane travel fees for any personnel travel that would otherwise require a driving distance greater than 250 miles. ENGINEER and OWNER will travel from Joliet, Illinois. All problems, errors, insufficiencies, and failures identified during testing shall be resolved before shipment. In the event the equipment does not operate in accordance with the specifications, programming of controllers/computers is incomplete, or setup of equipment is incomplete, there shall be deducted from payments due CONTRACTOR the amount of $1,500 per day for ENGINEER's time plus travel and expenses, $500 per day for

OWNER's travel and expenses, as well as all costs for additional time plus travel and expenses for OWNER and ENGINEER to witness additional factory acceptance testing.

C. System Supplier shall make provisions to allow ENGINEER to test any modifications to existing Bristol PLC logic to communicate with the new PACs via an Ethernet-based protocol. This shall include a mock-up in their factory with temporary, equivalent, Bristol PLCs using project-specific programs and new PACs as specified herein. Mock-up shall also include the SCADA System HMI computers (thin clients) and server.

D. In order to allow remote participation in the Factory Acceptance Test, System Supplier shall make provisions to allow ENGINEER and OWNER to connect to the temporary testing network in their factory using a high speed (minimum 30 mbps) Virtual Private Network (VPN). The VPN connection shall allow full network access to all PACs, PLCs, SCADA System HMI computers (thin clients), OITs, and any other equipment needed to fully complete the factory acceptance testing. The VPN shall be activated and the latest version of VPN Client software shall be provided to OWNER and ENGINEER at least one week prior to the scheduled test to allow for VPN connection testing and troubleshooting. This VPN connection is in addition to the in-person factory acceptance testing specified above.

E. On-Site Functional Acceptance Testing:
   1. After all equipment has been installed and is placed in full-time operation or after all equipment associated with the group of equipment scheduled for on-site functional acceptance testing has been installed and placed in full-time operation, CONTRACTOR and System Supplier shall demonstrate that all equipment and controls operate in compliance with the Contract Documents. For each piece of equipment being tested, all systems associated with the operation of the equipment (e.g., controls, piping, etc.) shall be installed and be in full operating condition so that all equipment functions are able to be completely tested without delay using real-time process I/O.
   2. All control wiring, hardwired interlocks, OIT screens, control programming, etc., shall be checked out and functionally tested by System Supplier prior to ENGINEER’s on-site functional acceptance testing. All functional errors shall be corrected prior to ENGINEER’s on-site functional acceptance testing. Submit written documentation stating completion of startup and functional testing prior to scheduling ENGINEER's on-site functional acceptance testing.
   3. CONTRACTOR shall submit updated versions of all OIT screens developed by this System Supplier to ENGINEER for review at least 1 month prior to the functional acceptance testing of equipment controlled through the associated OIT screens.
   4. Coordination Videoconferences:
      a. CONTRACTOR shall schedule and conduct an initial functional acceptance testing coordination videoconference (minimum one hour) at least two months prior to the anticipated functional acceptance testing. The videoconference shall include CONTRACTOR, System Supplier, Division 26 contractor, OWNER, and ENGINEER, and all other parties responsible for the equipment and controls scheduled for functional acceptance testing.
      b. CONTRACTOR shall schedule and conduct additional functional acceptance testing coordination videoconferences (minimum one hour) one month prior to the date for functional acceptance testing of each group of equipment (assume at least two groups) to confirm status of equipment installation and System Supplier checkouts, and updates to the functional acceptance testing schedule, after which ENGINEER will finalize reservations for travel and accommodations. All parties shall agree on a date for functional acceptance testing of the next group of equipment at this videoconference, or schedule an additional videoconference to establish a testing date one month prior to the delayed testing date. If the functional acceptance testing

is rescheduled within one month of the agreed upon date, there will be deducted from payments due to CONTRACTOR the amount of penalties paid by ENGINEER for travel and accommodation cancellations. OWNER will deduct the amount of these charges from payments made to CONTRACTOR.

c. CONTRACTOR shall provide the following information in written form at each videoconference. All information shall be updated prior to each videoconference.
   (1) Equipment installation and manufacturer's startup schedule.
   (2) Status of all power and control system wiring for the equipment scheduled for functional acceptance testing.
   (3) Schedule and status of System Supplier's on-site checkout and functional testing.
   (4) Anticipated delays and the cause of each delay.
   (5) Conflicts with OWNER's operation of the facility.
   (6) Proposed dates for acceptance testing of all equipment and controls.
   (7) Proposed dates for future acceptance testing coordination videoconferences.

5. After being notified by CONTRACTOR that the equipment has been installed and is in full operating condition and ready for ENGINEER's functional acceptance testing, ENGINEER will make a maximum of five 2-day trips to check operation. CONTRACTOR and System Supplier shall be on-site during testing to adjust equipment, correct erroneous wiring, and make modifications to control system and OIT programming, as necessary. If the equipment and controls do not operate according to the Contract Documents, or if CONTRACTOR and System Supplier are not present during the scheduled testing, there will be deducted from payments due to CONTRACTOR the amount of $1,500 a day for ENGINEER's time plus travel and expenses, and for all additional field and office time spent by ENGINEER checking equipment. OWNER will deduct the amount of these charges from payments made to CONTRACTOR.
6. System Supplier shall provide functional acceptance testing support through one or more on-site field service engineers and the project control system programmer. Time for the on-site field service engineers and programmer scheduled for functional acceptance testing shall be dedicated to the functional acceptance testing process and shall not be interrupted for other construction-related activities.

F. Final acceptance and payment will not be made until the entire system has operated satisfactorily according to OWNER and ENGINEER for a minimum of 30 consecutive days. CONTRACTOR shall include in Bid field follow-up to provide proper adjustments and operation during the first year following project final completion. Prior to beginning the 30-day test, the following criteria shall be met:
   1. Satisfactory operation of I/O control loops.
   2. Satisfactory operation of software.
   3. Satisfactory operation of control program.
   4. Satisfactory operation of peripheral equipment.
   5. The necessary debugging programs have been performed.
   6. Data output is reliable.
   7. Control loops are operational.
   8. Checking and calibrating of systems have been completed.
   9. Wired and wireless communication systems are reliable, without extended or intermittent loss of communication.

G. CONTRACTOR, through System Supplier, shall provide the following support services:
   1. Field Service Engineer: Field service engineer shall be responsible for programming of system PACs in the factory and making program adjustments at the site and modifications to the existing PLCs at the site. Field service engineer shall be present at the factory acceptance test and be present for startup of all systems and available

throughout the entire construction process until final completion. Service technicians sent for system startup will not be acceptable. Support shall include on-site time. Services shall include, but not be limited to:

a. Commissioning, installation, startup, and testing of equipment.
b. Revising or rewriting manuals to incorporate an installed and accepted system.
c. On-site training.
d. Software modifications.

2. In-factory support shall include consultation following the acceptance testing and shipment. Services shall include, but not be limited to:
   a. Researching and answering questions related to the system operation, documentation, and system use and functions.
   b. Program modifications.
   c. Revising or rewriting manuals.
3. Post-startup support shall include follow-up services during the one-year period following final acceptance. Service shall include follow-up recalibration and replacement of defective equipment, as well as additional training, software modifications, and control configurations as requested by OWNER. This shall include 80 hours for work on-site other than warranty repair or replacement of defective equipment. This time shall be used for software enhancements and modifications to improve the operation of the system. In addition to the 80 hours, include five 8-hour trips to the site.

H. CONTRACTOR shall not install any hardware or software to enable remote access or control without written permission from OWNER and ENGINEER.

1.11 COMMON REQUIREMENTS ALL EQUIPMENT

A. All indicating and recording devices shall be electric or electronic.

B. All indicating and control devices mounted on control panel and standalone starter enclosure doors (e.g., meters, gauges, electronic indicators, pilot lights, selector switches, OITs, etc.) shall be located at eye level, minimum 48 inches, maximum 60 inches, from floor to bottom of device.

C. All motor control power shall be 120 volts with suitable circuit protection (fuses or breakers). Fuse holders shall be provided with integral LEDs to indicate when the fuse is blown.

D. Devices powered at 120 volts from supervisory control panels shall be fused. This shall include, but not be limited to, solenoid valves, motor-operated valves, motorized ball valves, flowmeters, scales, and transmitters.

E. Provide lightning protection, isolation transformers, and fused disconnects at each end of each power circuit, supervisory circuit, and local supervisory circuit with transformers and relays, if necessary, to obtain supervisory power. 120-volt power shall be available at all control points. Lightning protection shall be completely solid-state and self-healing and shall not require the use of fuses. Provide a single switch with an indicating light to deenergize the control power for each location. Each panel shall have a GFI, duplex, 15 ampere, 120-volt receptacle.

F. If enclosure and panel space is needed for future installation of devices and lights, the enclosure and panel shall be constructed for such installation. Supports shall be provided for future equipment, and panel openings shall be made and covered with neat cover plates matching the panel.

G. Where equipment is necessary to perform a function as called for in one part of this specification, it shall be provided, even though the detailed enumeration at various control points may omit listing that equipment.

H. Where a certain accuracy of sensing and transmitting levels or flows and controlling operations are called for, means must be provided to read or determine that the levels or flows are within the limits or accuracy specified of the sensing, transmitting, and controlling devices. Where no accuracy is specified, but a knowledge of levels is necessary to set operating points, an indicating device of accuracy consistent with the operation of the system is required.

I. All control and auxiliary relays shall have indicating LEDs. All timing relays shall have On and timing Out LEDs.

J. An anti-condensation heater shall be provided in all control panels located outdoors. The anti-condensation heater shall be as manufactured by Hoffman Model DAHX001, or equal, sized based on control panel and exterior temperature. Anti-condensation heater shall be rated for a minimum of 500,000 operating hours.

K. Hardwired Motor Controls:
   1. Equipment and wiring specified to be hardwired shall be physically wired independent of controllers, programmable relays, and communication systems to allow manual operation in the event of an emergency.
   2. Motor control wiring and logic shall be set up such that in the event of a power failure, equipment shall automatically restart if previously running, or remain off if previously off. A manual reset shall not be required to restart equipment following a power failure.

1.12 GENERAL CONTROL ALGORITHMS

A. In general, the following is a definition of I/O at each motor controller:
   1. Run from auxiliary starter contact (dry contact).
   2. Fail from starter overload or VFD auxiliary contact (dry contact).
   3. Start/ Stop maintained signal to starter or VFD, or as required (dry contact).
   4. Start and Stop momentary signal to starter or VFD, or as required (dry contact).
   5. In Auto/In Remote from selector switch on motor controller (dry contact).
   6. Any command to operate shall be acted upon within 5 seconds, and any status feedback signals shall be received within 5 seconds.

B. Definitions:
   1. The "Master Telemetry PAC" for the SCADA System shall be the PAC located in SCC-Master at the Westside WWTP. This PAC shall send and receive information to and from all remote PACs connected to this PAC via radio, and shall make this information available to other networked PACs and available for display at the SCADA System.
   2. Where referenced herein, a "Remote Telemetry-Connected PAC" includes any PAC located at a facility remote from the Master Telemetry PAC location that communicates information back to the SCADA System via the Master Telemetry PAC and radio communications.
   3. Where referenced herein, a "Sub-Master Telemetry PAC" includes any PAC at a remote facility that sends and collects information to and from a group of remote PACs connected to this PAC via radio. The Sub-Master shall make this information available to the other networked PAC and for display at the SCADA System via the Master

Telemetry PAC and radio telemetry, the SCADA System Ethernet network, or an internet-based VPN.

4. Where referenced herein, the “SCADA System” includes any of the SCADA System HMI computers (thin clients) that are running the Water SCADA VTScada app at the Eastside WWTP, Westside WWTP, or Aux Sable WWTP.
5. Where referenced herein, the “HMI Software” refers to the existing VTScada software.

C. Programming algorithms described herein and in Part 3–Execution shall reside within the PAC associated with that equipment and not in the Master PAC. Polling sequences for data transmission over radio telemetry shall be set-up to poll remote data based on the data type (e.g., alarms, historical) so that data transmission rates are not adversely affected.

D. All alarm contacts or system changes following a command must exist or not change for 0 to 5 seconds to activate an alarm at the SCADA System.

E. All analog and digital inputs shall be monitored in the PAC. This shall include, but not be limited to, flows (water, etc.), weights, pressures, concentrations, and levels. The following analog signals shall have minimum, maximum, and running average calculated values: all flows, levels, pressures, and chlorine residuals. Instantaneous values, totals, maximum, minimum, and average values shall be read by the HMI software and be reset on a daily basis as described below. Minimum, maximum, and average values shall be stored in the PAC for the current day and previous day.

F. PACs shall calculate equipment runtimes and number of starts for all equipment where run signals are monitored. Runtimes and number of starts shall be read by the HMI software and be reset on a daily basis as described below.

G. Totalized flow values, chemical usage, and equipment runtimes as described above shall be stored in the PAC for a period of 7 days, with the oldest data being overwritten each day. This data shall be available for use by the HMI software for importing into a reporting software package for purposes of daily, weekly, and monthly reporting. The PAC shall indicate the specific date for each of the 7 previous days.

H. Daily flow totals, chemical usage, runtimes, number of starts, and number of cycles as described above shall be reset on a daily basis. This reset shall occur based on a time (hour and minute) setpoint stored in the Master Telemetry PAC through the HMI software and shall be automatically communicated to all Networked and Remote Telemetry-Connected PACs so that each PAC will reset daily totals for its associated equipment even if there is a loss of communication with the Master Telemetry PAC. The operator shall set the time when the daily reset will occur. Once this time setpoint matches the current time of the processor clock, each PAC shall clear any totals that have accumulated locally.

I. In addition to the totalizers described above, the PAC shall also calculate cumulative totals for all runtimes, number of starts, flows, and chemical (weight) usage. Maximum, minimum, and running average for all analog inputs shall also be included as part of the cumulative total algorithm. Cumulative totals shall totalize until manually reset by the operator. The reset tag within the PAC shall be set by the operator at the HMI software and reset by the PAC. There shall be a manual reset for each signal. The PAC shall display the date of the last cumulative totalizer reset for each signal.

J. Indication of time remaining for all timers (hardcoded and operator-adjustable) within PACs shall be made available for indication at the SCADA System.

K. Float switches shall include time delays to prevent intermittent starting and stopping and/or alarming because of bouncing floats (including hardwired relay logic).

L. Small motorized ball valves that are not provided with position indication (e.g., opened, closed) shall include hardcoded time delays on the open and close signals to allow operation of the valve.

M. The operator shall be able to set the processor clock and processor date in the Master Telemetry PAC from the HMI software. The clock and date setting shall be transmitted from the Master Telemetry PAC to all Remote Telemetry-Connected PACs based on the setting in the Master Telemetry PAC.

N. All analog signals shall be scaled to engineering units in the PAC with real or floating-point data types to prevent scaling values in the HMI. For existing PLCs that do not support real or floating-point data types, use implied decimals to allow storage in integer registers. System Supplier shall provide all analog ranges and PAC tag and PLC register/tag addresses, and any implied decimal scaling factors to ENGINEER for record. This shall include upper and lower limits for the associated device (i.e., 0 to 150 psi).

O. For all analog input signals to the PAC I/O cards, provide a Transmitter Fail alarm at the SCADA System for each transmitter. Transmitter fail shall be defined as the signal from the transmitter being out of range for an operator-adjustable time period of 0 to 120 minutes.

P. The following analog signals shall have associated high and low setpoints and alarms: all levels, pressures, weights, and process analyzers (e.g., chlorine residual, etc.).

Q. PACs shall be set up so that the ranges of all analog input signals to the PAC I/O cards can be configured from the HMI software. Provide two operator-adjustable setpoints for each analog input, one corresponding to 4 mA and the other corresponding to 20 mA. These setpoints are applicable to devices attached to the Networked PACs or Remote Telemetry-Connected PACs (via the Master Telemetry PAC). This feature is intended to be used for startup and calibration purposes.

R. All equipment controlled automatically from the SCADA System shall have “Call-to-Run” signals generated from their associated PACs. These signals shall be displayed at the SCADA System through the HMI software. Each associated PAC shall also generate a Call-to-Run Fail alarm if the equipment is called-to-run but does not start within a specific time period. The Call-to-Run Fail alarm shall be generated within the PAC software and may not be combined with other fail signals such as hardwired motor fails, and overtemperature. Call-to-Run Fail alarms shall only be active when the selector switch on the motor controller is in the "Auto" position.

S. All valves/gates controlled automatically from the SCADA System that have position feedback shall have “Call-to-Open/Close” signals generated from their associated PACs. These signals shall be displayed at the SCADA System through the HMI software. Each associated PAC shall also generate a Call-to-Open/Close Fail if the valve/gate is called-to-open/close, but does not open/close within a specific time period. Call-to-open/close signals may be generated by the Master PAC or the associated Remote Telemetry-Connected PAC via the Master Telemetry PAC as determined by System Supplier. The Call-to-Open/Close Fail signal shall be generated within the PAC software and may not be combined with other fail signals such as hardwired actuator faults. For valves/gates with analog 0 to 100% position feedback, provide an operator-adjustable deadband on the

position feedback signal such that when the valve/gate position feedback is within the deadband of the position setpoint, the valve/gate shall be considered "in position."

T. In cases where the automatic alternation of equipment is provided by the PAC, indication of the lead, lag, and lag-lag equipment (where applicable) shall be made available for display at the SCADA System.

U. All controlled equipment as described herein shall have the capability of manual control from the HMI software through the manipulation of analog or digital variables. This shall be through the use of a “SCADA H-O-A” switch or by forcing a single I/O point as a manual start command. All analog and digital outputs shall be capable of being manually set from the HMI software.

V. Where a manual reset is required at the SCADA System (i.e., level lockout, pressure lockout), the HMI software shall be configured to set a discrete reset bit. Once the PAC receives the bit and the alarm condition has cleared, the PAC shall clear the alarm and place the associated equipment back in service.

W. The SCADA System shall allow the operator to change all setpoints and operating parameters within the PACs as described herein. All control algorithms and alarms for equipment shall be programmed in the associated PAC and not in the Master Telemetry PAC. There shall be no control algorithms or alarms in the SCADA System HMI computers (thin clients). Control of each piece of equipment shall be accomplished as described herein and in Part 3–Execution of this section.

X. The Master PAC shall be set up so that a hardwired alarm light and horn on the front of the master panel are activated in the event of a PAC scan fail or in the event that the PAC power supply fails. For the PAC scan fail, there shall be one PAC output hardwired to a relay that the PAC will energize and deenergize every 15 seconds. This relay shall be wired to two time-delay relays (one N.C.T.O. and one N.O.T.C.) that will be hardwired to the alarm dialer (one dedicated channel). In the event either one of the time-delay relays remains in the closed state for longer than 60 seconds, the alarm light and horn shall be activated. The PAC power supply shall power an interface relay that, when deenergized, activates the same alarm dialer channel.

Y. Each Master Telemetry PAC and Sub-Master Telemetry PAC shall be setup so that these PACs monitor the cycle of each associated Remote Telemetry-Connected PAC to detect a communication failure. This shall be accomplished by the Master Telemetry PAC or Sub-Master Telemetry PAC setting and resetting a bit internal to the Master Telemetry PAC or Sub-Master Telemetry PAC program every 60 seconds. This bit shall then be sent to each associated Remote Telemetry-Connected PAC. Once this bit is received by the Remote Telemetry-Connected PAC, the PAC shall copy the value of this bit to a second bit internal to its PAC program. This second bit shall be read by the associated Master Telemetry PAC or Sub-Master Telemetry PAC. If the associated Master Telemetry PAC or Sub-Master Telemetry PAC does not see a change in status of the second bit, a PAC communication fail alarm shall be activated at the SCADA System. The associated Master Telemetry PAC or Sub-Master Telemetry PAC (via the Master Telemetry PAC) shall provide indication of which PAC is in alarm at the SCADA System.

Z. Radios installed in telemetry panels for Remote Telemetry-Connected PACs and for the Master Telemetry PAC shall be powered through a normally closed control power relay contact. If a Remote Telemetry-Connected PAC detects a communication fail or if a Sub-Master Telemetry PAC or the Master Telemetry PAC detects a communication fail with

all associated Remote Telemetry-Connected PACs, the PAC shall energize the control power relay that will deenergize power to the radio. The relay shall be energized for 5 seconds and then deenergized. Communication fail time delays shall be adjusted during startup based on the quantity of telemetry panels. One additional radio power cycle shall be attempted if the first power cycle does not restore communications.

AA. The Master Telemetry PAC shall log the following connection data with each Remote Telemetry-Connected PAC and make it available for display at the SCADA System. The data shall be reset daily using the same daily reset timer used for other SCADA System daily totalizers.
1. Connection attempts.
2. Successful connections.
3. Failed connections.
4. Success rate (%).
5. Duration (seconds) of the previous complete polling sequence for each polling sequence.

BB. Wiring diagrams for all panels shall be included as part of the SCADA System HMI graphics. All wiring diagrams shall be incorporated with the graphics in a read-only format so that through the HMI, the operator will have the ability to view panel wiring diagrams from the SCADA System HMI computers (thin clients). Acceptable electronic formats include .pdf, .jpg, and .gif.

CC. In the event of a power failure, when power is restored, the PAC shall automatically stagger the restart of any controlled equipment that is being called to run by the PAC. The stagger shall be operator-adjustable from 0 to 300 seconds through the HMI graphics software on the SCADA System HMI computers (thin clients).

DD. When a setpoint for a given value is changed (such as a Pump Start level in an elevated tank), the PAC shall compare the current value with the new setpoint and the associated control shall be immediately implemented. The intention of this algorithm is to prevent start/stop setpoints from being "missed" if the setpoint is changed to be above or below the current value.

1.13 SPARE PARTS

A. System Supplier shall furnish spare parts for equipment specified herein as listed in Section 26 95 10–Spare Parts.

1.14 WARRANTY

A. Standard One-Year Warranty: Unless otherwise stated below, manufacturer shall warrant the equipment to be free from defects in material and workmanship for a period of one year from the earlier of either the date established for partial utilization or Substantial Completion of the project.

PART 2–PRODUCTS

2.01 EQUIPMENT ENCLOSURES

A. New enclosures shall be front access only, minimum No. 14 gauge steel, with continuously-hinged doors. Enclosures equal to or smaller than 24 inches wide by 24 inches

high shall be equipped with at least two quarter turn latches. Enclosures larger than 24 inches in any dimension shall be equipped with 3-point latch with top and bottom bolts actuated by one rotating, lockable handle on each door. Provide a door stop kit for each door, data pocket for wiring diagrams, and minimum 12-inch, bolt-on, LED light and door switch. Panels over 48 inches wide shall have two lights. Painting shall include phosphate treatment, zinc chromate iron oxide primer, baked rust-inhibiting enamel, and white interior. All doors and panels shall be gasketed. All louvers inside enclosures shall be filtered and forced-air cooling shall be provided as necessary for conditions where installed. Provide enclosure dimensions as specified herein. Enclosures shall be as manufactured by Hoffman or Saginaw. MCC structures are not acceptable. Where installed next to motor control centers, enclosure color shall match that of the MCC.

B. Each PAC and remote I/O enclosure shall include, but not be limited to, the following equipment:
   1. PAC, I/O modules, and communication modules.
   2. Power supplies.
   3. Surge protective devices.
   4. DIN-rail mounted terminal blocks for field wiring terminations.
   5. Plastic wiring ducts.
   6. General purpose 15-amp, 120-volt AC duplex GFCI receptacle.
   7. 20-amp, 120-volt AC main circuit breaker and branch circuit breakers as required to feed the PAC and the I/O controlled field devices.
   8. Other accessories required to provide a complete and working PAC system.
   9. UPS backup for the SCC.
   10. Fiber-optic patch panel, as required.
   11. Network switch.
   12. Front panel-mounted programming port with RJ-45 jack and 120-volt receptacle.
   13. Operator Interface Terminal (OIT).

C. The equipment mounted within the enclosures shall be mounted on the enclosure back panel, neatly organized, and shall be in accordance with the manufacturer's recommendations.

D. Refer to Section 26 05 53–Electrical Identification for the control panel and field wiring color code.

E. 24 VDC power supplies shall be provided in the enclosures to power all 24 VDC devices and loop-powered analog input signals, where required.

F. NEMA ratings of enclosures shall be as required for the area where installed, unless specified otherwise.

G. Manufacturer of Accessories:
   1. The plastic wiring duct shall be Panduit Panduct, or equal.
   2. Terminal blocks shall meet the requirements of Section 26 05 19–Wire.
   3. Wire markers shall meet the requirements of Section 26 05 53–Electrical Identification.
   4. Circuit breakers shall be Square D Type QO with mounting bases, or equal. Circuit breakers can be rail-mounted type, Square D, Class 9080, Type GCB-150, or equal.
   5. Power supplies shall be Sola, DIN rail mount, SPD or SDN Series, or equal.
   6. Signal conditioners shall be Action Instruments, DIN rail mount, or equal.

H. All wiring within the enclosure shall be through plastic wiring troughs. Plastic wiring troughs shall have removable covers. Maximum fill for wiring troughs shall be 60%. All wiring in

supervisory enclosures and control panels not in wiring troughs shall be bound with continuous-type spiral windings. Terminal strips located adjacent to wiring troughs shall have a minimum of 1 1/2 inches between terminal strip and wiring trough. All wiring labels shall be able to be read without removing wiring trough covers. Wiring troughs shall be provided for all field wiring.

I. All wiring for new panels shall be done in the factory, Class II, Type C with master terminal strips for exterior connections. Terminal strips shall be located either at the bottom or on the side of the enclosure, depending on where the I/O conduits penetrate the enclosure. Splices are not allowed within enclosures or wireways. All enclosures must pass through doors to point of installation, and if enclosures are shipped in sections, all wiring and connections between sections shall be done by CONTRACTOR. The field wiring terminals shall be clearly identified as to which I/O terminals they are wired. Jumpers between adjacent terminal blocks shall be copper jumper bars supplied by the terminal block manufacturer. All wiring shall be labeled at each end with corresponding numbers matching the associated terminal block. This numbering shall be shown on the shop and Record Drawings.

J. All door-mounted devices shall be furnished flush-mounted, and an exterior-engraved phenolic nameplate worded by OWNER (upon receipt of shop drawings) shall be provided for each component, device, and light. All components within the enclosures shall be identified with sticky-back adhesive, self-laminating, machine-printed marking labels with white background and black text; minimum size 12 font. Labels shall be installed on the enclosure back panel and not on the device or wireway. Devices shall be grouped for each device or unit being controlled.

K. All panels with DIN rail-mounted equipment shall include a minimum of 25% spare DIN rail space.

L. In addition to spare I/O specified herein, provide a minimum of 25% spare hot and neutral terminals wired to terminal strips. Spares shall be provided for all voltage sources within the panel (e.g., 120 V, 24 V).

M. Enclosures that include motor controllers shall have a main disconnect for the enclosure.

2.02 PAC REMOTE TELEMETRY SYSTEMS

A. All control signals, status signals, alarm, and variable analog data shall be transmitted and received between the associated Master Telemetry PAC or Sub-Master Telemetry PAC and the Remote Telemetry-Connected PACs via a SCADA System using digital telemetry. The mode of communication for the PACs shall be via radios as specified herein. The SCADA System shall convert commands, alarms, and variable analog data to digital data blocks and transmit this information between a master and the multiple remote sites.

B. The digital blocks of data shall be sent/received in full-duplex mode from the Telemetry system to the PACs via the Ethernet interface.

C. If communications cannot be verified between the associated Master Telemetry PAC or Sub-Master Telemetry PAC and a Remote Telemetry-Connected PAC, the associated Master Telemetry PAC or Sub-Master Telemetry PAC shall try to send the data three times before a data fail output is energized.

D. The system shall communicate at a rate sufficient to perform any command to operate control within 5 seconds and receive any status feedback signals within 5 seconds.

E. The associated Master Telemetry PAC or Sub-Master Telemetry PAC shall normally sequentially poll all the Remote Telemetry-Connected PACs, but shall be field-programmable to alternate sequences to minimize the update time for critical remotes. Provisions shall be included to field-program a time delay between PAC interrogations and between scan sequences.

2.03 COMPACTLOGIX AND CONTROL LOGIX PROGRAMMABLE AUTOMATION CONTROLLERS

A. Construction:
1. A single local chassis shall house a CPU, memory, and communications.
2. A separate power supply shall supply necessary power to each chassis.
3. All system modules shall be DIN rail-mounted.
4. All system modules shall be able to operate in an industrial environment with an ambient temperature of 32°F to 140°F.
5. All system modules shall be able to operate in a free airflow environment.
6. All system modules shall be able to operate in high electrical noise environments.

B. The system shall support a minimum of eight local I/O expansion modules in up to three chassis, along with remote I/O expansion modules connected via the Ethernet network.
1. Local expansion modules shall be installed in the local chassis or in chassis adjacent to the local chassis.
2. The manufacturer shall have available a variety of I/O modules, including, but not limited to, AC or DC discrete input, AC or DC relay contact output, 4-20 mA analog input and output, and RTD.
3. Each chassis in multiple-chassis installations shall be interconnected via Ethernet.
4. Discrete I/O cards shall be 120 VAC 16 point maximum, unless otherwise noted.
5. Isolated discrete I/O cards shall be 8 point maximum. Isolated discrete cards shall be used if there are multiple or external power sources associated with the signals, if wiring leaves the building, or if the card is driving a load (i.e., solenoids, etc.).
6. Analog input cards shall be 8 point.
7. Analog output cards shall be 4 point isolated type.

C. Central Processing Unit (CPU):
1. The CPU shall be a self-contained unit, and shall be capable of providing control program execution, supporting remote and local programming, controlling all I/O scanning and inter-controller and peripheral communication and diagnostic functions as follows:
   a. 32 tasks (100 programs per task):
      (1) Continuous–one allowed.
      (2) Periodic–Run via an interrupt at a user-defined interval in 1 µs increments from 1 ms to 2000 s.
      (3) Event–Triggered by consumed tag or EVENT instruction.
   b. 256 controller connections.
   c. Network connections:
      (1) Up to 256 Ethernet/IP.
      (2) Up to 120 TCP/IP.
2. The PAC shall organize user applications as tasks, which can be specified as continuous, periodic, or event based. Tasks shall be triggered by input point or instruction.
3. The CPU shall have a real-time clock.
4. When the main power supply is removed, the CPU shall have the ability to back up user program and all data, or a nonenergy storage option.

5. The front of the CPU shall have a USB port.
6. The front of the CPU shall have an integrated latching mechanism for securing the secure digital (SD) memory card. The PAC shall operate with the memory card removed.
7. The processor module shall have LED indicators to indicate CPU status.
8. The processor module shall have a mode switch.

D. Memory:
1. The PAC shall have a minimum of 3 MB of standard user memory. Provide processor configurations with additional memory as required.
2. The program storage medium shall be solid-state, nonvolatile type.
3. The PAC shall include a 1 GB SD memory card to store the user program and the firmware of all modules residing in the same chassis to protect against memory loss.

E. Programming Environment:
1. Programming shall be through the USB 2.0 port or through the Ethernet/IP network.
2. The programming software shall run on the latest version of Windows and the programming methods shall be:
   a. IEC 61131-3 compliant ladder diagram.
   b. Structured text.
   c. Function block diagram.
   d. Sequential function chart.

F. Communication:
1. USB 2.0 port to support upload and download, online edits, firmware updates, and bridging to other modules.
2. Ethernet/IP switch and dual 10/100/1000 Mbps Ethernet/IP ports with unique IP addresses or a single IP address when connected as part of a device level ring. The interface shall support:
   a. IEEE 802.3 Physical and Data Link Standard.
   b. Common Industrial Protocol (CIP), the protocol that provides real-time I/O messaging and information/peer-to-peer messaging.
   c. Standard TCP/IP and UDP/IP communication.
   d. 10/100/1000 Mbps auto sensing and auto switching.
   e. Standard Ethernet media.
   f. Subnet masking.
   g. BOOTP and DHCP support.
   h. Manual configuration using specified software.
   i. Programmable Automation Controller messaging to peer controllers and workstations.
   j. I/O data, real-time interlocking and information.
   k. Full or half-duplex communication.
   l. Built-in web access to diagnostics.
   m. I/O control.
   n. Precision Time Protocol (CIP Sync, IEEE 1588).

G. Power Supply:
1. The power supply shall operate on 120 VAC, single-phase.
2. A single, main power supply shall be capable of supplying all necessary power to the local chassis housing the CPU and local I/O modules. Provide a dedicated power supply for each chassis.
3. The power supply shall be capable of converting AC power to the DC power required to operate the PAC system.

4. The power supply shall include an easily viewed indicator to show status of the DC power applied to the backplane.
5. The power supply shall provide electronic protection:
    a. At the time of power-up, the power supply shall inhibit operation of the controller and I/O modules until the DC voltages are within specifications.
    b. The power supply shall automatically shut down the PAC when its output power exceeds 125% of its rated power.
    c. The power supply shall provide surge protection, isolation and outage carry-over of up to 6 cycles of the AC line or 40 ms at 24 VDC.
    d. The power supply shall be fused.

H. PACs shall be as manufactured by Rockwell Automation, CompactLogix 5380 L3 Series, or equal.

I. Where redundant PACs are required, as described in this Specification and as shown on the SCADA Riser Diagram on the Drawings, provide redundant PAC configuration using Allen-Bradley Control Logix L7 series PACs, Flex I/O with redundant power supplies, and associated hardware necessary to create an automated hot-backup.
    1. The switchover from primary PAC to back up PAC shall be automatic and not require initiation by the operator nor require readdressing from the HMI computers. Indication shall be provided at the plant SCADA System to indicate the active PAC and to indicate when a PAC has failed. A manual reset at SCADA shall be required to resume operation from the primary processor.
    2. Provide redundant PAC racks, each with power supply, processor, Ethernet module, redundancy module, and redundant Ethernet modules. Redundancy modules shall be connected with fiber jumpers.
    3. New I/O modules shall be Allen Bradley 1794 Flex I/O. Provide new redundant Flex I/O Ethernet adapters, Allen Bradley 1794-AENTR, to connect Flex I/O modules into the redundant PLC Ethernet network.
    4. Provide power supplies for Flex I/O as required.
    5. Provide all additional accessories required to perform the operations described herein and to communicate with the plant Ethernet network. Provide Ethernet communications modules as required.

J. PAC Programming and PAC Software: System Supplier shall provide all PAC programming and software required to meet this specification. The software shall include, but not be limited to, the following:
    1. PAC logic programs to be written by System Supplier for the PAC systems to accomplish the monitoring and control functions as specified herein. The System Supplier shall document and annotate the programs, update them as required after startup, and then turn two copies of the programs over to OWNER on two USB flash drives with project-specific labels.
    2. System Supplier shall provide a commercially available PAC programming and documentation software package as developed by the system manufacturer for documenting and modifying the PAC programs. Modifications shall be accomplished from the Main SCADA server or the laptop.
    3. All I/O addressing that is to be viewed or manipulated by the HMI software shall be organized into contiguous blocks of integer tags for discrete bits and floating point tags for all other values to facilitate block data transfer between computers and PACs.

2.04 REMOTE I/O SYSTEMS

A. Construction:
   1. A single local chassis shall house a communication module, power supply, and I/O modules.
   2. All system modules shall be DIN rail-mounted.
   3. All system modules shall be able to operate in an industrial environment with an ambient temperature of -4°C to 131°C.
   4. All system modules shall be able to operate in a free airflow environment.
   5. All system modules shall be able to operate in high electrical noise environments.

B. Communication:
   1. Communication modules shall have an integral power supply for power to the system backplane. Provide additional power supplies as required.
   2. All I/O shall be communicated via the Ethernet/IP network protocol.
   3. One 10/100/1000 Mbps Ethernet/IP port.

C. I/O Modules
   1. The remote I/O chassis shall support a minimum of 13 I/O modules.
   2. Discrete I/O cards shall be 120 VAC, 16-point maximum.
   3. Analog input cards shall be 8-point, maximum.
   4. Analog output cards shall be 4-point ,maximum.

D. Remote I/O shall be as manufactured by Allen Bradley, Bulletin 5069 Compact 5000 I/O with Bulletin 5069-AENTRK Ethernet/IP adapter, or equal. All remote I/O components shall be compatible with the PACs specified herein.

2.05 UNINTERRUPTIBLE POWER SUPPLIES

A. Provide a UPS backup in each SCC and RIO panel that will provide continuous communication for at least 30 minutes following a power failure.
   1. UPS power shall be provided, at a minimum, to the following equipment:
      a. PACs and I/O cards, controllers, and OITs.
      b. Network switches, signal converters, and other communication devices.
      c. Power fail and communication indicating lights and alarm devices.
      d. Power supplies for loop-powered instruments.
      e. OIT.
   2. Each UPS shall be plug connected inside the control panel with a dedicated receptacle and overcurrent protection device. All UPS-powered devices shall be continuously powered through the UPS under normal operating conditions. Provide UPS voltage monitoring relays to automatically bypass the UPS when the UPS output rises 110% above or falls below 90% of the nominal supply voltage.
   3. Provide a stand or shelf within the control panel for the UPS and batteries so that they do not sit on the bottom of the enclosure.

B. Interior control panels with PACs shall be provided with a true online 120-volt AC UPS.
   1. Each UPS shall be provided with a dry contact output for remote indication of a common UPS alarm or if UPS batteries need replacement.
   2. UPS shall be APC with relay I/O module, Liebert GXT5 with relay card, or Eaton 9SX.

C. Exterior control panels with PACs shall be provided with a 24 VDC battery controller for a UPS system.

1. UPS shall have a rated current of 40 A, battery charging current of 2 A, and dry contacts rated for 30 VDC, 1 A for DC Bus OK, Battery Fail, and Battery Discharged.
2. UPS shall be Delta Model DRU-24V40ABN, or equal.

2.06 INDUSTRIAL CONTROL RELAYS AND CONTACTORS

A. Industrial control and power relays shall be installed in motor control centers, pump control panels, and motor starter enclosures where required by System Supplier. Relays used to interface with PAC I/O, motor control circuits, hard-wired control logic, and for loads less than 8 amps shall be terminal style, interposing/isolation relays. Relays for inductive loads, alarm lights, alarm horns, field wiring, or loads up to 15 amps shall be industrial, general purpose square base relays. Relays for monitoring the output voltage of uninterruptable power supplies shall be UPS voltage monitoring relays. Contactors for lighting circuits, branch circuits, or loads greater than 15 amps shall be industrial, electrically-held lighting contactors. Contactors for motor power control shall be industrial, electrically-held power contactors.

B. Relays shall meet the following requirements:
   1. Interposing/isolation relays:
      a. Configuration: SPDT or DPDT as required by System Supplier.
      b. Mounting: DIN rail with screw terminal base socket.
      c. Voltage: 120 VAC, or as required by System Supplier.
      d. Contact rating: 8 A (DPDT), 16 A (SPDT).
      e. Operating life: 10 million cycles.
      f. Status: On-Off flag-type or LED indicator.
      g. UL listed.
      h. Manufacturer: Allen-Bradley, 700-HK, or equal.
   2. General purpose relays:
      a. Configuration: DPDT or 3PDT as required by System Supplier.
      b. Mounting: DIN rail with screw terminal base socket.
      c. Voltage: 120 VAC.
      d. Contact rating: 15 A, minimum; 3/4 hp.
      e. Operating life: 10 million cycles.
      f. Status: On-Off flag-type or LED indicator.
      g. UL listed.
      h. Manufacturer: Allen-Bradley, 700-HB, or equal.
   3. UPS voltage monitoring relays:
      a. Configuration: SPDT.
      b. Mounting: DIN rail.
      c. Voltage: 120 VAC.
      d. Contact rating: 15 A.
      e. Operating life: 10 million cycles.
      f. Over-voltage range: 80 to 150 VAC, adjustable.
      g. Under-voltage range: 30 to 95% of pickup, adjustable.
      h. Drop-out time delay: 0.1 to 10 seconds, adjustable.
      i. UL listed.
      j. Manufacturer: Macromatic, VWKE120A, or equal.
   4. Lighting contactors:
      a. Configuration: Electrically-held, 2-12 poles.
      b. Mounting: DIN rail.
      c. Voltage: 120 VAC.
      d. Contact rating: 30 A continuous.
      e. UL listed.

f. Manufacturer: Square D, Class 8903L, or equal.

5. Power contactors:
   a. Configuration: Electrically-held, 3 poles.
   b. Mounting: DIN rail.
   c. Voltage: 120 VAC.
   d. Minimum contact rating: 20 A continuous, 1 hp.
   e. Operating life: 1.3 million cycles.
   f. UL listed.
   g. NEMA rated.
   h. Manufacturer: Allen-Bradley, Bulletin 300, or equal.
6. Duplex alternation relays:
   a. Configuration: DPDT or DPDT cross wired.
   b. Mounting: DIN rail with screw terminal base socket.
   c. Voltage: 120 VAC.
   d. Contact Rating: 10 A, minimum; 1/8 hp.
   e. Operating Life: 10 million mechanical operations and 100,000 electrical operations.
   f. Status: Output position indicating LEDs.
   g. Control: Three-position toggle switch permitting selection of normal duplexing action, locking in the A-B sequence, or locking in the B-A sequence. Alternation shall be able to be toggled every time a 120 VAC control signal is removed.
   h. Manufacturer: Diversified Electronics, ARA, or equal.

2.07 FIBER-OPTIC COMMUNICATION SYSTEMS

A. System Supplier shall provide the design and layout of the new fiber-optic communication system between the SCCs and RIOs as shown on the SCADA Riser. Spare runs of fiber-optic cable shall have connectors provided and be run to each terminating location. The fiber-optic network shall be setup in a self-healing ring-type configuration. Daisy chaining of the communication system is not acceptable.

B. System Supplier shall provide the necessary communication modules within the systems to allow the systems to communicate with the fiber-optic cabling.

C. System Supplier shall provide the necessary fiber-optic cable, fiber-optic termination units, connector kits, and terminator sets, as specified herein, to provide complete and working communication between the SCCs. Provide a fiber-optic patch panel for each SCC and RIO as noted herein. The installation of the fiber-optic cable shall be by CONTRACTOR, with supervision by System Supplier.

D. System Supplier shall provide the necessary final connections as required to prevent excessive signal attenuation between communication links.

2.08 UHF RADIO TELEMETRY SYSTEM

A. Radios shall be capable of supporting point-to-multipoint operation as a master, remote, or repeater.

B. Radios shall operate in the 400 to 470 MHz frequency band using 12.5 kHz frequency spacing. Actual frequency at which the unit operates shall be programmable via software. OWNER has existing licenses for six frequencies in this band. System supplier shall coordinate and purchase licenses for six new frequencies following all FCC procedures and requirements for use as described in Part 3.

C. Preferred modulation method is 64 QM to support gross data rate of 54 kbits/sec.

D. Radio shall be equipped with two 10/100BaseT RJ-45 Ethernet ports and two RS-232 RJ-45 serial ports.

E. Radio shall support VLANS and AES 256-bit encryption and CCM authentication.

F. Radio shall be suitable for back panel mounting in existing panels.

G. Radio shall be suitable for operation in ambient conditions for 40 to 104°F and up to 95% relative humidity (non-condensing).

H. Radios shall be 4RF Aprisa SR+, no equal.

I. The System Supplier shall provide the radio antennas for each new radio in the system. Instructions for installing and grounding these antennas shall be given to CONTRACTOR to provide a reliable system. Unless otherwise required, the antennas shall be attached to existing structures. Each remote and the master station shall be tested to verify that reflected power is 5% of forward power or less.

J. Antennas shall be directional or omnidirectional as described below. They shall be of aluminum construction and rated to withstand at least 100 mph winds. Adequate lengths of transmission cable shall be provided for connection between the antenna and radio transceiver at each location:
   1. Antenna for the master station, or as required for the system configuration, shall be omnidirectional and shall meet the following specifications:
      a. Type: Dual conversion, superheterodyne.
      b. Frequency Range: 390 to 470 MHz.
      c. Gain: 9 dB.
      d. Maximum Power Input: 500 Watts.
      e. VSWR: Less than 1.5.
      f. Lightning Protection: Direct ground protection to tower with Citel Model P8AX, or equal, surge protection device.
      g. Connector: 18-inch flexible extension (RG-393/U), Type N male with neoprene housing.
      h. Mounting Hardware: As recommended by manufacturer.
      i. Acceptable Manufacturers: Telewave, Scala, Sinclair, or equal.
   2. Antennas for each remote site, or as required for the system configuration, shall be directional (YAGI) type with the following characteristics:
      a. Type: Dual conversion, superheterodyne.
      b. Frequency Range: 390 to 470 MHz.
      c. Gain: 10 dB, minimum.
      d. Maximum Power Input: 150 Watts.
      e. Lightning Protection: Direct ground protection to mast with Citel Model P8AX, or equal, surge protection device.
      f. Front-to-Back Ratio: 20 dB, minimum.
      g. Connector: Type N, female.
      h. Mounting Hardware: As recommended by manufacturer.
      i. Acceptable Manufacturers: Telewave, Scala, Sinclair, or equal.

K. All antennas shall be grounded in accordance with the antenna manufacturer’s recommendations.

L. Transmission cable for all antennas shall be low-loss foam dielectric-type, Heliax cable with copper-clad aluminum inner conductor and corrugated copper outer conductor with 100% coverage. Cables over 100 feet shall have a hollow copper, round-tube inner conductor.
   1. Provide a 6-foot section (3-foot for master radio) of “super flexible” transmission cable with male Type N connectors at the radio antenna ports to the connector at the enclosure. This section shall pass through the enclosure. Provide standard Type N connectors for connection to a continuous cable extending from enclosure to antenna. Cable shall be weatherproof and suitable for direct environmental exposure. Connections shall have O-ring seals.
   2. Provide a male-to-male Type N connector where the antenna cable leaves the enclosure in which the radio is mounted. Cable from radio to connector at enclosure shall be “super flexible” and from the enclosure to the antenna shall be low-loss foam. Provide a coaxial lightning arrestor for the antenna cable.
   3. Coaxial lines to antennas shall be installed in conduit. Provide a drip loop where antenna cabling exits the conduit.
   4. Antenna cables shall be as manufactured by Commscope, model as follows, or equal:
      a. For run lengths less than 50 feet: LDF2-50.
      b. For run lengths between 50 and 100 feet: LDF4-50.
      c. For run lengths greater than 100 feet: AVA5-50.

M. System Supplier shall supervise the installation of all radio systems by CONTRACTOR.

2.09 LIMIT SWITCHES

A. Limit switches (door switches and stroke counters) where called for on the Drawings shall be Square D, Class 9007, Type C, or equal. Door switches in NEMA 4X areas shall be Omron, model D4B-21**N. CONTRACTOR shall provide head and body style to fit application.

B. Limit switches for sensing the position of swing arm check valves shall be Allen-Bradley Bulletin 802T, or equal. Switch shall include enclosure rated for the space installed, cat whisker sensor in length required for application, and mounting hardware for check valve swing arm and flexible cable to junction box.

2.10 MAGNETIC FLOW METERS

A. The magnetic flow meters shall be suitable for measuring water flows in the range indicated in the table below. The magnetic flow meters shall consist of a flanged flow tube with grounding rings and transmitter (register). The flow tube shall be of epoxy-coated carbon steel with hard rubber liner. Flanges shall be carbon steel and conform to ANSI B16.5, Class 150.

B. The meters shall include a means to automatically rezero. Meters shall be provided with grounding rings made of material compatible with electrode material. Meter shall be NSF-approved for drinking water applications.

C. The meter shall incorporate design features to minimize the effect of greasy (nonconductive) coatings or incorporate a means to automatically clean the electrodes during continuous operation. Meter accuracy shall not be affected by greasy coatings, and cleaning of the meter manually shall not be required.

D. Meter accuracy shall be ±0.5% of rate from 1.0 to 30.0 ft/sec and 0.1% of scale below 1.0 ft/sec when installed with the appropriate upstream and downstream pipe diameters. The meters shall be wet-calibrated in a primary flow laboratory traceable to the National Institute of Standards and Technology. Transmitters and flow tubes shall be interchangeable.

E. The transmitter shall be designed to operate on 120 VAC, 60 Hz. Connections at the flow tube shall be factory-potted. Outputs shall be Sensus communication protocol and configurable pulse output.

F. The meters shall be operable in all liquids with 20 umhos/cm or more conductivity.

G. The meters shall include empty pipe detection. Meters shall be capable of reading forward and reverse flow.

H. Enclosure Ratings:
   1. Flow tube enclosure shall be IP68 rated to a depth of 6 feet for a cumulative time period of 9 months.
   2. Remote transmitter enclosure shall be NEMA 4.
   3. Flow tube with integral transmitter enclosure shall be NEMA 4.

I. The magnetic flow meters shall be Sensus Hydroverse, no equal. Meters shall be sized to match the nominal pipe diameter in which they are installed. Provide cable, length as required, to reach from the flow tube to the remote transmitter; CONTRACTOR shall coordinate. Flow meters shall be provided as follows:

Tag No.	Size (Inches)	Maximum Scale	Transmitter	Totalizer/ Transmitter Tag No.
FE/FIT-652-0-2	16	600 to 19,000 gpm	Remote	FIQT-652-0-2
FE/FIT-117-0-1	*12	300 to 5,000 gpm	Remote	FIQT-117-0-1
FE/FIT-602-0-1	8	300 to 5,000 gpm	Remote	FIQT-602-0-1
FE/FIT-653-0-1	16	600 to 19,000 gpm	Remote	FIQT-653-0-1

* CONTRACTOR shall confirm meter size prior to ordering meter.

J. Remote transmitter (register) shall be Sensus Hydroverse remote transmitter.

K. Transmitter shall be FM approved and CSA certified. Remote and integral transmitter shall include back-lit display and push buttons or other means for local operation and maintenance. Display shall include instantaneous flow rate and totalized forward and reverse flow and indication of present faults.

L. Provide Sensus Act-PAK 1100DN-S-155026E totalizer/transmitter to interface with the transmitter (register) and provide a 4~20 mA signal and Sensus protocol signal. Act-PAK shall utilize 120-volt single-phase power. Provide cable between remote transmitter and totalizer/transmitter in length as required.

2.11 PHASE FAILURE RELAYS

A. Each station noted herein shall have a new phase sequence and unbalance monitor installed. This relay shall be used to shut down the well and booster pumps as well as alarm power failure for the station.

B. Relay shall be Diversified Electronics, Inc., SLM-230 or 440–ASE. CONTRACTOR shall select voltages.

2.12 OPERATOR INTERFACE TERMINAL (OIT)

A. The operator interface shall meet the following general specifications:
   1. Voltage: 85 VAC to 264 VAC.
   2. Temperature: 0°C to 55°C.
   3. Humidity: 5% to 95% noncondensing.
   4. RFI: MIL-STD-461B.
   5. EMI: IEEE 472-1974.
   6. Communication Port: Ethernet.

B. The operator interface shall have the following minimum features:
   1. Type: Color Active Matrix Thin Film Transistor (TFT) touchscreen LCD.
   2. Display Size: 10.4-inch.
   3. Resolution: 800 by 600, 18-bit color graphics.
   4. Clock: Battery-backed real time.
   5. Application Memory: 512 MB.
   6. Enclosure: NEMA Type 12.

C. The operator interface panel shall be as manufactured by Allen-Bradley, Panelview Plus 7 Performance, or equal. Provide Factory Talk View Studio for Machine Edition programming software.

2.13 THERMOSTATS

A. Line voltage thermostats for high- and low-temperature alarms shall be PECO Model TF115-001, or equal. Thermostats shall be rated NEMA 4X with a 40°F to 110°F temperature range and fixed 3°F deadband.

B. Analog (low voltage) thermostats shall be provided to generate a 4-20 mA signal for interface with the SCADA system. Thermostats shall include temperature transmitter and temperature sensor. Transmitters shall be installed in single gang box and be TCS/Basys model TX1507. Sensors shall be as follows:
   1. Sensors for outdoor air temperature shall be TCS/Basys model TS1003.
   2. Sensors for indoor NEMA 1 locations shall be TCS/Basys model TS1000.

2.14 SURGE PROTECTIVE DEVICES FOR CONTROL PANELS, INSTRUMENTATION, AND NETWORK EQUIPMENT

A. The incoming power supply of each supervisory control center shall be protected with a surge protective device (SPD). SPD unit shall be as manufactured by Citel Model DS240, or equal. Surge protection shall be provided for all phases and neutral.

B. Each analog signal entering or leaving a supervisory control panel and leaving a building shall be provided with a DIN-rail mounted surge protection device as manufactured by

Citel Model DLA-24D3, or equal. Each transmitter shall be provided with a surge protection device as manufactured by Citel Model TSP15M, or equal, on the output and Citel Model DS240, or equal, on the power supply. Surge protection shall be provided for all phases and neutral.

C. Each Ethernet cable entering or leaving a supervisory control panel and leaving a building shall be provided with a DIN-rail-mounted surge protection device rated up to 10 Gbps as manufactured by Phoenix Contact, model DT-LAN-CAT6+, or equal.

2.15 PATCH PANELS

A. Fiber-optic patch panels shall be installed in each new SCC and RIO and shall be used to terminate incoming fiber-optic cable serving its associated structure. Patch panels shall be as manufactured by Siemon Company, or equal, model SWIC3-M-01. Each patch panel shall include the following.
   1. Wall-mounting enclosure with fiber port terminations as shown on the Drawings.
   2. Fiber port designation labels with removable pocket.
   3. Dust-proofing grommets, strain relief hardware, cable ties, and mounting hardware.
   4. Thumb turn enclosure latch.
   5. Bend radius guides to provide proper storage of fiber slack.
   6. Adapter plates with the appropriate fiber terminating connectors. Adapters shall be universal to accept multimode or single-mode fiber.
   7. Minimum of 25% spare ports available for future fiber terminations.

2.16 INDUSTRIAL ETHERNET SWITCHES

A. Managed Switches: Managed Ethernet network switches shall be as manufactured by N-Tron 700 series, no equal. Each switch shall include, but not be limited to, the following:
   1. Selectable star or ring topology with redundant fail-over. Switches shall be configured for a ring topology, unless noted otherwise.
   2. DIN rail mounting and redundant 24-volt DC power supply inputs. Provide redundant power supplies, Hirschmann Model RPS series, or equal.
   3. Command line interface, DHCP, and store and forward switching.
   4. SNTP real time clock.
   5. IP and MAC port security and SNMPv3.
   6. Compliance with the following IEEE Standards: 802.1D, 802.1p QoS, 802.3, 802.3u, 802.3x flow control, 802.1w RSTP, and 802.1Q VLAN.
   7. SNMP with web browsing for switch configuration, diagnostics, and monitoring.
   8. System Supplier shall coordinate the fiber port connector type.
   9. Quantity of ports shall be determined by the System Supplier. Switch shall have at least two spare ports.

PART 3-EXECUTION

3.01 SYSTEM INSTALLATION AND SEQUENCING

A. System Supplier must maintain the ability for OWNER to monitor and control all the Water SCADA System sites during installation of the proposed system. It is understood that transferring sites from the existing system to the proposed may require periods when data for a specific site may not be available in either system; however, these periods shall be limited to a maximum of one hour. All sites shall be operational in one or the other system at the end of each working day. CONTRACTOR shall give OWNER a minimum of 48 hours'

notice before beginning work that will affect normal operations. OWNER reserves the right to terminate work at any time to maintain operations.

B. System Supplier shall provide a detailed plan identifying the proposed sequence and schedule for transferring the remote sites to the proposed master controller. The sequence/schedule shall identify the time required for each of the following tasks for each remote site:
   1. Transfer the existing I/O wiring from existing PLC to new PAC and install any new I/O wiring to new PAC.
   2. Testing of all I/O wiring and local hardwired controls.
   3. Modification of the associated VTScada graphics to incorporate all SCADA control for equipment at the site, display all alarms and data, and interface with the proposed master controller.
   4. Testing of the VTScada graphics. Refer to Paragraph 1.10.E. of this Specification section.

C. It is the intention of these Specifications that the existing Bristol/Emerson ControlwaveMicro-based Water SCADA System operate in parallel with the proposed Rockwell CompactLogix-based Water SCADA System to provide complete operational data to OWNER's operations staff until all the remote sites have been transferred to the proposed system and testing has been completed as described herein.

D. The following construction sequence is provided as a general guideline for the information and for the benefit of CONTRACTOR. This construction sequence is not intended to dictate means, method of construction, or direct construction activities. This construction sequence is a conceptual general construction sequence with minimum recommended outage, shutdowns, and operating units to be maintained in service. The general construction sequence is projected to allow the Work to be completed while maintaining operation of the water system. It is not intended to be all inclusive and does not list all work elements or details that are required to complete the Work, complete treatment processes, or place unit processes in service. CONTRACTOR shall be responsible for implementing any additional details required, including temporary construction, at no additional cost to OWNER. CONTRACTOR may propose alternate sequence or modifications to this sequence. OWNER will review the proposed modifications and determine if such modification of the sequence interferes with the proper operation of the system. Any modifications to this general construction sequence shall be proposed in writing and shall be approved by OWNER prior to implementation. No construction shall occur between June 1 and August 30 to avoid outages during periods of high water demand.
   1. Install the new SCC-MASTER, antennas, and antenna cables at the Westside WWTP. The existing SCC-Main, antennas, and antenna cables shall remain in place.
   2. Install new SCC, antennas, and antenna cables at the Sub-Master sites (Rock Run Tank, Ridge Road Standpipe, Joliet Mall Tank, and Parkwood Tank). The existing SCCs, antennas, and antenna cables shall remain in place. The new radios shall use new licensed frequencies to communicate with new radios in the new SCC-MASTER or the associated Sub-Master sites. At this point all I/O and control shall remain in the existing system, except for the Racetrack Tank Level (LT-653-0-1), Parkwood Tank Level (LT-117-0-1), and the Fairmount and Garvin Reservoir Level (LT-111-1-1), which shall be made available in both the existing SCC-Main PLC and the SCC-Master PAC. Refer to the intermediate SCADA Riser Diagram on the Drawings that shows modifications up to this point.
   3. Once the new SCCs and radios are installed and operational at the Master site and the Sub-Master sites, work can begin at each remote site. The order in which remote sites are modified shall be based on the associated Sub-Master site. All remote sites

associated with a specific Sub-Master site shall be modified before work begins on any remote sites associated with a different Sub-master. A suggested order for modifying remotes sites is: Parkwood Tank remote sites, Racetrack Tank, Well 18D/Well 18D WTP, Joliet Mall Tank remote sites, Ridge Road Standpipe remote sites, and Rock Run Tank remote sites. Work to be completed at each remote site is as follows: Replace SCCs and make modifications shown on the Drawings and described herein at each remote site. The existing radio at each remote site shall be converted to Ethernet/IP and use a new licensed frequency to communicate with associated Sub-Master. Existing SCCs with Bristol Controlwave Micro Controllers that are not being removed shall have their existing programming modified to communicate with the Allen-Bradley CompactLogix in the new SCCs. Any Bristol Controlwave Micro controllers that are removed shall be turned over to OWNER to be used as spare. Control of the remote sites shall be transferred from the existing SCC-Main to the SCC-MASTER according to the sequence prepared by CONTRACTOR as described in Section 01 11 00–Summary of Work. As the SCC is replaced at each remote site, the associated VTScada graphics shall be updated to use the tags on the new master PAC.

4. When all remote sites associated with a Sub-Master site have been modified, all I/O associated with that site shall be moved to the new SCC and the existing SCC shall be removed. The existing radios and antennas shall be turned over to OWNER to be used as spare. The existing antenna cable shall remain in place and be labeled as spare.
5. Additional site-specific construction sequence requirements are as follows:
    a. Remote Well Sites: For structures that contain a well pump and no booster pumps (rock wells, gravel wells, and individual well houses), no more than two wells in the entire water system may be offline at a time. CONTRACTOR shall obtain approval from OWNER at least 48 hours before taking any well out of service. No well shall be out of service for longer than 72 hours.
    b. Fairmount and Garvin Booster Station: Local hardwired pressure control of the booster pumps shall be maintained throughout construction. SCADA control of the booster station shall be offline for no longer than 48 hours.
    c. Well 10D Booster Station and Well 11D Booster Station: The new SCC shall be installed prior to any other demolition work to the furthest extent possible. Local control of Booster Pump No. 2 shall be maintained through construction. SCADA control of the booster station shall be offline for no longer than 48 hours.
    d. Bluff Street Booster Station: SCADA control of the pumps shall be offline for no longer than 48 hours.
    e. Washington Street Booster Station, Richards Street Booster Station, and Racetrack Tank: The Washington Street Booster Station and the Richards Street Booster Station pumps are controlled from the Racetrack Tank level. Construction at these three sites shall occur simultaneously or provisions shall be made to make the Racetrack Tank level available in both the existing SCC-Main PLC and the SCC-Master PAC. SCADA control of either booster station shall be offline for no longer than 48 hours.

3.02 SUPERVISORY CONTROL CENTER (SCC)–GENERAL

A. Control descriptions described herein are specific in nature to equipment associated with each SCC. CONTRACTOR shall refer to Section 1.12–General Control Algorithms for additional programming requirements. Control of equipment shall be programmed in each local PAC and not in the Master Telemetry PAC.

B. UPS’s installed in all SCCs shall be configured to provide a dry contact output to the PAC in the event of a UPS common alarm. The common alarm shall include, but not be limited to,

"UPS Fault" and "Replace Battery" alarms. Indication of a "UPS Common Alarm" shall be provided at the SCADA System for each UPS.

C. Each SCC shall have an exterior, panel-mounted receptacle and programming port for the Ethernet network mounted to the front of the panel. The receptacle and programming port shall be provided to allow for PAC programming via laptop without opening the panel door. Receptacle and programming port shall be provided with a dead-front cover.

D. Provide a control power fail relay in each SCC that shall be used to indicate an incoming control power fail alarm at the SCADA System. Provide a red indicating light on the front of each SCC to indicate a loss of incoming line power to the SCC. Control power fail wiring shall be hardwired and not through the PAC.

E. Provide a red indicating light on the front of each SCC to indicate loss of communication with the Master Telemetry PAC.

F. There is a configurable network switch fail contact available at each managed network switch. This fail contact shall be wired to a relay, which shall be wired to the associated PAC for indication of a common network switch alarm. Each network switch shall be configured by System Supplier (via software) to provide this alarm.

G. Refer to the Section 26 09 90–SCADA System I/O Listing for all required I/O that shall interface with each PAC. For each PAC, provide the lesser of a minimum of 25% spares or one completely spare I/O module for analog and discrete inputs and outputs. All spare and unused I/O shall be wired to terminal blocks.

H. Any wiring identified as "DEMO" in the Section 26 09 90 I/O lists shall be disconnected, abandoned in place, and permanently marked with a wire marker identifying the device on the other end of the wire/cable.

I. Any wiring identified as "EXIST" in the Section 26 09 90 I/O lists shall be disconnected from the existing controller and reconnected to the new controller as described in the associated panel description in this section. Field wiring shall remain unchanged. New wire markers shall be provided on all reused wiring.

J. Supplier shall prepare new CAD drawings for each enclosure (new and existing). System Supplier shall include time on site for field investigation and wire tracing as required in the Bid. New CAD drawings shall be as follows:
   1. Interior and exterior elevation using .pdf of existing enclosure interior and exterior elevation as the background.
   2. Network drawing showing all network switches and connections, including connections over the radio network. The network diagrams shall include the color for each and every field fiber that is terminated at a fiber patch panel.
   3. Incoming power and power distribution drawings.
   4. Loop drawings showing existing and new field wiring and I/O: The existing loop drawings do not show the entire motor control circuit for the motor control I/O. The new drawings shall show the entire circuit or reference an existing drawing that does show the entire circuit.
   5. Demolition versions of the above listed drawings showing proposed modifications. Photos or hand marked drawings are acceptable for demolition drawings.

K. Where radios are being relocated to new enclosures, provide a 6-foot section (3-foot for master radio) of "super flexible" transmission cable with male Type N connectors at the radio

antenna ports to the connector at the enclosure. This section shall pass through the enclosure. Provide standard Type N connectors for connection to a continuous cable extending from enclosure to antenna. Cable shall be weatherproof and suitable for direct environmental exposure. Connections shall have O-ring seals. Provide a male-to-male Type N connector where the antenna cable leaves the enclosure in which the radio is mounted. Cable from radio to connector at enclosure shall be “super flexible,” and from the enclosure to the antenna shall be low-loss foam as described herein. Provide a coaxial lightning arrestor for the antenna cable.

3.03 GENERAL OIT REQUIREMENTS

A. Each OIT shall be programmed to allow the operator to enter all control and alarm setpoints associated with its SCC. Each OIT shall be set up such that it prompts the operator for the setpoints to be entered. All setpoints changed at the OIT shall be updated automatically at the SCADA System and vice versa. Each OIT shall provide indication and operating functions for the system as follows:
   1. A process overview and zoomed-view screens as required for additional details for all processes that are monitored and/or controlled from this PAC.
   2. System status.
   3. Control switches (e.g., Hand-Off-Auto, On-Off, Open-Close-Auto, etc.) and pushbuttons for each piece of equipment.
   4. Adjustment for all system setpoints.
   5. Running, failed, open, closed, required, etc. for each piece of equipment.
   6. Status of all equipment and equipment run times.
   7. Indication of all analog signals.
   8. Control system timers and indication of time remaining and time to start for each timed sequence.
   9. Indication of all alarm conditions on an alarm summary screen. This screen shall show the last 10 alarms, indicate whether the alarm is active, unacknowledged, or returned to normal. The operator shall be able to acknowledge all or individual alarms from this screen. When an alarm is received, the OIT shall default to this screen to show the current alarm. The current alarm shall blink until acknowledged. Alarms shall list the time and date of each occurrence and be listed in chronological order.
   10. Include in the Bid, the creation of an additional five HMI screens of similar complexity to those specified herein for each OIT.

B. The OIT graphics configuration shall follow a situational-awareness theme that avoids the excessive use of color for process screen backgrounds, menus, borders, headers, buttons, equipment symbols, and text displays. Equipment symbols shall adhere to a specific color code for indication of equipment status and alarms. Avoid non-animating colors on equipment graphics. Main process graphic and pop-ups screens shall use a light gray background color. Simulated facility graphics, environments, and three-dimensional layouts shall not be included on the backgrounds. Piping shall be represented by thin, solid-gray lines and shall not include contour shading. Process structures and tanks shall be represented using simple shapes (e.g., squares, rectangles, circles, etc.) and process equipment should be represented by simple, equipment-specific shapes (i.e., no gradients or shading).
   1. Equipment:
      a. Light gray shall be used to indicate that the equipment is not operating or running and has been disabled from automatic operation.
      b. Yellow shall be used to indicate that the equipment is not running or operating, but is in an automatic control state and ready to operate once the operating conditions are met.

c. Orange shall be used to indicate that the equipment is called to run, but is not yet running.
d. Green shall be used to indicate that the equipment is running or operating in the forward direction.
e. Blue shall be used to indicate that the equipment is running or operating in the reverse direction.
f. Red shall be used to indicate failure conditions for equipment and signals.

2. Valves:
a. Light gray shall be used to indicate that the valve is closed.
b. Green shall be used to indicate that the valve is open.
c. Red shall be used to indicate a valve actuator fault or a valve out of position alarm.

C. In addition to the color code for equipment statuses, text indicating when equipment is “Running” or “Not Running” and when equipment is “In Auto” or “Not In Auto” shall be displayed next to the equipment using blue text for indication that the text is dynamic. Blue shall be reserved only for dynamic text, excluding the analog process variables described below.

D. Analog process variable displays shall use black text inside of a thin, dark gray border with light gray background. The text shall animate to white and the background shall animate to red during an alarm condition for the associated process variable (e.g., high level, low level, transmitter fail, etc.), and shall remain in that state until the alarm condition is cleared.

E. Setpoint-entry boxes be sized similar to the analog process value displays, but shall instead use a thicker border. The background color for setpoint entry boxes shall be light green for process control and system setpoints and shall be light red for alarm setpoints.

F. Text size and font requirements:
1. Font shall be Segoe UI Bold or Arial Bold.
2. Text for general labels on process screens and menus shall be size 12.
3. Text for value displays shall be size 14.
4. Text for process graphic titles and menu titles may be sized as needed by the software developer, minimum size 16.

G. OIT Security:
1. OITs shall be configured with at least two security levels, using the manufacturer’s standard security package.
a. The minimum security level shall not require a username or password and shall allow an operator to navigate between graphics, but prohibit access to graphics or controls that require a username and password.
b. The second security level shall require a valid username and password and be used for graphics or controls that OWNER designates required valid access. In general, a user must be logged in with a valid username and password to acknowledge alarms and make setpoint changes.
2. The security scheme shall be configured to log a user out after a user-configurable time if there is no activity.

H. OIT graphics shall be developed prior to the factory acceptance test and shall be submitted for review by OWNER and ENGINEER. System Supplier shall include the following as part of the OIT configuration:
1. Meetings at initiation, 50%, and 90% completion of OIT graphics development. Meeting shall include System Supplier’s programmer, OWNER and ENGINEER to review layouts, alarm configuration, and security information. System Supplier shall provide a

color .pdf of all graphics at least one week prior to the meeting. All meetings shall be held virtually and assumed to be four hours in duration. System Supplier shall be responsible for organizing the meetings.

2. An allowance of 40 hours of programming time shall be included in the Bid for enhancements and modifications to the graphics. This is over and above the programming time required to configure the OITs to meet these specifications.

3.04 MODIFICATIONS TO EXISTING WATER SCADA SYSTEM VTSCADA GRAPHICS

A. The SCADA System HMI computers (thin clients) and servers are existing (installed and configured in 2022) and will be reused. The HMI software is VTScada, Version 12.1.08. The graphics were developed in 2022 and are not expected to require major graphical modifications or additions as a part of this project. OWNER owns a development license that may be used to modify the existing HMI graphics. The VTScada system is configured as follows:

1. The Primary VTScada server is located in SCC-Main at the Eastside WWTP. It communicates with the existing SCC-Main PLC and the existing radio telemetry network via a persistent SCADA Network VPN between the Eastside WWTP and the Westside WWTP over the City of Joliet's leased fiber network. The City of Joliet manages the persistent SCADA Network VPN and the associated hardware.
2. The Secondary VTScada server is located at the Westside WWTP. It communicates with the existing SCC-Main PLC and the existing radio telemetry network via the SCADA Network at the Westside WWTP.
3. There are three VTScada thin clients in the Central Control Center at the Eastside WWTP, one of which is dedicated to the water SCADA System; and two shared Water/Westside Wastewater VTScada thin clients at the Westside WWTP. The Central Control Center is staffed 24 hours a day, seven days a week. All alarms, status information, and control changes are handled by staff at the Central Control Center. If the Primary VTScada server goes down, the Secondary VTScada server is configured to provide the same data and functionality to the VTScada thin clients. If the persistent SCADA Network VPN goes down, the Secondary VTScada server at Westside WWTP and the VTScada thin clients at Westside WWTP provide backup monitoring and control capability.

B. The VTScada server has a built-in historian that is configured to archive the existing tags in the Water VTScada application. Changes to the historian are not expected with the exception of adding any new tags that currently are not part of the VTScada application.

C. A VTScada Bristol BSAP driver on the Primary and Secondary servers interfaces directly with the Bristol controllers at each of the sites in the system. This existing driver shall be disabled and removed and replaced with the corresponding Allen-Bradley driver.

D. It is OWNER's intent to retain the existing VTScada graphics and alarms, but link the graphic objects and alarms to tags in the proposed Allen-Bradley master controller located within SCC-MASTER at the Westside Wastewater Plant. Remove or replace all existing information and controls associated with the equipment being removed or modified as part of this project with new controls and graphics to match the complexity and clarity of the existing VTScada graphics, where applicable. Prior to implementing any graphics changes, a tag naming scheme shall be agreed upon between OWNER, ENGINEER and System Supplier.

E. The City of Joliet maintains a Verizon private network that includes multiple modem equipped tablet computers that are partitioned by the City to be part of the SCADA network. These tablet computers allow operators and maintenance personnel to view the VTScada graphics

while in the field. The tablet computers do not have general internet access and are limited to communicating only with devices that are on the SCADA network.

F. Refer to the Appendix for hard copies of OWNER's existing VTScada graphics.

G. OWNER uses Waterly for water system reports. Data, such as daily flow totals, runtimes, starts, chemical usage, and chlorine concentration for the water reports, is obtained from the VTScada Servers by a Waterly-provided Flexi data acquisition device that is connected to the SCADA network at the Eastside WWTP. The Flexi queries the VTScada Server for specific tags using the REST API and then forwards the data to the Waterly cloud-based server. System Supplier shall coordinate with Waterly to obtain a database of the information required by Waterly to populate the exiting reports and provide the corresponding tags for the data within the new master PAC. System supplier shall provide the updated database to Waterly for upload to the Flexi device.

3.05 RADIO TELEMETRY SYSTEM MODIFICATIONS

A. The existing radio telemetry system consists of licensed frequency radios (4RF Aprisa SR+) using a serial protocol to transmit and receive data between the West Side WWTP and the remote sites. System Supplier shall relocate radios as shown on the drawings and as described herein, and switch all the radios to Ethernet/IP. System Supplier shall use the resources available from 4RF to assist with configuration of the radios to optimize Ethernet/IP operation. The 4RF contact is Joe McFadden (phone:785 521-0786 Email:joe.mcfadden@4rf.com). Any radios that are removed or otherwise not used upon completion of this project shall be turned over to OWNER. The radio telemetry system consists of the Master site, Sub-Master sites, and remote sites. The sites communicating with the West Side WWTP (SCC-MASTER) (Master) are as follows:
   1. Well 18D (SCC-018-0-1) (Remote).
   2. Racetrack Tank (SCC-653-0-1) (Remote).
   3. Parkwood Tank (SCC-117-0-1) (Sub-Master): The following sites communicate through the Parkwood Tank to the Master:
      a. Rock 1 Well (SCC-101-0-1) (Remote).
      b. Rock 2 Well (SCC-103-0-1) (Remote).
      c. Rock 3 Well (SCC-003-0-1) (Remote).
      d. Gravel 102 Well (SCC-102-0-1) (Remote).
      e. Gravel 104 Well (SCC-104-0-1) (Remote).
      f. Gravel 105 Well (SCC-105-0-1) (Remote).
      g. Fairmount and Garvin Booster Station (SCC-111-0-1) (Remote).
      h. Bluff Street Booster Station (SCC-113-0-1) (Remote).
      i. Richard Street Booster Station (SCC-114-0-1) (Remote).
      j. Washington Street WTP (SCC-651-1-1) (Remote).
      k. Prairie and Campbell Booster Station (SCC-701-0-1) (Remote).
      l. Well 29D WTP (SCC-801-1-1) (Remote).
   4. Rock Run Tank (SCC-602-0-1) (Sub-Master): The following sites communicate through the Rock Run Tank to the Master:
      a. Campbell Street Tank (SCC-009-0-1) (Remote).
      b. Well 22D (SCC-022-0-1) (Remote).
      c. Joliet Mall Tank (SCC-012-0-1) (Sub-Master): The following sites communicate through the Joliet Mall Tank to the Rock Run Tank and then to the Master:
         (1) Well 10D Booster Station (SCC-010-0-1) (Remote).
         (2) Well 11D Booster Station (SCC-011-0-1) (Remote).
         (3) Well 16D (SCC-016-0-1) (Remote).
         (4) Well 23D (SCC-023-0-1) (Remote).

d. Ridge Road Standpipe (SCC-211-0-1) (Sub-Master): The following sites communicate through the Ridge Road Standpipe to the Rock Run Tank and then to the Master:
   (1) Well 15D (SCC-015-0-1) (Remote).
   (2) Well 17D (SCC-017-0-1) (Remote).
   (3) Well 20D (SCC-020-0-1) (Remote).
   (4) Well 21D (SCC-021-0-1) (Remote).
   (5) Well 25D, Black Road (SCC-025-0-1) (Remote).
   (6) Well 27D (SCC-027-0-1) (Remote).
   (7) Well 28D (SCC-028-0-1) (Remote).

B. System Supplier shall include an onsite radio path survey to confirm the height of any radio antenna that is relocated. It is anticipated the following facilities, which are proposed to have the existing antenna relocated, will require inclusion in the radio path survey.
   1. Rock 1 Well/Gravel 101 Well.
   2. Rock 2 Well/Gravel 103 Well.
   3. Well 10D.
   4. Well 11D.
   5. Well 15D.
   6. Well 16D.
   7. Well 18D.
   8. Well 25D.

C. A Telemetry Modifications allowance of $125,000 shall be included in the Bid for improvements and modifications to the radio telemetry system based on any issues discovered in the onsite radio path survey.

D. It is the intention of these Specifications that the existing Bristol/Emerson ControlwaveMicro-based Water SCADA System operate in parallel with the proposed Rockwell controller-based Water SCADA System to provide complete operational data to OWNER's operations staff until all the remote sites have been transferred to the proposed system and testing has been completed as described herein.

E. To allow the systems to operate in parallel, System Supplier shall obtain 6 new licensed frequencies from the FCC to be used with the new and existing radios. The Master Site and each Sub-Master site shall use a different licensed frequency, as shown on the Drawings, to communicate with associated remote sites. All frequencies shall be licensed to OWNER. Include all labor and materials costs in the Bid to obtain the licenses for the new frequencies.

F. System Supplier shall coordinate the IP addresses for all IP-connected devices. System Supplier shall propose a segmented IP address scheme and include it as part of the shop drawing submittals. A list of all IP addresses shall be included in the O&M drawings.

G. A voltage standing wave ratio (VSWR) test shall be performed on all existing antenna cables that are being reused. Results of the VSWR test shall be submitted to ENGINEER and OWNER for information.

3.06 SCC-MAIN (EXISTING) (WEST SIDE WASTEWATER TREATMENT PLANT)

A. Existing SCC-Main shall be maintained in place and operational until all the remote sites have been transferred to the proposed master in SCC-MASTER and a Substantial Completion certificate has been issued for the installed system. Removal of SCC-Main will be considered part of the Items to be Completed or Corrected work.

B. OWNER shall identify the equipment within SCC-Main that is desired for spare parts. System Supplier shall remove this equipment and package/store the equipment in containers/cartons and turn over OWNER. The remaining equipment and enclosure shall be removed by the System Supplier.

C. The existing field wiring identified on the I/O list to be removed shall be removed including all conduit. The existing field wiring identified to be made spare shall be pulled back to a convenient pull point above the suspended ceiling, marked as “SPARE,” and identified with the location of the other end of the cable. Unused surface-mounted conduit shall be removed.

3.07 SCC-MASTER (WEST SIDE WASTEWATER TREATMENT PLANT)

A. Provide a new NEMA 12, redundant, PAC-based supervisory control center, sized 36 inches wide by 30 inches deep by 36 inches high, where shown on the Westside WWTP Main Equipment Building Plan on the Drawings. PACs in this panel shall be Allen-Bradley Control Logix L7 series controller, as specified herein. All control algorithms and alarms described herein shall be programmed into these PACs. These PACs shall be considered the Master Telemetry PAC. Provide a UPS, network switch, and two Aprisa SR+ radios within this SCC as shown on the SCADA Riser.

B. Provide a high temperature thermostat within this SCC for high temperature alarm at the SCADA system.

C. Zone Control: The City of Joliet Water Distribution System is divided into zones. A matrix shall be provided for zones as listed below. Matrix shall include an operator-adjustable start and stop setpoint for each stage and a common control time delay. Each zone is controlled as follows:
   1. High Zone: Wells and booster stations are started and stopped manually at the respective facility by an operator. Elevated tank levels within the high zone are monitored by operators at the Central Control Facility where operators manually start/stop booster pumps to maintain the tank levels. No staging matrices or controls are required for the high zone.
   2. Low Zone: Low zone pressure is directly related to the Fairmount & Garvin Reservoir level. No staging matrices or controls are required for the low zone.
   3. Southeast Zone:
      a. Provide a five-stage matrix for control in the Southeast Zone (Racetrack Tank). Washington Street Booster Pump 1, Washington Street Booster Pump 2, Washington Street Booster Pump 3, Richards Street Booster Pump 1, and Richards Street Booster Pump 2 may be assigned to any of the stages of the matrix. Operator shall make stage selections through the SCADA system. Pumps with a speed command signal from SCADA shall start and run at an operator-adjustable speed setpoint (0 to 100%) when called to run from the matrix. It shall be possible to assign more than one pump to a stage.
      b. Booster pumps shall be controlled by the Racetrack Tank level (LT-653-0-1) based on operator-adjustable “Start” and “Stop” setpoints (0 to 30.0 feet) for each stage. In addition, operator-adjustable common setpoints for “Minimum Pump Runtime” (0 to 30.0 minutes) and “Control Time Delay” (0 to 30.0 minutes) shall be included.
      c. When a pump is called from the associated matrix stage, it shall run for the minimum pump runtime setpoint. If the stage stop setpoint is reached before the minimum runtime has expired, the pump shall continue to run for the minimum runtime.

d. As the level in the tank falls and remains below the Stage 1 start setpoint for the control time delay, all pumps selected for Stage 1 shall be called to run. The pump(s) shall continue to run until the level rises and remains above the Stage 1 stop setpoint for the control time delay. After Stage 1 is active, if the level continues to fall and remain below a stage start setpoint for the control time delay, the pump(s) selected for that stage shall be called to run. The pump(s) shall continue to run until the level rises and remains above the associated stage stop setpoint for the control time delay. This shall continue through all the stages if necessary. The active stage shall be indicated at the SCADA system.

4. Ridgewood Zone:
   a. Provide a four-stage level matrix for control in the Ridgewood Zone (Parkwood Tank). Fairmount & Garvin Pump 1, Fairmount & Garvin Pump 2, Fairmount & Garvin Pump 3, and Fairmount & Garvin Pump 4 may be assigned to any of the stages of the matrix. It shall only be possible to assign one pump to each stage. The operator shall make stage selections through the SCADA System. Pumps with a speed command signal from SCADA shall start and run at an operator-adjustable speed setpoint (0 to 100%) when called to run from the matrix.
   b. The booster pumps shall be controlled by the Parkwood Tank level (LT-117-0-1) based on operator-adjustable "Start" and "Stop" setpoints (0 to 30.0 feet) for each stage of the matrix. In addition, operator-adjustable common setpoints for "Minimum Pump Runtime" (0 to 30.0 minutes) and "Control Time Delay" (0 to 30.0 minutes) shall be included.
   c. When a pump is called to run from the associated matrix stage, it shall run for the minimum pump runtime setpoint. If the stage stop setpoint is reached before the minimum runtime has expired, the pump shall continue to run for the minimum runtime.
   d. As the level falls and remains below the Stage 1 start setpoint for the control time delay, the pump selected for Stage 1 shall be called to run. The pump shall continue to run until the level rises and remains above the Stage 1 stop setpoint for the control time delay. After Stage 1 is active, if the level continues to fall and remain below the a stage start setpoint for the control time delay, the pump selected for that stage shall be called to run. The pump shall continue to run until the level rises and remains above the associated stage stop setpoint for the control time delay. This shall continue through all the stages if necessary. The active stage shall be indicated at the SCADA system.
5. Fairmount & Garvin Reservoir:
   a. Provide a five-stage matrix for control of the Fairmount & Garvin Reservoir level. Gravel 101 Well, Gravel 102 Well, Gravel 103 Well, Gravel 104 Well, and Gravel 105 Well may be assigned to any of the stages of the matrix. Operator shall make stage selections through the SCADA system. It shall not be possible to assign more than one well to a stage.
   b. Wells shall be controlled by the Fairmount & Garvin Reservoir level (LT-111-0-1) based on operator-adjustable “Start” and “Stop” setpoints (0 to 30.0 feet) for each stage. In addition, operator-adjustable common setpoints for “Minimum Pump Runtime” (0 to 30.0 minutes) and “Control Time Delay” (0 to 30.0 minutes) shall be included.
   c. When a well is called from the associated matrix stage, it shall run for the minimum pump runtime setpoint. If the stage stop setpoint is reached before the minimum runtime has expired, the well shall continue to run for the minimum runtime.
   d. As the level in the tank falls and remains below the Stage 1 start setpoint for the control time delay, all wells selected for Stage 1 shall be called to run. The well(s) shall continue to run until the level rises and remains above the Stage 1 stop setpoint for the control time delay. After Stage 1 is active, if the level continues to fall and

remain below a stage start setpoint for the control time delay, the well(s) selected for that stage shall be called to run. The wells(s) shall continue to run until the level rises and remains above the associated stage stop setpoint for the control time delay. This shall continue through all the stages if necessary. The active stage shall be indicated at the SCADA system.

e. When a filter in backwash signal is detected at SCADA for any of the Fairmount and Garvin WTP filters, control of the wells shall be paused such that no wells are started or stopped from SCADA until the filter in backwash signal is deactivated.

D. In the event of a communication fail between the master and any remote SCC/RIO, control for that remote shall revert to local control as described herein. Communication failure shall be active when communication with that station is lost completely for an operator-adjustable time period (0 to 120 minutes). Communication failure alarms for each station shall be monitored at the SCADA system. See individual SCC control descriptions for local control description.

E. This PAC shall calculate the zone system demand at an operator-adjustable calculation interval (1 to 30 minutes) for indication at the SCADA system. Elevated tank flow and standpipe flow shall be calculated using change in volume by storing the tank/standpipe level and then using that level after the calculation interval along with the current level to determine the change in volume. Gauging tables for the elevated tanks will be provided during shop drawing review. An increasing level shall result in negative flow and a decreasing level shall result in a positive flow.

1. The High Zone system demand shall be the sum of the Ridge Road Standpipe, Joliet Mall Tank, Campbell Street Tank, Rock Run Tank, Well 12D WTP Treated Water, Well 15D WTP Treated Water, Well 16D WTP Treated Water, Well 18D WTP Treated Water, Well 30D WTP Treated Water, Black Road WTP Train 1, Black Road WTP Train 2, Black Road WTP Train 3, Black Road WTP Train 4, Black Road WTP Train 5, Black Road WTP Train 6, Black Road WTP Train 7, Well 10D Booster Station, Well 11D Booster Station, and Bluff Street Booster flows.
2. The Low Zone system demand shall be the Fairmount & Garvin Reservoir flow minus the Fairmount & Garvin Booster Station flow.
3. The Southeast Zone system demand shall be the sum of Race Track Tank, Washington Street Booster Station, and Richards Street Booster Station flows.
4. The Ridgewood Zone system demand shall be the sum of Parkwood Tank and Fairmount & Garvin Booster Station flows.

F. This PAC shall calculate the total system demand as the sum of the individual zone demands for indication at the SCADA system.

G. This PAC shall calculate the previous day's total zone usage by determining the change in storage and adding the change to the daily well and booster pump flow totals. This calculation shall be performed daily at the daily reset time as described in Paragraph 1.12. The total system usage shall be calculated as described below and displayed at the SCADA system.

1. Store all elevated tank and standpipe levels and the associated volume (from the associated gauging table) at the daily reset time. These values shall be retained for use on the following day.
2. Subtract the current elevated tank or standpipe volume (based on current level and the associated gauging table) from the previous day's level for each elevated tank at the reset time (retain the sign). If the result is negative, the amount in storage has increased. If the result is positive, the amount in storage has decreased. The individual elevated tank and standpipe change in storage shall be available at the SCADA system.

3. High Zone usage shall be the sum of the change in storage for Ridge Road Standpipe, Joliet Mall Tank, Campbell Street Tank, Rock Run Tank, and the daily total for Well 12D WTP Treated Water, Well 15D WTP Treated Water, Well 16D WTP Treated Water, Well 18D WTP Treated Water, Well 30D WTP Treated Water, Black Road WTP Train 1, Black Road WTP Train 2, Black Road WTP Train 3, Black Road WTP Train 4, Black Road WTP Train 5, Black Road WTP Train 6, Black Road WTP Train 7, Well 10D Booster Station, Well 11D Booster Station, and Bluff Street Booster flows.
4. Low Zone usage shall be the sum of the Fairmont & Garvin Reservoir daily flow total minus the Fairmount & Garvin Booster Station daily flow total.
5. Southeast Zone usage shall be the sum of the change in storage for the Race Track Tank and the Washington Street Booster Station and Richards Street Booster daily flow totals.
6. Ridgewood Zone usage shall be the sum of the change in storage for Parkwood Tank and the Fairmount & Garvin Booster Station daily flow.
7. The total usage shall be calculated by adding all the zone usage together. The individual zone usage and total usage shall be available at the SCADA System.

H. New antennas shall be mounted on the existing roof structures according to the manufacturer's instructions. CONTRACTOR shall provide all required mounting hardware. Any roof or building penetrations shall be sealed watertight after the installation is complete.

3.08 RIO-101-0-1 DEMOLITION (ROCK 1 WELL)

A. Remove the existing field wiring/cable from the terminal blocks and the field fiber-optic cable from the fiber patch panel within this enclosure and prepare for termination within SCC-001-0-1. Remove the existing fiber patch panel and prepare for installation within SCC-001-0-1. Remove the existing 500 VA UPS and prepare for installation within SCC-001-0-1. Remove the existing RIO-101-0-1 enclosure and turn over to OWNER.

3.09 SCC-001-0-1 (ROCK 1 WELL)

A. Provide a new NEMA 12, PAC-based supervisory control center, sized 30 inches wide by 36 inches high by 16 inches deep. Provide a network switch within this SCC. The newly installed field wiring/cable terminal blocks shall be in the same location and the same order as the removed RIO-101-0-1. Provide space within this SCC for field installation of the existing radio from RIO-101-0-1. Provide space within this SCC for field installation of the existing fiber patch panel from RIO-101-0-1. Install the SCC in the same location as the removed RIO-101-0-1. Re-terminate the existing field wiring within the SCC. Provide space within this SCC for field installation of the existing UPS from RIO-101-0-1. UPS shall be plug-connected inside the control panel with a dedicated receptacle and overcurrent protection device. All UPS-powered devices shall be continuously powered through the UPS under normal operating conditions. Provide UPS voltage monitoring relays to automatically bypass the UPS when the UPS output rises 110% above or falls below 90% of the nominal supply voltage. Provide a stand or shelf within the control panel for the UPS and batteries so that they do not sit on the bottom of the enclosure. Provide a door switch for this enclosure.

B. Relocate the existing 4RF Aprisa SR+ radio from RIO-101-0-1 to SCC-001-0-1. Reconfigure the radio to use Ethernet communication with the sites as shown on the SCADA Riser. Provide power, lightning arrestor, bulkhead connector, and flexible cable within this SCC for relocated radio.

C. Relocate the existing fiber patch panel from RIO-101-0-1 to SCC-001-0-1. Re-terminate the existing field fiber cable within the fiber patch panel. Provide fiber patch cables between the fiber patch panel and the network switch as shown on the SCADA Riser.

D. Install the existing antenna from RIO-101-0-1 on the exterior of the Rock 1 Well House. Provide all mounting hardware. Mounting hardware shall be stainless steel. Ground the antenna in accordance with the original manufacturer's recommendation and the System Supplier's drawings. Provide antenna cable from SCC-001-0-1 to the antenna.

E. There shall be an operator-adjustable "Door Ajar" timer (0 to 120.0 minutes) within this PAC for each of the building and control panel entry doors (3). If the Entry Door Switch is active for longer than the "Door Ajar" timer, a "Door Ajar Alarm" shall be generated and displayed at the SCADA system.

F. Well Pump Motor Starter Panel Modifications (WP-101-0-1): Modify existing well pump starter control circuit in the motor starter panel to allow the "Stop" output from the SCC to stop the pump regardless of the position of the H-O-A selector switch on this starter panel. The entire motor control circuit shall be shown on this system supplier's drawings. Include any required time and material to document the existing motor control circuit so it can be included on this system supplier's drawings.

G. Rock 1 Well Control: Provide a SCADA Hand-Off selector switch in this PAC for control of the well pump. All well status and alarms shall be displayed at SCADA regardless of how the well was started.

3.10 RIO-101-0-1 MODIFICATIONS (FORMERLY SCC-101-0-1) (GRAVEL 101 WELL)

A. The existing enclosure is a NEMA 12, wall-mounted steel enclosure that is 24 inches wide by 42 inches high by 10 inches deep. Replace the existing Bristol ControlWave Micro controller in this panel with Remote I/O as specified herein. Replace the existing DIN rail-mounted, 60 watt, 24-volt DC power supply in-kind. Verify 24-volt DC power supply size is sufficient to power panel devices. Remove the existing DIN rail-mounted, 30-watt, 12-volt DC power supply. Replace the existing Ethernet switch with a new switch as specified herein and shown on the SCADA Riser Diagram. Remove the existing Maple Systems HMI550H OIT. Provide cover plate to cover the opening left by removal of the OIT. Paint cover plate to match existing panel. Provide all new power supplies, fuses, and control power transformers as required to power the proposed controller and Ethernet switch. The existing 500 VA UPS has been maintained by OWNER and shall be reused.

B. Remove the existing 4RF Aprisa SR+ radio in this panel and associated antenna, antenna cable, and conduit. Radio and antenna shall be reused for installation with SCC-001-0-1.

C. Provide a new nameplate on this panel that identifies it as RIO-101-0-1. Remove existing nameplate.

3.11 RIO-103-0-1 DEMOLITION (ROCK 2 WELL)

A. Remove the existing field wiring/cable from the terminal blocks and the field fiber-optic cable from the fiber patch panel within this enclosure and prepare for termination within SCC-002-0-1. Remove the existing fiber patch panel and prepare for installation within SCC-002-0-1. Remove the existing 500 VA UPS and prepare for installation within SCC-002-0-1. Remove the existing RIO-103-0-1 enclosure and turn over to OWNER. Remove the existing antenna mounting structure and antenna cable.

3.12 SCC-002-0-1 (ROCK 2 WELL)

A. Provide a new NEMA 12, PAC-based supervisory control center, sized 30 inches wide by 36 inches high by 16 inches deep. Provide a network switch within this SCC. The newly installed field wiring/cable terminal blocks shall be in the same location and the same order as the removed RIO-103-0-1. Provide space within this SCC for field installation of the existing radio from RIO-103-0-1. Provide space within this SCC for field installation of the existing fiber patch panel. Install the SCC in the same location as the removed RIO-103-0-1. Re-terminate the existing field wiring within the SCC. Provide space within this SCC for field installation of the existing UPS from RIO-103-0-1. UPS shall be plug connected inside the control panel with a dedicated receptacle and overcurrent protection device. All UPS-powered devices shall be continuously powered through the UPS under normal operating conditions. Provide UPS voltage monitoring relays to automatically bypass the UPS when the UPS output rises 110% above or falls below 90% of the nominal supply voltage. Provide a stand or shelf within the control panel for the UPS and batteries so that they do not sit on the bottom of the enclosure. Provide a door switch for this enclosure.

B. Relocate the existing 4RF Aprisa SR+ radio from the existing RIO-103-0-1 to SCC-002-0-1. Reconfigure the radio to use Ethernet communication with the sites as shown on the SCADA Riser. Provide power, lightning arrestor, bulkhead connector, and flexible cable within this SCC for relocated radio.

C. Relocate the existing fiber patch panel from RIO-103-0-1 to SCC-002-0-1. Re-terminate the existing field fiber cable within the fiber patch panel. Provide fiber patch cables between the fiber patch panel and the network switch as shown on the SCADA Riser.

D. Install the existing antenna from RIO-103-0-1 on the exterior of the Rock 2 Well House. Provide all mounting hardware. Mounting hardware shall be stainless steel. Ground the antenna in accordance with the original manufacturer’s recommendation and the System Supplier’s drawings. Provide antenna cable from SCC-002-0-1 to the antenna.

E. There shall be an operator-adjustable “Door Ajar” timer (0 to 120.0 minutes) within this PAC for each of the building and control panel entry doors (3). If the Entry Door Switch is active for longer than the “Door Ajar” timer, a “Door Ajar Alarm” shall be generated and displayed at the SCADA system.

F. Well Pump Motor Starter Panel Modifications (WP-002-0-1): Modify existing well pump starter control circuit in the motor starter panel to allow the "Stop" output from the SCC to stop the pump regardless of the position of the H-O-A selector switch on this starter panel. The entire motor control circuit shall be shown on this system supplier’s drawings. Include any required time and material to document the existing motor control circuit so it can be included on this system supplier’s drawings.

G. Rock 2 Well control: Provide a SCADA Hand-Off selector switch in this PAC for control of the well pump. All well status and alarms shall be displayed at SCADA regardless of how the well was started.

3.13 RIO-103-0-1 MODIFICATIONS (FORMERLY SCC-103-0-1) (GRAVEL 103 WELL)

A. The existing enclosure is a NEMA 12 wall-mounted steel enclosure that is 24 inches wide by 42 inches high by 10 inches deep. Replace the existing Bristol ControlWave Micro controller in this panel with Remote I/O as specified herein. Replace the existing

DIN rail-mounted 60 watt, 24-volt DC power supply in-kind. Verify 24-volt DC power supply size is sufficient to power panel devices. Remove the existing DIN rail-mounted 30-watt, 12-volt DC power supply. Replace the existing Ethernet switch with a new switch as specified herein and shown on the SCADA Riser Diagram. Remove the existing Maple Systems HMI550H OIT. Provide cover plate to cover the opening left by removal of the OIT. Paint cover plate to match existing panel. Provide all new power supplies, fuses and control power transformers as required to power the proposed controller and Ethernet switch. The existing 500 VA UPS has been maintained by OWNER and shall be reused. UPS shall be plug-connected inside the control panel with a dedicated receptacle and overcurrent protection device. All UPS-powered devices shall be continuously powered through the UPS under normal operating conditions. Provide UPS voltage monitoring relays to automatically bypass the UPS when the UPS output rises 110% above or falls below 90% of the nominal supply voltage. Provide a stand or shelf within the control panel for the UPS and batteries so that they do not sit on the bottom of the enclosure.

B. Remove the existing 4RF Aprisa SR+ radio in this panel and associated antenna, antenna cable, and conduit. Radio and antenna shall be reused for installation with SCC-002-0-1.

C. Provide a new nameplate on this panel that identifies it as RIO-103-0-1. Remove existing nameplate.

3.14 SCC-003-0-1 MODIFICATIONS (ROCK 3 WELL)

A. The existing enclosure is a NEMA 12 wall-mounted steel enclosure that is 24 inches wide by 42 inches high by 10 inches deep. Replace the existing Bristol ControlWave Micro controller in this panel with a CompactLogix Programmable Automation Controller as specified herein. Replace the existing DIN rail-mounted, 60 watt, 24-volt DC power supply in kind. Remove the existing DIN rail-mounted, 30-watt, 12-volt DC power supply. Verify 24-volt DC power supply size is sufficient to power panel devices. Replace the existing Ethernet switch with a new switch as specified herein and shown on the SCADA Riser Diagram. Remove the existing Maple Systems HMI550H OIT. Provide cover plate to cover the opening left by the removal of the OIT. Paint cover plate to match existing panel. Provide all new power supplies, fuses, and control power transformers as required to power the proposed controller and Ethernet switch. The existing 500 VA UPS has been maintained by OWNER and shall be reused.

B. Reconfigure the existing 4RF Aprisa SR+ radio within this enclosure to use Ethernet communication with the sites as shown on the SCADA Riser.

C. Well Pump Motor Starter Panel Modifications (WP-003-0-1): Modify existing well pump starter control circuit in the motor starter panel to allow the "Stop" output from the SCC to stop the pump regardless of the position of the H-O-A selector switch on this starter panel. The entire motor control circuit shall be shown on this system supplier’s drawings. Include any required time and material to document the existing motor control circuit so it can be included on this system supplier’s drawings.

D. Rock 3 Well control: Provide a SCADA Hand-Off selector switch in this PAC for control of the well pump. All well status and alarms shall be displayed at SCADA regardless of how the well was started.

E. Provide a new radio power cycle relay in this SCC. Control power to the existing radio in this panel shall be routed through this relay. Relay shall be controlled as described in the General Control Algorithms section of this specification.

3.15 SCC-102-0-1 MODIFICATIONS (GRAVEL 102 WELL)

A. The existing enclosure is a NEMA 12 wall-mounted steel enclosure that is 24 inches wide by 42 inches high by 10 inches deep. Replace the existing Bristol ControlWave Micro controller in this panel with a CompactLogix Programmable Automation Controller as specified herein. Replace the existing DIN rail-mounted, 60-watt, 24-volt DC power supply in-kind. Verify 24-volt DC power supply size is sufficient to power panel devices. Remove the existing DIN rail-mounted, 30-watt, 12-volt DC power supply. Replace the existing Ethernet switch with a new switch as specified herein and shown on the SCADA Riser Diagram. Remove the existing Maple Systems HMI550H OIT. Provide cover plate to cover the opening left by removal of the OIT. Paint cover plate to match existing panel. Provide all new power supplies, fuses, and control power transformers as required to power the proposed controller and Ethernet switch. The existing 500 VA UPS has been maintained by OWNER and shall be reused. UPS shall be plug connected inside the control panel with a dedicated receptacle and overcurrent protection device. All UPS-powered devices shall be continuously powered through the UPS under normal operating conditions. Provide UPS voltage monitoring relays to automatically bypass the UPS when the UPS output rises 110% above or falls below 90% of the nominal supply voltage. Provide a stand or shelf within the control panel for the UPS and batteries so that they do not sit on the bottom of the enclosure.

B. Reconfigure the existing 4RF Aprisa SR+ radio within this enclosure to use Ethernet communication with the sites as shown on the SCADA Riser.

C. Provide a new radio power cycle relay in this SCC. Control power to the existing radio in this panel shall be routed through this relay. Relay shall be controlled as described in the General Control Algorithms section of this specification.

3.16 SCC-104-0-1 MODIFICATIONS (GRAVEL 104 WELL)

A. The existing enclosure is a NEMA 12 wall-mounted steel enclosure that is 24 inches wide by 42 inches high by 10 inches deep. Replace the existing Bristol ControlWave Micro controller in this panel with a CompactLogix Programmable Automation Controller as specified herein. Replace the existing DIN rail-mounted, 60-watt, 24-volt DC power supply in-kind. Verify 24-volt DC power supply size is sufficient to power panel devices. Remove the existing DIN rail-mounted, 30-watt, 12-volt DC power supply. Replace the existing Ethernet switch with a new switch as specified herein and shown on the SCADA Riser Diagram. Remove the existing Maple Systems HMI550H OIT. Provide cover plate to cover the opening left by removal of the OIT. Paint cover plate to match existing panel. Provide all new power supplies, fuses, and control power transformers as required to power the proposed controller and Ethernet switch. The existing 500 VA UPS has been maintained by OWNER and shall be reused. UPS shall be plug-connected inside the control panel with a dedicated receptacle and overcurrent protection device. All UPS-powered devices shall be continuously powered through the UPS under normal operating conditions. Provide UPS voltage monitoring relays to automatically bypass the UPS when the UPS output rises 110% above or falls below 90% of the nominal supply voltage. Provide a stand or shelf within the control panel for the UPS and batteries so that they do not sit on the bottom of the enclosure.

B. Reconfigure the existing 4RF Aprisa SR+ radio within this enclosure to use Ethernet communication with the sites as shown on the SCADA Riser.

C. Provide a new radio power cycle relay in this SCC. Control power to the existing radio in this panel shall be routed through this relay. Relay shall be controlled as described in the General Control Algorithms section of this specification.

3.17 SCC-105-0-1 MODIFICATIONS (GRAVEL 105 WELL)

A. The existing enclosure is a NEMA 12 wall-mounted steel enclosure that is 24 inches wide by 42 inches high by 10 inches deep. Replace the existing Bristol ControlWave Micro controller in this panel with a CompactLogix Programmable Automation Controller as specified herein. Replace the existing DIN rail-mounted, 60 watt, 24-volt DC power supply in-kind. Remove the existing DIN rail-mounted, 30-watt, 12-volt DC power supply. Verify 24-volt DC power supply size is sufficient to power panel devices. Replace the existing Ethernet switch with a new switch as specified herein and shown on the SCADA Riser Diagram. Remove the existing Maple Systems HMI550H OIT. Provide cover plate to cover the opening left by removal of the OIT. Paint cover plate to match existing panel. Provide all new power supplies, fuses, and control power transformers as required to power the proposed controller and Ethernet switch. The existing 500 VA UPS has been maintained by OWNER and shall be reused. UPS shall be plug-connected inside the control panel with a dedicated receptacle and overcurrent protection device. All UPS-powered devices shall be continuously powered through the UPS under normal operating conditions. Provide UPS voltage monitoring relays to automatically bypass the UPS when the UPS output rises 110% above or falls below 90% of the nominal supply voltage. Provide a stand or shelf within the control panel for the UPS and batteries so that they do not sit on the bottom of the enclosure.

B. Reconfigure the existing 4RF Aprisa SR+ radio within this enclosure to use Ethernet communication with the sites as shown on the SCADA Riser.

C. Provide a new radio power cycle relay in this SCC. Control power to the existing radio in this panel shall be routed through this relay. Relay shall be controlled as described in the General Control Algorithms section of this specification.

3.18 RIO-009-0-1 MODIFICATIONS (WELL 30D)

A. This existing enclosure is a NEMA 12 steel wall-mounted enclosure that is 30 inches wide by 36 inches high by 12 inches deep. Replace the existing Bristol remote I/O in this panel with Remote I/O as specified herein. Replace the existing DIN rail-mounted 60 watt, 24-volt DC power supply in-kind. Remove the existing DIN rail-mounted, 30-watt, 12-volt DC power supply. Verify 24-volt DC power supply size is sufficient to power panel devices. Replace the existing Ethernet switch with switch as specified herein and as shown on the SCADA Riser Diagram. Provide any new power supplies, fuses, and control power transformers as required to power the proposed Remote I/O and Ethernet switch. The existing 500 VA UPS has been maintained by OWNER and shall be reused.

B. Well Pump Motor Starter Panel Modifications (WP-030-0-1): Modify existing well pump starter control circuit in the motor starter panel to allow the "Stop" output from the RIO Panel to stop the pump regardless of the position of the H-O-A selector switch on this starter panel. The entire motor control circuit shall be shown on the this system supplier’s drawings. Include any required time and material to document the existing motor control circuit so it can be included on this system supplier’s drawings.

C. Well 30D Control: Provide a SCADA Hand-Off selector switch in the SCC-009-0-1 PAC for control of the well pump. Provide logic in the SCC-009-0-1 PAC such that when the well pump is called to run from SCADA, the associated waste valve is opened prior to starting

the well pump and remains open for an operator-adjustable time duration (0 to 60 minutes) after the well pump starts. The waste valve shall close after the time duration expires. All well status and alarms shall be displayed at SCADA regardless of how the well was started.

3.19 RIO-010-0-1 DEMOLITION (WELL 10D RESERVOIR/BOOSTER STATION)

A. The existing RIO panel shall be demolished. All field wiring associated with the panel shall be pulled back to ceiling immediately above panel. Wiring which is not removed shall be re-terminated at new junction box as shown on the Drawings and all wiring shown on the I/O list shall be extended from this ceiling junction box to SCC-010-0-1. Remove the existing 500 VA UPS and prepare for installation in SCC-010-0-1. Remove the existing RIO-010-0-1 enclosure and turn over to OWNER.

3.20 SCC-010-0-1 (WELL 10D RESERVOIR/BOOSTER STATION)

A. Provide a new NEMA 12, PAC-based supervisory control center, sized 30 inches wide by 48 inches high by 16 inches deep. Provide a network switch and fiber patch panel within this SCC, as shown on the SCADA Riser. The new field wiring/cable terminal blocks shall be in the same location and the same order as the existing RIO-010-0-1. Provide space within this SCC for field installation of the existing radio relocated from SCC-301-1-1. Provide space within this SCC for field installation of the existing UPS from RIO-010-0-1. Provide space within this SCC for future I/O cards (at least 2 cards each of DI, DO, AI, AO). Provide a door switch for this enclosure.

B. Provide an OIT on the front door of this enclosure. An operator shall be able to access data from and make setpoint changes to any other Water SCADA System site from this OIT.

C. Configure this PAC to communicate with the existing Bristol ControlWave Micro controller in SCC-301-1-1 via an Ethernet-based protocol via the fiber-optic cable connection between the two panels. This PAC shall obtain the untreated and treated water flow, and all equipment status information from the existing controller and make the information available to the proposed Master Telemetry PAC. SCC-301-1-1 monitors two filter trains. Refer to Section 26 09 90 "Typical I/O Associated With Each Filter Train" I/O list for list of I/O typical for each filter train to be communicated from SCC-301-1-1.

D. Booster Pump Control:
   1. Booster Pumps 1 and 3 (BP-010-0-1 and BP-010-0-3): Provide an operator-selectable SCADA Hand-Off-Time switch in this PAC for each booster pump.
      a. In SCADA Hand, the pump shall start and run continuously.
      b. In SCADA Time, the pump shall be controlled by operator-adjustable Start Time (0:01 to 24:00) and Stop Time (0:01 to 24:00) setpoints for each pump. When the Start Time setpoint is reached, the pump shall start and run until the Stop Time setpoint is reached. If the current time of day is between the start and stop setpoints, the pump shall start without the time of day having to pass through the start time. The pump shall stop when the time of day reaches the stop setpoint.
      c. There shall be a high-discharge pressure setpoint (0 to 150 psi) which shall shut down the pump when the discharge pressure as measured by PT-010-0-1 exceeds the setpoint (SCADA Hand and Time modes) and generate an alarm at SCADA. This alarm and shutdown shall be reset by switching the Hand-Off-Time switch to the Off position then back to any other position. Provide an operator-adjustable High-discharge Pressure Shutdown Delay (0 to 30 seconds) to prevent nuisance shutdowns. This high-discharge pressure shutdown control shall have an enable-disable switch in SCADA.

2. Booster Pump 2 (BP-010-0-2): Provide an operator-selectable SCADA Hand-Off-Time-Flow switch in this PAC for the booster pump.
    a. In SCADA Hand, the pump shall start and run continuously at an operator-adjustable speed (0 to 100.0%).
    b. In SCADA Time, the pump shall be controlled by operator-adjustable Start Time (0:01 to 24:00) and Stop Time (0:01 to 24:00) setpoints. When the Start Time setpoint is reached, the pump shall start and run at an operator-adjustable speed (0 to 100%) until the Stop Time setpoint is reached. If the current time of day is between the start and stop setpoints, the pump shall start without the time of day having to pass through the start time. The pump shall stop when the time of day reaches the stop setpoint.
    c. In SCADA "Flow," the pump shall start and vary its speed to match the station discharge flow (FT-010-0-1) with the total untreated instantaneous flow to the Well 10D WTP (FIT-301-1-1 plus FIT-301-2-1).
    d. There shall be a high-discharge pressure setpoint (0 to 150 psi) which shall shut down the pump when the discharge pressure as measured by PT-010-0-1 exceeds the setpoint (SCADA Hand, Time, and Flow modes) and generate an alarm at SCADA. This alarm and shutdown shall be reset by switching the Hand-Off-Time-Flow switch to the Off position then back to any other position. Provide an operator-adjustable High-discharge Pressure Shutdown Delay (0 to 30 seconds) to prevent nuisance shutdowns. This high-pressure pressure shutdown control shall have an enable-disable switch in SCADA.
3. The above control shall be programmed in the PAC in this SCC.

E. Relocate the existing 4RF Aprisa SR+ radio from SCC-301-1-1 to SCC-010-0-1. Reconfigure the radio to use Ethernet communication with the sites as shown on the SCADA Riser. Provide power, lightning arrestor, bulkhead connector, and flexible cable within this SCC for relocated radio.

F. Install the existing antenna from SCC-301-1-1 on the exterior of the Well 10D Booster Station. Provide all mounting hardware. Mounting hardware shall be 316 stainless steel. Ground the antenna in accordance with the original manufacturer's recommendation and the System Supplier's drawings. Provide antenna cable from SCC-010-0-1 to the antenna.

G. There shall be an operator-adjustable "Door Ajar" timer (0 to 120.0 minutes) within this PAC for each of the building entry doors and hatch switches (4). If the Entry Door Switch is active for longer than the "Door Ajar" timer, a "Door Ajar Alarm" shall be generated and displayed at the SCADA system.

H. Well 10D Control: Provide a SCADA Hand-Off selector switch in this PAC for control of the well pump. Provide logic in this PAC such that when the well pump is called to run from SCADA, the associated waste valve is opened prior to starting the well pump and remains open for an operator-adjustable time duration (0 to 60 minutes) after the well pump starts. The waste valve shall close after the time duration expires. All well status and alarms shall be displayed at SCADA regardless of how the well was started.

I. Well Pump Motor Starter Panel Modifications (WP-010-0-1): Modify existing well pump starter control circuit in the motor starter panel to allow the "Stop" output from the SCC to stop the pump regardless of the position of the H-O-A selector switch on this starter panel. The entire motor control circuit shall be shown on this system supplier's drawings. Include any required time and material to document the existing motor control circuit so it can be included on this system supplier's drawings.

J. Loss of communication with the Master Telemetry PAC shall not shut down any pumps or cause alternation of the pumps to occur.

3.21 SCC-301-1-1 MODIFICATIONS (WELL 10D WTP)

A. Configure the existing Bristol ControlWave Micro controller in this SCC to communicate with the PAC in SCC-010-0-1 via an Ethernet-based protocol. This controller shall make available the untreated and treated water flow, and all equipment status information for each filter train as monitored by this SCC and associated RIO panels. This SCC monitors 2 filter trains. Refer to Section 26 09 90 "Typical I/O Associated With Each Filter Train" I/O list for list of I/O typical for each filter train to be communicated with SCC-010-0-1.

B. Remove the existing 4RF Aprisa SR+ radio in this panel and associated building-mounted antenna, antenna cable, and conduit. Radio and antenna shall be reused for installation with SCC-010-0-1.

C. Remove all logic related to the booster station and well from the Bristol ControlWave Micro in this panel. Control logic for filter vessels, associated chemical treatment, and miscellaneous equipment in the treatment plant shall remain.

3.22 RIO-011-0-1 DEMOLITION (WELL 11D RESERVOIR/BOOSTER STATION)

A. The existing RIO panel shall be demolished. All field wiring associated with the panel shall be pulled back to the ceiling immediately above panel. Wiring that is not removed shall be re-terminated at new junction box as shown on the Drawings and all wiring shown on the I/O list shall be extended from this ceiling junction box to the new SCC-011-0-1. Remove the existing 500 VA UPS and prepare for installation in SCC-011-0-1. Remove the existing RIO-011-0-1 enclosure and turn over to OWNER. Provide space within this SCC for future I/O cards (at least 2 cards each of DI, DO, AI, AO).

3.23 SCC-011-0-1 (WELL 11D RESERVOIR/BOOSTER STATION)

A. Provide a new NEMA 12, PAC-based supervisory control center, sized 30 inches wide by 48 inches high by 16 inches deep. Provide a network switch and fiber patch panel within this SCC. The new field wiring/cable terminal blocks shall be in the same location and the same order as the existing RIO-011-0-1. Provide space within this SCC for field installation of the existing radio relocated from SCC-351-1-1. Provide space within this SCC for field installation of the existing UPS from RIO-011-0-1. Provide space within this SCC for future I/O cards (at least 2 cards each of DI, DO, AI, AO). Provide a door switch for this enclosure.

B. Provide an OIT on the front door of this enclosure. An operator shall be able to access data from any other Water SCADA System site from this OIT.

C. Configure this PAC to communicate with the existing Bristol ControlWave Micro controller in SCC-351-1-1 via an Ethernet-based protocol via the fiber-optic cable connection between the two panels. This PAC shall obtain the untreated and treated water flow, and all equipment status information from the existing controller and make the information available to the proposed master PAC. SCC-351-1-1 monitors two filter trains. Refer to Section 26 09 90 "Typical I/O Associated With Each Filter Train" I/O list for list of I/O typical for each filter train to be communicated from SCC-351-1-1.

D. Booster Pump Control:
   1. Booster Pumps 1 and 3 (BP-011-0-1 and BP-011-0-3): Provide an operator-selectable SCADA Hand-Off-Time switch in this PAC for each booster pump.
      a. In SCADA Hand, the pump shall start and run continuously.
      b. In SCADA Time, the pump shall be controlled by operator-adjustable Start Time (0:01 to 24:00) and Stop Time (0:01 to 24:00) setpoints for each pump. When the Start Time setpoint is reached, the pump shall start and run until the Stop Time setpoint is reached. If the current time of day is between the start and stop setpoints, the pump shall start without the time of day having to pass through the start time. The pump shall stop when the time of day reaches the stop setpoint.
      c. There shall be a high-discharge pressure setpoint (0 to 150 psi) which shall shut down the pump when the discharge pressure as measured by PT-011-0-1 exceeds the setpoint (SCADA Hand and Time modes) and generate an alarm at SCADA. This alarm and shutdown shall be reset by switching the SCADA Hand-Off-Time-Pressure switch to the Off position then back to any other position. Provide an operator-adjustable High-discharge Pressure Shutdown Delay (0 to 30 seconds) to prevent nuisance shutdowns. This high-discharge pressure shutdown control shall have an enable-disable switch in SCADA.
   2. Booster Pump 2 (BP-011-0-2): Provide an operator-selectable SCADA Hand-Off-Time-Flow switch in this PAC for the booster pump.
      a. In SCADA Hand, the pump shall start and run continuously at an operator-adjustable speed (0-100.0%).
      b. In SCADA Time, the pump shall be controlled by operator-adjustable Start Time (0:01 to 24:00) and Stop Time (0:01 to 24:00) setpoints. When the Start Time setpoint is reached, the pump shall start and run at an operator-adjustable speed (0 to 100%) until the Stop Time setpoint is reached. If the current time of day is between the start and stop setpoints, the pump shall start without the time of day having to pass through the start time. The pump shall stop when the time of day reaches the stop setpoint.
      c. In SCADA “Flow,” the pump shall start and vary its speed to match the station discharge flow (FT-011-0-1) with the total untreated instantaneous flow to the Well 11D WTP (FIT-351-1-1 plus FIT-351-2-1).
      d. There shall be a high-discharge pressure setpoint (0 to 150 psi) which shall shut down the pump when the discharge pressure as measured by PT-011-0-1 exceeds the setpoint (SCADA Hand, Time, and Flow modes) and generate an alarm at SCADA. This alarm and shutdown shall be reset by switching the Hand-Off-Time-Flow switch to the Off position then back to any other position. Provide an operator-adjustable High-discharge Pressure Shutdown Delay (0 to 30 seconds) to prevent nuisance shutdowns. This high-discharge pressure shutdown control shall have an enable-disable switch in SCADA.
   3. The above control shall be programmed in the PAC in this SCC.

E. Relocate the existing 4RF Aprisa SR+ radio from SCC-351-1-1 to SCC-011-0-1. Reconfigure the radio to use Ethernet communication with the sites as shown on the SCADA Riser. Provide power, lightning arrestor, bulkhead connector, and flexible cable within this SCC for relocated radio.

F. Install the existing antenna from SCC-351-1-1 on the exterior of the Well 11D Booster Station. Provide all mounting hardware. Mounting hardware shall be stainless steel. Ground the antenna in accordance with the original manufacturer’s recommendation and the System Supplier’s drawings. Provide antenna cable from SCC-011-0-1 to the antenna.

G. There shall be an operator-adjustable “Door Ajar” timer (0-120.0 minutes) within this PAC for each of the building entry doors and hatch switches (4). If the Entry Door Switch is active for longer than the “Door Ajar” timer, a “Door Ajar Alarm” shall be generated and displayed at the SCADA system.

H. Well 11D Control: Provide a SCADA Hand-Off selector switch in this PAC for control of the well pump. Provide logic in this PAC such that when the well pump is called to run from SCADA, the associated waste valve is opened prior to starting the well pump and remains open for an operator-adjustable time duration (0 to 60 minutes) after the well pump starts. The waste valve shall close after the time duration expires. All well status and alarms shall be displayed at SCADA regardless of how the well was started.

I. Well Pump Motor Starter Panel Modifications (WP-011-0-1): Modify existing well pump starter control circuit in the motor starter panel to allow the "Stop" output from the SCC to stop the pump regardless of the position of the H-O-A selector switch on this starter panel. The entire motor control circuit shall be shown on this system supplier’s drawings. Include any required time and material to document the existing motor control circuit so it can be included on this system supplier’s drawings.

J. Loss of communication with the Master Telemetry PAC shall not shut down any pumps or cause alternation of the pumps to occur.

3.24 SCC-351-1-1 MODIFICATIONS (WELL 11D WTP)

A. Configure the existing Bristol ControlWave Micro controller in this SCC to communicate with the PAC in SCC-011-0-1 via an Ethernet-based protocol. This controller shall make available the untreated and treated water flow, and all equipment status information for each filter train as monitored by this SCC and associated RIO panels. This SCC monitors 2 filter trains. Refer to Section 26 09 90 "Typical I/O Associated With Each Filter Train" I/O list for list of I/O typical for each filter train to be communicated with SCC-011-0-1.

B. Remove the existing 4RF Aprisa SR+ radio in this panel and associated building-mounted antenna, antenna cable, and conduit. Radio and antenna shall be reused for installation with SCC-011-0-1.

C. Remove all logic related to the booster station and well from the Bristol ControlWave Micro in this panel. Control logic for filter vessels, associated chemical treatment, and miscellaneous equipment in the treatment plant shall remain.

3.25 RIO-012-0-1 MODIFICATIONS (WELL 12D)

A. This existing enclosure is a NEMA 12 steel wall-mounted enclosure that is 30 inches wide by 36 inches high by 12 inches deep. Replace the existing Bristol Remote I/O in this panel with Remote I/O as specified herein. Replace the existing DIN rail-mounted, 60 watt, 24-volt DC power supply in-kind. Verify 24-volt DC power supply size is sufficient to power panel devices. Remove the existing DIN rail-mounted, 30-watt, 12-volt DC power supply. Replace the existing Ethernet switch with switch as specified herein and as shown on the SCADA Riser Diagram. Provide any new power supplies, fuses, and control power transformers as required to power the proposed remote I/O and Ethernet switch. The existing 500 VA UPS has been maintained by OWNER and shall be reused. UPS shall be plug-connected inside the control panel with a dedicated receptacle and overcurrent protection device. All UPS-powered devices shall be continuously powered through the UPS under normal operating conditions. Provide UPS voltage monitoring relays to automatically bypass the

UPS when the UPS output rises 110% above or falls below 90% of the nominal supply voltage. Provide a stand or shelf within the control panel for the UPS and batteries so that they do not sit on the bottom of the enclosure.

B. Well 12D Control: Provide a SCADA Hand-Off selector switch in the SCC-012-0-1 PAC for control of the well pump. Provide logic in the SCC-012-0-1 PAC such that when the well pump is called to run from SCADA, the associated waste valve is opened prior to starting the well pump and remains open for an operator-adjustable time duration (0 to 60 minutes) after the well pump starts. The waste valve shall close after the time duration expires. All well status and alarms shall be displayed at SCADA regardless of how the well was started.

C. Well Pump Motor Starter Panel Modifications (WP-012-0-1): Modify existing well pump starter control circuits in the motor starter panel to allow the "Stop" output from the SCC to stop the pump regardless of the position of the H-O-A selector switch on this starter panel. The entire motor control circuit shall be shown on this system supplier's drawings. Include any required time and material to document the existing motor control circuit so it can be included on this system supplier's drawings.

3.26 RIO-015-0-1 DEMOLITION (WELL 15D)

A. Remove the existing field wiring/cable from the terminal blocks and the field fiber-optic cable from the fiber patch panel within this enclosure and prepare for termination within SCC-015-0-1. Remove the existing 500 VA UPS and prepare for installation in SCC-015-0-1. Remove the existing RIO-015-0-1 enclosure and turn over to OWNER.

3.27 SCC-015-0-1 (WELL 15D)

A. Provide a new NEMA 12, PAC-based supervisory control center, sized 30 inches wide by 48 inches high by 16 inches deep. Provide a network switch and fiber patch panel within this SCC, as shown on the SCADA Riser. The new field wiring/cable terminal blocks shall be in the same location and the same order as the existing RIO-015-0-1. Provide space within this SCC for field installation of the existing radio. Install the SCC in the same location as the removed RIO-015-0-1. Re-terminate the existing field wiring within the SCC. Provide space within this SCC for field installation of the existing UPS from RIO-015-0-1. UPS shall be plug-connected inside the control panel with a dedicated receptacle and overcurrent protection device. All UPS-powered devices shall be continuously powered through the UPS under normal operating conditions. Provide UPS voltage monitoring relays to automatically bypass the UPS when the UPS output rises 110% above or falls below 90% of the nominal supply voltage. Provide a stand or shelf within the control panel for the UPS and batteries so that they do not sit on the bottom of the enclosure. Provide a door switch for this enclosure.

B. Configure this PAC to communicate with the existing Bristol ControlWave Micro controller in SCC-401-1-1 via an Ethernet-based protocol via the fiber-optic cable connection between the two panels. This PAC shall obtain the untreated and treated water flow, and all equipment status information from the existing controller and make the information available to the proposed Master Telemetry PAC. SCC-401-1-1 monitors one filter train. Refer to Section 26 09 90 "Typical I/O Associated With Each Filter Train" I/O list for list of I/O typical for the filter train to be communicated from SCC-401-1-1.

C. Relocate the existing 4RF Aprisa SR+ radio from SCC-401-1-1 to SCC-015-0-1. Reconfigure the radio to use Ethernet communication with the sites as shown on the SCADA Riser.

Provide power, lightning arrestor, bulkhead connector, and flexible cable within this SCC for relocated radio.

D. Install the existing antenna from SCC-401-1-1 on the exterior of the Well 15D Booster Station. Provide all mounting hardware. Mounting hardware shall be stainless steel. Ground the antenna in accordance with the original manufacturer's recommendation and the System Supplier's drawings. Provide antenna cable from SCC-015-0-1 to the antenna.

E. There shall be an operator-adjustable "Door Ajar" timer (0 to 120.0 minutes) within this PAC for each of the building and control panel entry doors (3). If the Entry Door Switch is active for longer than the "Door Ajar" timer, a "Door Ajar Alarm" shall be generated and displayed at the SCADA system.

F. Well 15D Control: Provide a SCADA Hand-Off selector switch in this PAC for control of the well pump. Provide logic in this PAC such that when the well pump is called to run from SCADA, the associated waste valve is opened prior to starting the well pump and remains open for an operator-adjustable time duration (0 to 60 minutes) after the well pump starts. The waste valve shall close after the time duration expires. All well status and alarms shall be displayed at SCADA regardless of how the well was started.

G. Well Pump Motor Starter Panel Modifications (WP-015-0-1): Modify existing well pump starter control circuit in the motor starter panel to allow the "Stop" output from the SCC to stop the pump regardless of the position of the H-O-A selector switch on this starter panel. The entire motor control circuit shall be shown on this system supplier's drawings. Include any required time and material to document the existing motor control circuit so it can be included on this system supplier's drawings.

3.28 SCC-401-1-1 (WELL 15D WTP)

A. Configure the existing Bristol ControlWave Micro controller in this SCC to communicate with the PAC in the new SCC-015-0-1 via an Ethernet-based protocol. This controller shall make available the untreated and treated water flow, and all equipment status information for the filter train as monitored by this SCC. This SCC monitors 1 filter train. Refer to Section 26 09 90 "Typical I/O Associated With Each Filter Train" for list of I/O typical for each filter train to be communicated with SCC-015-0-1.

B. Remove all logic related to the well pump from the Bristol ControlWave Micro in this panel. Control logic for filter vessel, associated chemical treatment, and miscellaneous equipment in the treatment plant shall remain.

C. Remove the existing 4RF Aprisa SR+ radio in this panel and associated building-mounted antenna, antenna cable, and conduit. Radio and antenna shall be reused for installation with SCC-015-0-1.

3.29 RIO-016-0-1 DEMOLITION (WELL 16D)

A. Remove the existing field wiring/cable from the terminal blocks and the field fiber-optic cable from the fiber patch panel within this enclosure and prepare for termination within SCC-016-0-1. Remove the existing 500 VA UPS and prepare for installation in SCC-016-0-1. Remove the existing RIO-016-0-1 enclosure and turn over to OWNER.

3.30 SCC-016-0-1 (WELL 16D)

A. Provide a new NEMA 12, PAC-based supervisory control center, sized 30 inches wide by 48 inches high by 16 inches deep. Provide a network switch and fiber patch panel within this SCC, as shown on the SCADA Riser. The new field wiring/cable terminal blocks shall be in the same location and the same order as the existing RIO-016-0-1. Provide space within this SCC for field installation of the existing radio. Install the SCC in the same location as the removed RIO-016-0-1. Re-terminate the existing field wiring within the SCC. Provide space within this SCC for field installation of the existing UPS from RIO-016-0-1. UPS shall be plug-connected inside the control panel with a dedicated receptacle and overcurrent protection device. All UPS-powered devices shall be continuously powered through the UPS under normal operating conditions. Provide UPS voltage monitoring relays to automatically bypass the UPS when the UPS output rises 110% above or falls below 90% of the nominal supply voltage. Provide a stand or shelf within the control panel for the UPS and batteries so that they do not sit on the bottom of the enclosure. Provide a door switch for this enclosure.

B. Configure this PAC to communicate with the existing Bristol ControlWave Micro controller in SCC-451-1-1 via an Ethernet-based protocol via the fiber-optic cable connection between the two panels. This PAC shall obtain the untreated and treated water flow, and all equipment status information from the existing controller and make the information available to the proposed master Telemetry PAC. SCC-451-1-1 monitors one filter train. Refer to Section 26 09 90 “Typical I/O Associated With Each Filter Train” I/O list for list of I/O typical for the filter train to be communicated from SCC-451-1-1.

C. Relocate the existing 4RF Aprisa SR+ radio from SCC-451-1-1 to SCC-016-0-1. Reconfigure the radio to use Ethernet communication with the sites as shown on the SCADA Riser. Provide power, lightning arrestor, bulkhead connector, and flexible cable within this SCC for relocated radio.

D. Install the existing antenna from SCC-451-1-1 on the exterior of the Well 16D Booster Station. Provide all mounting hardware. Mounting hardware shall be stainless steel. Ground the antenna in accordance with the original manufacturer’s recommendation and the System Supplier’s drawings. Provide antenna cable from SCC-016-0-1 to the antenna.

E. There shall be an operator-adjustable “Door Ajar” timer (0 to 120.0 minutes) within this PAC for each of the building and control panel entry doors (3). If the Entry Door Switch is active for longer than the “Door Ajar” timer, a “Door Ajar Alarm” shall be generated and displayed at the SCADA system.

F. Well 16D Control: Provide a SCADA Hand-Off selector switch in this PAC for control of the well pump. Provide logic in this PAC such that when the well pump is called to run from SCADA, the associated waste valve is opened prior to starting the well pump and remains open for an operator-adjustable time duration (0 to 60 minutes) after the well pump starts. The waste valve shall close after the time duration expires. All well status and alarms shall be displayed at SCADA regardless of how the well was started.

G. Well Pump Motor Starter Panel Modifications (WP-016-0-1): Modify existing well pump starter control circuit in the motor starter panel to allow the "Stop" output from the SCC to stop the pump regardless of the position of the H-O-A selector switch on this starter panel. The entire motor control circuit shall be shown on this system supplier’s drawings. Include any required time and material to document the existing motor control circuit so it can be included on this system supplier’s drawings.

3.31 SCC-451-1-1 (WELL 16D WTP)

A. Configure the existing Bristol ControlWave Micro controller in this SCC to communicate with the PAC in the new SCC-016-0-1 via an Ethernet-based protocol. This controller shall make available the untreated and treated water flow, and all equipment status information for the filter train as monitored by this SCC. This SCC monitors 1 filter train. Refer to Section 26 09 90 “Typical I/O Associated With Each Filter Train” I/O list for list of I/O typical for each filter train to be communicated with SCC-016-0-1.

B. Remove all logic related to the well pump from the Bristol ControlWave Micro in this panel. Control logic for filter vessel, associated chemical treatment, and miscellaneous equipment in the treatment plant shall remain.

C. Remove the existing 4RF Aprisa SR+ radio in this panel and associated building-mounted antenna, antenna cable, and conduit. Radio and antenna shall be reused for installation with SCC-016-0-1.

3.32 SCC-017-0-1 MODIFICATIONS (WELL 17D)

A. The existing enclosure is a NEMA 12 wall-mounted steel enclosure that is 24 inches wide by 42 inches high by 10 inches deep. Replace the existing Bristol ControlWave Micro controller in this panel with a CompactLogix Programmable Automation Controller as specified herein. Replace the existing DIN rail-mounted, 60 watt, 24-volt DC power supply in-kind. Verify 24-volt DC power supply size is sufficient to power panel devices. Remove the existing DIN rail-mounted, 30-watt, 12-volt DC power supply. Replace the existing Ethernet switch with switch as specified herein and shown on the SCADA Riser Diagram. Remove the existing Maple Systems HMI550H OIT. Provide cover plate to cover the opening left by removal of the OIT. Paint cover plate to match existing panel. Provide all new power supplies, fuses, and control power transformers as required to power the proposed controller and Ethernet switch. The existing 500 VA UPS has been maintained by OWNER and shall be reused. UPS shall be plug-connected inside the control panel with a dedicated receptacle and overcurrent protection device. All UPS-powered devices shall be continuously powered through the UPS under normal operating conditions. Provide UPS voltage monitoring relays to automatically bypass the UPS when the UPS output rises 110% above or falls below 90% of the nominal supply voltage. Provide a stand or shelf within the control panel for the UPS and batteries so that they do not sit on the bottom of the enclosure.

B. Reconfigure the existing 4RF Aprisa SR+ radio within this enclosure to use Ethernet communication with the sites as shown on the SCADA Riser.

C. Well 17D Control: Provide a SCADA Hand-Off selector switch in this PAC for control of the well pump. All well status and alarms shall be displayed at SCADA regardless of how the well was started.

D. Well Pump Motor Starter Panel Modifications (WP-017-0-1): Modify existing well pump starter control circuit in the motor starter panel to allow the “Stop” output from the SCC to stop the pump regardless of the position of the H-O-A selector switch on this starter panel. The entire motor control circuit shall be shown on this system supplier's drawings. Include any required time and material to document the existing motor control circuit so it can be included on this system supplier's drawings.

E. Provide a new radio power cycle relay in this SCC. Control power to the existing radio in this panel shall be routed through this relay. Relay shall be controlled as described in the General Control Algorithms section of this specification.

3.33 RIO-018-0-1 DEMOLITION (WELL 18D)

A. Remove the existing field wiring/cable from the terminal blocks and the field fiber-optic cable from the fiber patch panel within this enclosure and prepare for termination within SCC-018-0-1. Remove the existing 500 VA UPS and prepare for installation in SCC-018-0-1. Remove the existing RIO-018-0-1 enclosure and turn over to OWNER.

3.34 SCC-018-0-1 (WELL 18D)

A. Provide a new NEMA 12, PAC-based supervisory control center, sized 30 inches wide by 48 inches high by 16 inches deep. Provide a network switch and fiber patch panel within this SCC, as shown on the SCADA Riser. The new field wiring/cable terminal blocks shall be in the same location and the same order as the existing RIO-018-0-1. Provide space within this SCC for field installation of the existing radio. Install the SCC in the same location as the removed RIO-016-0-1. Re-terminate the existing field wiring within the SCC. Provide space within this SCC for field installation of the existing UPS from RIO-018-0-1. UPS shall be plug-connected inside the control panel with a dedicated receptacle and overcurrent protection device. All UPS-powered devices shall be continuously powered through the UPS under normal operating conditions. Provide UPS voltage monitoring relays to automatically bypass the UPS when the UPS output rises 110% above or falls below 90% of the nominal supply voltage. Provide a stand or shelf within the control panel for the UPS and batteries so that they do not sit on the bottom of the enclosure. Provide a door switch for this enclosure.

B. Configure this PAC to communicate with the existing Bristol ControlWave Micro controller in SCC-601-1-1 via an Ethernet-based protocol via the fiber-optic cable connection between the two panels . This PAC shall obtain the untreated and treated water flow, and all equipment status information from the existing controller and make the information available to the proposed master PAC. SCC-601-1-1 monitors one filter train. Refer to Section 26 09 90 “Typical I/O Associated With Each Filter Train” I/O list for list of I/O typical for the filter train to be communicated from SCC-601-1-1.

C. Relocate the existing 4RF Aprisa SR+ radio from SCC-601-1-1 to SCC-018-0-1. Reconfigure the radio to use Ethernet communication with the sites as shown on the SCADA Riser. Provide power, lightning arrestor, bulkhead connector, and flexible cable within this SCC for relocated radio.

D. Install the existing antenna from SCC-601-1-1 on the exterior of the Well 18D Booster Station. Provide all mounting hardware. Mounting hardware shall be stainless steel. Ground the antenna in accordance with the original manufacturer’s recommendation and the System Supplier’s drawings. Provide antenna cable from SCC-018-0-1 to the antenna.

E. There shall be an operator-adjustable “Door Ajar” timer (0-120.0 minutes) within this PAC for each of the building and control panel entry doors (3). If the Entry Door Switch is active for longer than the “Door Ajar” timer, a “Door Ajar Alarm” shall be generated and displayed at the SCADA system.

F. Well 18D Control: Provide a SCADA Hand-Off selector switch in this PAC for control of the well pump. Provide logic in this PAC such that when the well is called to run from SCADA,

the associated waste valve is opened prior to starting the well and remains open for an operator-adjustable time duration (0 to 60 minutes) after the well starts. The waste valve shall close after the time duration expires. All well status and alarms shall be displayed at SCADA regardless of how the well was started.

G. Well Pump Motor Starter Panel Modifications (WP-018-0-1): Modify existing well pump starter control circuit in the motor starter panel to allow the "Stop" output from the SCC to stop the pump regardless of the position of the H-O-A selector switch on this starter panel. The entire motor control circuit shall be shown on this system supplier's drawings. Include any required time and material to document the existing motor control circuit so it can be included on this system supplier's drawings.

H. Relocate the existing fiber patch panel from RIO-018-0-1 to SCC-018-0-1. Re-terminate the existing field fiber cable within the fiber patch panel. Provide fiber patch cables between the fiber patch panel and the network switch as shown on the SCADA Riser.

3.35 SCC-601-1-1 (WELL 18D WTP)

A. Configure the existing Bristol ControlWave Micro controller in this SCC to communicate with the PAC in the new SCC-018-0-1 via an Ethernet-based protocol. This controller shall make available the untreated and treated water flow, and all equipment status information for the filter train as monitored by this SCC. This SCC monitors 1 filter train. Refer to Section 26 09 90 "Typical I/O Associated With Each Filter Train" I/O list for list of I/O typical for each filter train to be communicated with SCC-018-0-1.

B. Remove all logic related to the well pump from the Bristol ControlWave Micro in this panel. Control logic for filter vessel, associated chemical treatment, and miscellaneous equipment in the treatment plant shall remain.

C. Remove the existing 4RF Aprisa SR+ radio in this panel and associated building-mounted antenna, antenna cable, and conduit. Radio and antenna shall be reused for installation with SCC-016-0-1.

3.36 SCC-020-0-1 (WELL 20D)

A. The existing enclosure is a NEMA 12 wall-mounted steel enclosure that is 30 inches wide by 36 inches high by 12 inches deep. Replace the existing Bristol ControlWave Micro controller in this panel with a CompactLogix Programmable Automation Controller as specified herein. Replace the existing DIN rail-mounted, 60 watt, 24-volt DC power supply in-kind. Verify 24-volt DC power supply size is sufficient to power panel devices. Remove the existing DIN rail-mounted, 30-watt, 12-volt DC power supply. Replace the existing Ethernet switch with switch as specified herein and shown on the SCADA Riser Diagram. Remove the existing Maple Systems HMI550H OIT. Provide cover plate to cover the opening left by removal of the OIT. Paint cover plate to match existing panel. Provide all new power supplies, fuses, and control power transformers as required to power the proposed controller and Ethernet switch. The existing 500 VA UPS has been maintained by OWNER and shall be reused. UPS shall be plug-connected inside the control panel with a dedicated receptacle and overcurrent protection device. All UPS-powered devices shall be continuously powered through the UPS under normal operating conditions. Provide UPS voltage monitoring relays to automatically bypass the UPS when the UPS output rises 110% above or falls below 90% of the nominal supply voltage. Provide a stand or shelf within the control panel for the UPS and batteries so that they do not sit on the bottom of the enclosure.

B. Reconfigure the existing 4RF Aprisa SR+ radio within this enclosure to use Ethernet communication with the sites as shown on the SCADA Riser.

C. Well 20D Control: Provide a SCADA Hand-Off selector switch in this PAC for control of the well pump. All well status and alarms shall be displayed at SCADA regardless of how the well was started.

D. Well Pump Motor Starter Panel Modifications (WP-020-0-1): Modify existing well pump starter control circuit in the motor starter panel to allow the “Stop” output from the SCC to stop the pump regardless of the position of the H-O-A selector switch on this starter panel. The entire motor control circuit shall be shown on this system supplier's drawings. Include any required time and material to document the existing motor control circuit so it can be included on this system supplier's drawings.

E. Provide a new radio power cycle relay in this SCC. Control power to the existing radio in this panel shall be routed through this relay. Relay shall be controlled as described in the General Control Algorithms section of this specification.

3.37 SCC-021-0-1 (WELL 21D)

A. The existing enclosure is a NEMA 12 wall-mounted steel enclosure that is 30 inches wide by 36 inches high by 12 inches deep. Replace the existing Bristol ControlWave Micro controller in this panel with a CompactLogix Programmable Automation Controller as specified herein. Replace the existing DIN rail-mounted, 60-watt, 24-volt DC power supply in-kind. Verify 24-volt DC power supply size is sufficient to power panel devices. Remove the existing DIN rail-mounted, 30-watt, 12-volt DC power supply. Replace the existing Ethernet switch with a new switch as specified herein and shown on the SCADA Riser Diagram. Remove the existing Maple Systems HMI550H OIT. Provide cover plate to cover the opening left by removal of the OIT. Paint cover plate to match existing panel. Provide all new power supplies, fuses, and control power transformers as required to power the proposed controller and Ethernet switch. The existing 500 VA UPS has been maintained by OWNER and shall be reused.

B. Reconfigure the existing 4RF Aprisa SR+ radio within this enclosure to use Ethernet communication with the sites as shown on the SCADA Riser.

C. Well 21D Control: Provide a SCADA Hand-Off selector switch in this PAC for control of the well pump. All well status and alarms shall be displayed at SCADA regardless of how the well was started.

D. Well Pump Motor Starter Panel Modifications (WP-021-0-1): Modify existing well pump starter control circuit in the motor starter panel to allow the “Stop” output from the SCC to stop the pump regardless of the position of the H-O-A selector switch on this starter panel. The entire motor control circuit shall be shown on this system supplier's drawings. Include any required time and material to document the existing motor control circuit so it can be included on this system supplier's drawings.

E. Provide a new radio power cycle relay in this SCC. Control power to the existing radio in this panel shall be routed through this relay. Relay shall be controlled as described in the General Control Algorithms section of this specification.

3.38 SCC-022-0-1 (WELL 22D)

A. The existing enclosure is a NEMA 12 wall-mounted steel enclosure that is 30 inches wide by 36 inches high by 12 inches deep. Replace the existing Bristol ControlWave Micro controller in this panel with a CompactLogix Programmable Automation Controller as specified herein. Replace the existing DIN rail-mounted, 60 watt, 24-volt DC power supply in-kind. Verify 24-volt DC power supply size is sufficient to power panel devices. Remove the existing DIN rail-mounted, 30-watt, 12-volt DC power supply. Replace the existing Ethernet switch with a new switch as specified herein and shown on the SCADA Riser Diagram. Remove the existing Maple Systems HMI550H OIT. Provide cover plate to cover the opening left by removal of the OIT. Paint cover plate to match existing panel. Provide all new power supplies, fuses, and control power transformers as required to power the proposed controller and Ethernet switch. The existing 500 VA UPS has been maintained by OWNER and shall be reused. UPS shall be plug-connected inside the control panel with a dedicated receptacle and overcurrent protection device. All UPS-powered devices shall be continuously powered through the UPS under normal operating conditions. Provide UPS voltage monitoring relays to automatically bypass the UPS when the UPS output rises 110% above or falls below 90% of the nominal supply voltage. Provide a stand or shelf within the control panel for the UPS and batteries so that they do not sit on the bottom of the enclosure.

B. Reconfigure the existing 4RF Aprisa SR+ radio within this enclosure to use Ethernet communication with the sites as shown on the SCADA Riser.

C. Well 22D Control: Provide a SCADA Hand-Off selector switch in this PAC for control of the well pump. Provide logic in this PAC such that when the well pump is called to run from SCADA, the associated waste valve is opened prior to starting the well pump and remains open for an operator-adjustable time duration (0 to 60 minutes) after the well pump starts. The waste valve shall close after the time duration expires. All well status and alarms shall be displayed at SCADA regardless of how the well was started.

D. Well Pump Motor Starter Panel Modifications (WP-022-0-1): Modify existing well pump starter control circuit in the motor starter panel to allow the "Stop" output from the SCC to stop the pump regardless of the position of the H-O-A selector switch on this starter panel. The entire motor control circuit shall be shown on this system supplier’s drawings. Include any required time and material to document the existing motor control circuit so it can be included on this system supplier’s drawings.

E. There shall be an operator-adjustable "Door Ajar" timer (0 to 120.0 minutes) within this PAC for each of the building and control panel entry doors (3). If the Entry Door Switch is active for longer than the "Door Ajar" timer, a "Door Ajar Alarm" shall be generated and displayed at the SCADA system.

F. Provide a new radio power cycle relay in this SCC. Control power to the existing radio in this panel shall be routed through this relay. Relay shall be controlled as described in the General Control Algorithms section of this specification.

3.39 SCC-023-0-1 (WELL 23D)

A. The existing enclosure is a NEMA 12 wall-mounted steel enclosure that is 30 inches wide by 36 inches high by 12 inches deep. Replace the existing Bristol ControlWave Micro controller in this panel with a CompactLogix Programmable Automation Controller as specified herein. Replace the existing DIN rail-mounted, 60 watt, 24-volt DC power supply in-kind. Verify 24-volt DC power supply size is sufficient to power panel devices. Remove the existing DIN rail-mounted, 30-watt, 12-volt DC power supply. Replace the existing Ethernet switch with a new switch as specified herein and shown on the SCADA Riser Diagram. Remove the existing Maple Systems HMI550H OIT. Provide cover plate to cover the opening left by removal of the OIT. Paint cover plate to match existing panel. Provide all new power supplies, fuses, and control power transformers as required to power the proposed controller and Ethernet switch. The existing 500 VA UPS has been maintained by OWNER and shall be reused. UPS shall be plug-connected inside the control panel with a dedicated receptacle and overcurrent protection device. All UPS-powered devices shall be continuously powered through the UPS under normal operating conditions. Provide UPS voltage monitoring relays to automatically bypass the UPS when the UPS output rises 110% above or falls below 90% of the nominal supply voltage. Provide a stand or shelf within the control panel for the UPS and batteries so that they do not sit on the bottom of the enclosure.

B. Reconfigure the existing 4RF Aprisa SR+ radio within this enclosure to use Ethernet communication with the sites as shown on the SCADA Riser.

C. Well 23D Control: Provide a SCADA Hand-Off selector switch in this PAC for control of the well pump. Provide logic in this PAC such that when the well pump is called to run from SCADA, the associated waste valve is opened prior to starting the well pump and remains open for an operator-adjustable time duration (0 to 60 minutes) after the well pump starts. The waste valve shall close after the time duration expires. All well status and alarms shall be displayed at SCADA regardless of how the well was started.

D. Well Pump Motor Starter Panel Modifications (WP-023-0-1): Modify existing well pump starter control circuit in the motor starter panel to allow the "Stop" output from the SCC to stop the pump regardless of the position of the H-O-A selector switch on this starter panel. The entire motor control circuit shall be shown on this system supplier’s drawings. Include any required time and material to document the existing motor control circuit so it can be included on this system supplier’s drawings.

E. There shall be an operator-adjustable "Door Ajar" timer (0 to 120.0 minutes) within this PAC for each of the building and control panel entry doors (3). If the Entry Door Switch is active for longer than the "Door Ajar" timer, a "Door Ajar Alarm" shall be generated and displayed at the SCADA system.

F. Provide a new radio power cycle relay in this SCC. Control power to the existing radio in this panel shall be routed through this relay. Relay shall be controlled as described in the General Control Algorithms section of this specification.

3.40 SCC-024-0-1 (WELL 24D)

A. The existing enclosure is a NEMA 12 wall-mounted steel enclosure that is 30 inches wide by 36 inches high by 12 inches deep. Replace the existing Bristol ControlWave Micro controller in this panel with a CompactLogix Programmable Automation Controller as specified herein. Replace the existing DIN rail-mounted, 60 watt, 24-volt DC power supply in-kind. Verify 24-volt DC power supply size is sufficient to power panel devices. Remove

the existing DIN rail-mounted, 30-watt, 12-volt DC power supply. Replace the existing Ethernet switch with a new switch as specified herein and shown on the SCADA Riser Diagram. Provide all new power supplies, fuses, and control power transformers as required to power the proposed controller and Ethernet switch. The existing 500 VA UPS has been maintained by OWNER and shall be reused. UPS shall be plug-connected inside the control panel with a dedicated receptacle and overcurrent protection device. All UPS-powered devices shall be continuously powered through the UPS under normal operating conditions. Provide UPS voltage monitoring relays to automatically bypass the UPS when the UPS output rises 110% above or falls below 90% of the nominal supply voltage. Provide a stand or shelf within the control panel for the UPS and batteries so that they do not sit on the bottom of the enclosure. Remove the existing Ethernet radio in this panel and associated building-mounted antenna, antenna cable, and conduit.

B. Provide a fiber patch panel in a NEMA 12 enclosure below or adjacent to this SCC for new fiber as shown on Drawings. Provide fiber patch cable in 3/4-inch conduit from fiber patch panel to new network switch in the SCC.

C. Well 24D Control: Provide a SCADA Hand-Off selector switch in this PAC for control of the well pump. Provide logic in this PAC such that when the well pump is called to run from SCADA, the associated waste valve is opened prior to starting the well pump and remains open for an operator-adjustable time duration (0 to 60 minutes) after the well pump starts. The waste valve shall close after the time duration expires. All well status and alarms shall be displayed at SCADA regardless of how the well was started.

D. Well Pump Motor Starter Panel Modifications (WP-024-0-1): Modify existing well pump starter control circuit in the motor starter panel to allow the "Stop" output signal from the SCC to stop the pump regardless of the position of the H-O-A selector switch on this starter panel. The entire motor control circuit shall be shown on this system supplier’s drawings. Include any required time and material to document the existing motor control circuit so it can be included on this system supplier’s drawings.

E. Provide a new radio power cycle relay in this SCC. Control power to the existing radio in this panel shall be routed through this relay. Relay shall be controlled as described in the General Control Algorithms section of this specification.

3.41 SCC-025-0-1 (WELL 25D)

A. The existing enclosure is a NEMA 12 wall-mounted steel enclosure that is 30 inches wide by 36 inches high by 12 inches deep. Replace the existing Bristol ControlWave Micro controller in this panel with a CompactLogix Programmable Automation Controller as specified herein. Replace the existing DIN rail-mounted, 60-watt, 24-volt DC power supply in-kind. Verify 24-volt DC power supply size is sufficient to power panel devices. Remove the existing DIN rail-mounted, 30-watt, 12-volt DC power supply. Replace the existing Ethernet switch with switch as specified herein and shown on the SCADA Riser Diagram. Provide new fiber patch panel, as shown on the SCADA Riser. Provide any new power supplies, fuses, and control power transformers as required to power the proposed controller and Ethernet switch. The existing 500 VA UPS has been maintained by OWNER and shall be reused. UPS shall be plug-connected inside the control panel with a dedicated receptacle and overcurrent protection device. All UPS-powered devices shall be continuously powered through the UPS under normal operating conditions. Provide UPS voltage monitoring relays to automatically bypass the UPS when the UPS output rises 110% above or falls below 90% of the nominal supply voltage. Provide a stand or shelf within the control panel for the UPS and batteries so that they do not sit on the bottom of the enclosure. Remove the existing

Ethernet radio in this panel and associated building-mounted antenna, antenna cable, and conduit.

B. Relocate the existing 4RF Aprisa SR+ radio from SCC-201-1-1 to SCC-025-0-1. Reconfigure the radio to use Ethernet communication with the sites as shown on the SCADA Riser. Provide power, lightning arrestor, bulkhead connector, and flexible cable within this SCC for relocated radio. Reconnect radio to existing relocated antenna and antenna cable as described herein.

C. Configure this PAC to communicate with the existing Bristol ControlWave Micro controller in SCC-201-1-1 and SCC-201-5-1 via an Ethernet-based protocol. This PAC shall obtain the untreated and treated water flow, and all equipment status information from the existing controller and make the information available to the proposed Master Telemetry PAC. SCC-201-1-1 monitors four filter trains and SCC-201-5-1 monitors two filter trains. Refer to Section 26 09 90 “Typical I/O Associated With Each Filter Train” I/O list for list of I/O typical for each filter train to be communicated from SCC-201-1-1 and SCC-201-5-1.

D. Provide a fiber patch panel in a NEMA 12 enclosure below or adjacent to this SCC for new fiber as shown on Drawings. Provide fiber patch cable in 3/4-inch conduit from fiber patch panel to new network switch in the SCC.

E. There shall be an operator-adjustable "Door Ajar" timer (0-120.0 minutes) within this PAC for each of the building and control panel entry doors (3). If the Entry Door Switch is active for longer than the "Door Ajar" timer, a "Door Ajar Alarm" shall be generated and displayed at the SCADA system.

F. Well 25D Control: Provide a SCADA Hand-Off selector switch in this PAC for control of the well pump. Provide logic in this PAC such that when the well pump is called to run from SCADA, the associated waste valve is opened prior to starting the well pump and remains open for an operator-adjustable time duration (0 to 60 minutes) after the well pump starts. The waste valve shall close after the time duration expires. All well status and alarms shall be displayed at SCADA regardless of how the well was started.

G. Install the existing antenna from SCC-201-1-1 on the exterior of the Well 25D building. Provide all mounting hardware. Mounting hardware shall be stainless steel. Ground the antenna in accordance with the original manufacturer's recommendation and the System Supplier's drawings. Provide antenna cable from SCC-025-0-1 to the antenna.

H. Well Pump Motor Starter Panel Modifications (WP-025-0-1): Modify existing well pump starter control circuit in the motor starter panel to allow the "Stop" output from the SCC to stop the pump regardless of the position of the H-O-A selector switch on this starter panel. The entire motor control circuit shall be shown on this system supplier’s drawings. Include any required time and material to document the existing motor control circuit so it can be included on this system supplier’s drawings.

I. Provide a new radio power cycle relay in this SCC. Control power to the existing radio in this panel shall be routed through this relay. Relay shall be controlled as described in the General Control Algorithms section of this specification.

3.42 SCC-201-1-1 MODIFICATIONS (BLACK ROAD WTP BUILDING A)

A. Configure the existing Bristol ControlWave Micro controller in this SCC to communicate with the PAC in SCC-025-0-1 via an Ethernet-based protocol. This controller shall make available the untreated and treated water flow, and all equipment status information for each filter train as monitored by this SCC and associated RIO panels. This SCC monitors 4 filter trains. Refer to Section 26 09 90 “Typical I/O Associated With Each Filter Train” I/O list for list of I/O typical for each filter train to be communicated with SCC-025-0-1.

B. Remove all logic related to the well pumps from the Bristol ControlWave Micro in this panel. Control logic for filter vessels, associated chemical treatment, and miscellaneous equipment in the treatment plant shall remain.

C. Remove the existing 4RF Aprisa SR+ radio in this panel and associated building-mounted antenna, antenna cable, and conduit. Radio and antenna shall be reused for installation with SCC-025-0-1.

D. Remove the existing Ethernet radio in this panel and associated building-mounted antenna, antenna cable, and conduit.

E. Provide new Ethernet switch as specified herein and shown on the SCADA Riser Diagram. Provide new power supplies, fuses, and control power transformers as required to power the proposed Ethernet switch.

3.43 SCC-201-5-1 MODIFICATIONS (BLACK ROAD WTP BUILDING B)

A. Configure the existing Bristol ControlWave Micro controller in this SCC to communicate with the PAC in SCC-025-0-1 via an Ethernet-based protocol. This controller shall make available the untreated and treated water flow, and all equipment status information for each filter train as monitored by this SCC and associated RIO panels. This SCC monitors 2 filter trains. Refer to Section 26 09 90 “Typical I/O Associated With Each Filter Train” I/O list for list of I/O typical for each filter train to be communicated with SCC-025-0-1.

B. Remove all logic related to the well pumps from the Bristol ControlWave Micro in this panel. Control logic for filter vessels, associated chemical treatment, and miscellaneous equipment in the treatment plant shall remain.

3.44 SCC-027-0-1 MODIFICATIONS (WELL 27D)

A. The existing enclosure is a NEMA 12 wall-mounted steel enclosure that is 30 inches wide by 36 inches high by 12 inches deep. Replace the existing Bristol ControlWave Micro controller in this panel with a CompactLogix Programmable Automation Controller as specified herein. Replace the existing DIN rail-mounted, 60-watt, 24-volt DC power supply in-kind. Verify 24-volt DC power supply size is sufficient to power panel devices. Remove the existing DIN rail-mounted, 30-watt, 12-volt DC power supply. Replace the existing Ethernet switch with switch as specified herein and shown on the SCADA Riser Diagram. Remove the existing Maple Systems HMI550H OIT. Provide cover plate to cover the opening left by removal of the OIT. Paint cover plate to match existing panel. Provide all new power supplies, fuses, and control power transformers as required to power the proposed controller and Ethernet switch. The existing 500 VA UPS has been maintained by OWNER and shall be reused. UPS shall be plug-connected inside the control panel with a dedicated receptacle and overcurrent protection device. All UPS-powered devices shall be continuously powered through the UPS under normal operating conditions. Provide UPS voltage monitoring relays

to automatically bypass the UPS when the UPS output rises 110% above or falls below 90% of the nominal supply voltage. Provide a stand or shelf within the control panel for the UPS and batteries so that they do not sit on the bottom of the enclosure.

B. Reconfigure the existing 4RF Aprisa SR+ radio within this enclosure to use Ethernet communication with the sites as shown on the SCADA Riser.

C. Well 27D Control: Provide a SCADA Hand-Off selector switch in this PAC for control of the well pump. All well status and alarms shall be displayed at SCADA regardless of how the well was started.

D. Well Pump Motor Starter Panel Modifications (WP-027-0-1): Modify existing well pump starter control circuit in the motor starter panel to allow the “Stop” output from the SCC to stop the pump regardless of the position of the H-O-A selector switch on this starter panel. The entire motor control circuit shall be shown on this system supplier's drawings. Include any required time and material to document the existing motor control circuit so it can be included on this system supplier's drawings.

E. Provide a new radio power cycle relay in this SCC. Control power to the existing radio in this panel shall be routed through this relay. Relay shall be controlled as described in the General Control Algorithms section of this specification.

F. Modify the VTSCADA graphics to display the information associated with new I/O points at this site.

3.45 SCC-028-0-1 MODIFICATIONS (WELL 28D)

A. The existing enclosure is a NEMA 12 wall-mounted steel enclosure that is 30 inches wide by 36 inches high by 12 inches deep. Replace the existing Bristol ControlWave Micro controller in this panel with a CompactLogix Programmable Automation Controller as specified herein. Replace the existing DIN rail-mounted, 60-watt, 24-volt DC power supply in-kind. Remove the existing DIN rail-mounted, 30-watt, 12-volt DC power supply. Replace the existing Ethernet switch with switch as specified herein and shown on the SCADA Riser Diagram. Verify 24-volt DC power supply size is sufficient to power panel devices. Remove the existing Maple Systems HMI550H OIT. Provide cover plate to cover the opening left by removal of the OIT. Paint cover plate to match existing panel. Provide all new power supplies, fuses, and control power transformers as required to power the proposed controller and Ethernet switch. The existing 500 VA UPS has been maintained by OWNER and shall be reused. UPS shall be plug-connected inside the control panel with a dedicated receptacle and overcurrent protection device. All UPS-powered devices shall be continuously powered through the UPS under normal operating conditions. Provide UPS voltage monitoring relays to automatically bypass the UPS when the UPS output rises 110% above or falls below 90% of the nominal supply voltage. Provide a stand or shelf within the control panel for the UPS and batteries so that they do not sit on the bottom of the enclosure.

B. Reconfigure the existing 4RF Aprisa SR+ radio within this enclosure to use Ethernet communication with the sites as shown on the SCADA Riser.

C. Well 28D Control: Provide a SCADA Hand-Off selector switch in this PAC for control of the well pump. All well status and alarms shall be displayed at SCADA regardless of how the well was started.

D. Well Pump Motor Starter Panel Modifications (WP-028-0-1): Modify existing well pump starter control circuit in the motor starter panel to allow the “Stop” output from the SCC to stop the pump regardless of the position of the H-O-A selector switch on this starter panel. The entire motor control circuit shall be shown on this system supplier's drawings. Include any required time and material to document the existing motor control circuit so it can be included on this system supplier's drawings.

E. Provide a new radio power cycle relay in this SCC. Control power to the existing radio in this panel shall be routed through this relay. Relay shall be controlled as described in the General Control Algorithms section of this specification.

F. Modify the VTSCADA graphics to display the information associated with new I/O points at this site.

3.46 SCC-801-1-1 MODIFICATIONS (WELL 29D/WELL 29D WTP)

A. The existing enclosure is a NEMA 12 freestanding steel enclosure that is 24 inches wide by 90 inches high by 20 inches deep. Remove the I/O shown in the demolition I/O list from the Bristol ControlWave Micro programming and the OIT.

B. Configure the existing Bristol ControlWave Micro controller in this SCC to communicate with the PAC in the new SCC-801-1-2 via an Ethernet-based protocol. This controller shall make available the treated water flow and all equipment status information for the filter train as monitored by this SCC. This SCC monitors one filter train. Refer to Section 26 09 90 “Typical I/O Associated With Each Filter Train” I/O list for list of I/O typical for the filter train to be communicated with SCC-801-1-2.

C. Relocate the existing 4RF Aprisa SR+ radio within this enclosure to SCC-801-1-2.

D. Remove all logic related to the well pump from the Bristol ControlWave Micro in this panel. Control logic for filter vessel, associated chemical treatment, and miscellaneous equipment in the treatment plant shall remain.

3.47 SCC-801-1-2 (WELL 29D)

A. Provide a new NEMA 12, PAC-based supervisory control center, sized 36 inches wide by 16 inches deep by 48 inches high, suitable for wall-mounting, where shown on the Drawings. All control algorithms described herein shall be programmed into this PAC. Provide network switch within the enclosure as shown on the SCADA Riser. Provide a door switch for this enclosure.

B. Relocate the existing 4RF Aprisa SR+ radio from SCC-801-1-1 to SCC-801-1-2. Reconfigure the radio to use Ethernet communication with the sites as shown on the SCADA Riser. Provide power, lightning arrestor, bulkhead connector, and flexible cable within this SCC for relocated radio. Provide new antenna cable and conduit from this SCC to the existing antenna.

C. Configure this PAC to communicate with the existing Bristol ControlWave Micro controller in SCC-801-1-1 via an Ethernet-based protocol. This PAC shall obtain the untreated and treated water flow, and all equipment status information from the existing controller and make the information available to the proposed Master Telemetry PAC. SCC-801-1-1 monitors one filter train. Refer to Section 26 09 90 “Typical I/O Associated With Each Filter Train” I/O list for list of I/O typical for the filter train to be communicated from SCC-801-1-1.

D. There shall be an operator-adjustable "Door Ajar" timer (0 to 120.0 minutes) within this PAC for each of the building and control panel entry doors (4). If the Entry Door Switch is active for longer than the "Door Ajar" timer, a "Door Ajar Alarm" shall be generated and displayed at the SCADA system.

E. Well 29D Control: Provide a SCADA Hand-Off selector switch in this PAC for control of the well pump. Provide logic in this PAC such that when the well pump is called to run from SCADA, the associated waste valve is opened prior to starting the well pump and remains open for an operator-adjustable time duration (0 to 60 minutes) after the well pump starts. The waste valve shall close after the time duration expires. All well status and alarms shall be displayed at SCADA regardless of how the well was started.

F. Well Pump Motor Starter Panel Modifications (WP-029-0-1): Modify existing well pump starter control circuit in the motor starter panel to allow the "Stop" output from the SCC to stop the pump regardless of the position of the H-O-A selector switch on this starter panel. The entire motor control circuit shall be shown on this system supplier's drawings. Include any required time and material to document the existing motor control circuit so it can be included on this system supplier's drawings.

3.48 SCC-009-0-1 MODIFICATIONS (CAMPBELL STREET TANK)

A. The existing enclosure is a NEMA 4X wall-mounted stainless steel enclosure that is 36 inches wide by 42 inches high by 12 inches deep. Replace the existing Bristol ControlWave Micro controller in this panel with a CompactLogix Programmable Automation Controller as specified herein. Replace the existing DIN rail-mounted, 60-watt, 24-volt DC power supply in-kind. Verify 24-volt DC power supply size is sufficient to power panel devices. Remove the existing DIN rail-mounted, 30-watt, 12-volt DC power supply. Replace the existing Ethernet switch with switch as specified herein and shown on the SCADA Riser Diagram. Provide all new power supplies, fuses, and control power transformers as required to power the proposed controller and Ethernet switch. The existing 500 VA UPS has been maintained by OWNER and shall be reused. UPS shall be plug-connected inside the control panel with a dedicated receptacle and overcurrent protection device. All UPS-powered devices shall be continuously powered through the UPS under normal operating conditions. Provide UPS voltage monitoring relays to automatically bypass the UPS when the UPS output rises 110% above or falls below 90% of the nominal supply voltage. Provide a stand or shelf within the control panel for the UPS and batteries so that they do not sit on the bottom of the enclosure.

B. Reconfigure the existing 4RF Aprisa SR+ radio within this enclosure to use Ethernet communication with the sites as shown on the SCADA Riser.

C. Configure this PAC to communicate with the existing Bristol ControlWave Micro controller in SCC-501-1-1 via an Ethernet-based protocol. This PAC shall obtain the untreated and treated water flow, and all equipment status information from the existing controller and make the information available to the proposed Master Telemetry PAC. SCC-501-1-1 monitors one filter train. Refer to Section 26 09 90 "Typical I/O Associated With Each Filter Train" I/O list for list of I/O typical for the filter train to be communicated from SCC-501-1-1.

D. There shall be an operator-adjustable "Door Ajar" timer (0 to 120.0 minutes) within this PAC for each of the building and control panel entry doors (2). If the Entry Door Switch is active for longer than the "Door Ajar" timer, a "Door Ajar Alarm" shall be generated and displayed at the SCADA system.

3.49 SCC-501-1-1 MODIFICATIONS (WELL 30D WTP)

A. Configure the existing Bristol ControlWave Micro controller in this SCC to communicate with the PAC in the new SCC-009-0-1 via an Ethernet-based protocol. This controller shall make available the untreated and treated water flow, and all equipment status information for the filter train as monitored by this SCC. This SCC monitors 1 filter train. Refer to Section 26 09 90 “Typical I/O Associated With Each Filter Train” I/O list for list of I/O typical for each filter train to be communicated with SCC-009-0-1.

B. Remove all logic related to the elevated tank and well pump from the Bristol ControlWave Micro in this panel. Control logic for filter vessel, associated chemical treatment, and miscellaneous equipment in the treatment plant shall remain.

3.50 SCC-551-1-1 MODIFICATIONS (WELL 12D WTP)

A. Configure the existing Bristol ControlWave Micro controller in this SCC to communicate with the PAC in the new SCC-012-0-1 via an Ethernet-based protocol. This controller shall make available the untreated and treated water flow, and all equipment status information for the filter train as monitored by this SCC. This SCC monitors 1 filter train. Refer to Section 26 09 90 “Typical I/O Associated With Each Filter Train” I/O list for list of I/O typical for each filter train to be communicated with SCC-012-0-1.

B. Remove all logic related to the elevated tank and well pump from the Bristol ControlWave Micro in this panel. Control logic for filter vessel, associated chemical treatment, and miscellaneous equipment in the treatment plant shall remain.

3.51 SCC-012-0-1 DEMOLITION (JOLIET MALL TANK)

A. The existing enclosure and all field wiring and conduit shall remain to be utilized as a junction box for I/O to new SCC-012-0-1. All devices within this panel shall be removed except for the existing fiber patch panel and terminal blocks. Remove the existing 500 VA UPS and turn over to OWNER. The existing 4RF Aprisa SR+ radios within this enclosure shall be turned over to OWNER.

B. Existing antennas and antenna cable shall remain in-place as spare.

3.52 SCC-012-0-1 (JOLIET MALL TANK)

A. Provide a new NEMA 12, PAC-based supervisory control center, sized 36 inches wide by 48 inches high by 16 inches deep, suitable for wall mounting. Provide a UPS, network switch, fiber patch panel and two Aprisa SR+ radios within this SCC as shown on the SCADA Riser. Provide a door switch for this enclosure.

B. Provide a new omni-directional antenna and a new Yagi antenna on the elevated tank according to manufacturer's instructions to match the height and direction of existing antennas. CONTRACTOR shall provide all mounting hardware in accordance with manufacturer's recommendations. Reuse existing penetrations for new cables. Any penetrations shall be sealed watertight after installation is complete. Provide temporary sealant or protective structure for any penetrations during installation work. Install each existing spare antenna cable in new 3/4-inch conduit to this SCC.

C. Configure this PAC to communicate with the existing Bristol ControlWave Micro controller in SCC-551-1-1 via an Ethernet-based protocol. This PAC shall obtain the untreated and treated water flow, and all equipment status information from the existing controller and make the information available to the proposed Master Telemetry PAC. SCC-551-1-1 monitors one filter train. Refer to Section 26 09 90 “Typical I/O Associated With Each Filter Train” I/O list for list of I/O typical for the filter train to be communicated from SCC-551-1-1.

D. There shall be an operator-adjustable "Door Ajar" timer (0 to 120.0 minutes) within this PAC for each of the building and control panel entry doors (2). If the Entry Door Switch is active for longer than the "Door Ajar" timer, a "Door Ajar Alarm" shall be generated and displayed at the SCADA system.

E. Provide a low-temperature thermostat in this panel for low temperature alarm at the SCADA System.

3.53 SCC-117-0-1 DEMOLITION (PARKWOOD TANK)

A. The existing enclosure and all field wiring and conduit shall remain to be utilized as a junction box for I/O to new SCC-117-0-1. All devices within this panel shall be removed, except for the existing terminal blocks. Remove the existing Maple Systems HMI550H OIT. Provide cover plate to cover the opening left by removal of the OIT. Paint cover plate to match existing panel. Remove the existing 500 VA UPS and turn over to OWNER. The existing 4RF Aprisa SR+ radios within this enclosure shall be turned over to OWNER.

B. Existing antennas and antenna cable shall remain in-place as spare.

3.54 SCC-117-0-1 (PARKWOOD TANK)

A. Provide a new NEMA 4X, PAC-based supervisory control center, sized 36 inches wide by 48 inches high by 16 inches deep, suitable for wall mounting. Provide a UPS, network switch, and two Aprisa SR+ radios within this SCC as shown on the SCADA Riser. Provide a door switch for this enclosure.

B. Provide a new omni-directional antenna and a new Yagi antenna on the elevated tank according to manufacturer's instructions to match the height and direction of existing antennas. CONTRACTOR shall provide all mounting hardware in accordance with manufacturer's recommendations. Reuse existing penetrations for new cables. Any penetrations shall be sealed watertight after installation is complete. Provide temporary sealant or protective structure for any penetrations during installation work to maintain a watertight structure. Install each existing spare antenna cable in new 3/4-inch conduit to this SCC.

C. There shall be an operator-adjustable "Door Ajar" timer (0 to 120.0 minutes) within this PAC for the control panel entry door (1). If the Entry Door Switch is active for longer than the "Door Ajar" timer, a "Door Ajar Alarm" shall be generated and displayed at the SCADA system.

D. Provide a low-temperature thermostat in this panel for low temperature alarm at the SCADA System.

3.55 SCC-211-0-1 DEMOLITION (RIDGE ROAD STANDPIPE)

A. The existing enclosure and all field wiring and conduit shall remain to be utilized as a junction box for I/O to new SCC-211-0-1. All devices within this panel shall be removed, except for the existing terminal blocks. Remove the existing Maple Systems HMI550H OIT. Provide cover plate to cover the opening left by removal of the OIT. Paint cover plate to match existing panel. Remove the existing 500 VA UPS and turn over to OWNER. The existing 4RF Aprisa SR+ radios within this enclosure shall be turned over to OWNER.

B. Existing antennas and antenna cable shall remain in-place as spare.

3.56 SCC-211-0-1 (RIDGE ROAD STANDPIPE)

A. Provide a new NEMA 4X, PAC-based supervisory control center, sized 36 inches wide by 48 inches high by 16 inches deep, suitable for wall mounting. Provide a UPS, network switch, and two Aprisa SR+ radios within this SCC as shown on the SCADA Riser. Provide a door switch for this enclosure.

B. Provide a new omni-directional antenna and a new Yagi antenna on the elevated tank according to manufacturer's instructions to match the height and direction of existing antennas. CONTRACTOR shall provide all mounting hardware in accordance with manufacturer's recommendations. Reuse existing penetrations for new cables. Any penetrations shall be sealed watertight after installation is complete. Provide temporary sealant or protective structure for any penetrations during installation work. Install each existing spare antenna cable in new 3/4 inch conduit to this SCC.

C. There shall be an operator-adjustable "Door Ajar" timer (0 to 120.0 minutes) within this PAC for the control panel entry door (1). If the Entry Door Switch is active for longer than the "Door Ajar" timer, a "Door Ajar Alarm" shall be generated and displayed at the SCADA system.

D. Provide a low-temperature thermostat in this panel for low temperature alarm at the SCADA System.

3.57 SCC-653-0-1 MODIFICATIONS (RACE TRACK TANK)

A. The existing enclosure is a NEMA 12 wall-mounted stainless steel enclosure that is 30 inches wide by 36 inches high by 12 inches deep. Replace the existing Bristol ControlWave Micro controller in this panel with a CompactLogix Programmable Automation Controller as specified herein. Replace the existing DIN rail-mounted, 60-watt, 24-volt DC power supply in-kind. Verify 24-volt DC power supply size is sufficient to power panel devices. Remove the two existing DIN rail-mounted, 30-watt, 12-volt DC power supplies. Replace the existing Ethernet switch with switch as specified herein and shown on the SCADA Riser Diagram. Remove the existing Maple Systems HMI550H OIT as specified herein. Provide cover plate to cover the opening left by removal of the OIT. Paint cover plate to match existing panel. Provide any new power supplies, fuses, and control power transformers as required to power the proposed controller and Ethernet switch. The existing 500 VA UPS has been maintained by OWNER and shall be reused. UPS shall be plug-connected inside the control panel with a dedicated receptacle and overcurrent protection device. All UPS-powered devices shall be continuously powered through the UPS under normal operating conditions. Provide UPS voltage monitoring relays to automatically bypass the UPS when the UPS output rises 110% above or falls below 90% of the nominal

supply voltage. Provide a stand or shelf within the control panel for the UPS and batteries so that they do not sit on the bottom of the enclosure.

B. Reconfigure the existing 4RF Aprisa SR+ radio within this enclosure to use Ethernet communication with the sites as shown on the SCADA Riser.

C. Provide a new radio power cycle relay in this SCC. Control power to the existing radio in this panel shall be routed through this relay. Relay shall be controlled as described in the General Control Algorithms section of this specification.

3.58 SCC-602-0-1 DEMOLITION (ROCK RUN TANK)

A. The existing enclosure and all field wiring and conduit shall remain to be utilized as a junction box for I/O to new SCC-602-0-1. All devices within this panel shall be removed, except for the existing terminal blocks. Remove the existing Maple Systems HMI550H OIT. Provide cover plate to cover the opening left by removal of the OIT. Paint cover plate to match existing panel. Remove the existing 500 VA UPS and turn over to OWNER. The existing 4RF Aprisa SR+ radios within this enclosure shall be turned over to OWNER.

B. Existing antennas and antenna cable shall remain in-place as spare.

3.59 SCC-602-0-1 (ROCK RUN TANK)

A. Provide a new NEMA 12, PAC-based supervisory control center, sized 36 inches wide by 48 inches high by 16 inches deep, suitable for wall mounting. Provide a UPS, network switch, and two Aprisa SR+ radios within this SCC as shown on the SCADA Riser. Provide a door switch for this enclosure.

B. Provide an OIT on the front door of this enclosure. Modify existing opening as required. An operator shall be able to access data from any other Water SCADA System site from this OIT.

C. Provide a new omni-directional antenna and a new Yagi antenna on the elevated tank according to manufacturer's instructions to match the height and direction of existing antennas. CONTRACTOR shall provide all mounting hardware in accordance with manufacturer's recommendations. Reuse existing penetrations for new cables. Any penetrations shall be sealed watertight after installation is complete. Provide temporary sealant or protective structure for any penetrations during installation work. Install each existing spare antenna cable in new 3/4-inch conduit to this SCC.

D. There shall be an operator-adjustable "Door Ajar" timer (0 to 120.0 minutes) within this PAC for each of the building and control panel entry doors (2). If the Entry Door Switch is active for longer than the "Door Ajar" timer, a "Door Ajar Alarm" shall be generated and displayed at the SCADA system.

3.60 FAIRMOUNT & GARVIN BOOSTER STATION CONTROL PANEL DEMOLITION (USEMCO PANEL)

A. The existing USEMCO Panel shall be demolished. All field wiring and conduit associated with the panel as shown in Section 26 09 90–I/O Listing, except for field wiring and conduit from the existing MCC, shall be removed. Field wiring and conduit associated with the existing MCC-111-0-1 shall be re terminated at new junction boxes, one for analog signals and the other for digital signals, as shown on the Drawings.

3.61 FAIRMOUNT & GARVIN BOOSTER STATION CONTROL PANEL DEMOLITION (AQUATROL PANEL)

A. The existing Aquatrol Panel shall be demolished. All field wiring and conduit associated with the panel shall be removed.

3.62 SCC-111-0-1 DEMOLITION (FAIRMOUNT & GARVIN BOOSTER STATION/RESERVOIR)

A. The existing enclosure shall be demolished. All field wiring and conduit associated with this panel shall be removed, except for the existing antenna cable to existing antenna mounted on this station, which shall be reused. Remove the field fiber-optic cable and associated conduit from the fiber patch panel within this enclosure back to the fiber pull box shown on the Drawings and prepare for termination within new SCC-111-0-1. Remove the existing 500 VA UPS and prepare for installation with new SCC-111-0-1.

B. The existing 4RF Aprisa SR+ radio within this enclosure shall be relocated to new SCC-111-0-1 as described below.

3.63 SCC-111-0-1 (FAIRMOUNT & GARVIN BOOSTER STATION/RESERVOIR)

A. Provide a new NEMA 12, PAC-based supervisory control center, sized 36 inches wide by 16 inches deep by 48 inches high, suitable for wall-mounting where shown on the Drawings. All control algorithms and alarms described herein shall be programmed into this PAC. Provide a network switch and fiber patch panel within the enclosure as shown on the SCADA Riser. Provide space within this SCC for field installation of the existing radio. Reinstall the existing UPS from the existing SCC-111-0-1 in new SCC-111-0-1. UPS shall be plug-connected inside the control panel with a dedicated receptacle and overcurrent protection device. All UPS-powered devices shall be continuously powered through the UPS under normal operating conditions. Provide UPS voltage monitoring relays to automatically bypass the UPS when the UPS output rises 110% above or falls below 90% of the nominal supply voltage. Provide a stand or shelf within the control panel for the UPS and batteries so that they do not sit on the bottom of the enclosure. Install the SCC in the same location as the existing SCC-111-0-1 and Aquatrol panel. Provide a door switch for this enclosure.

B. Provide an OIT on the front door of this enclosure. An operator shall be able to access data from any other Water SCADA System site from this OIT.

C. Configure this PAC to communicate with the existing Bristol ControlWave Micro controllers in SCC-110-1-1 and SCC-110-5-1 via an Ethernet-based protocol via the fiber-optic cable connection between the two panels. This PAC shall obtain the untreated and treated water flow, and all equipment status information from the existing controllers and make the information available to the proposed Master Telemetry PAC. SCC-110-1-1 monitors four filter trains and SCC-110-5-1 monitors two filter trains. Refer to Section 26 09 90 "Typical I/O Associated With Each Filter Train" I/O list for list of I/O typical for each filter train to be communicated from SCC-110-1-1 and SCC-110-5-1.

D. Booster Pump Control: Provide a SCADA Local-Remote selector switch for control of the booster pumps at this station. In SCADA “Remote,” the pumps shall be controlled as described under SCC-Master and, if communication between this PAC and the Master Telemetry PAC fails, control shall switch to Local mode. In SCADA “Local,” the pumps shall be controlled as described below. Logic for the SCADA Local-Remote selector switch and local control described below shall be in the local PAC and not dependent on communication

with the master. For Booster Pump Nos. 1 through 4 (BP-111-0-1 through BP-111-0-4): Provide an operator-selectable SCADA Hand-Off-Time-Pressure switch in this PAC for each booster pump.

1. In SCADA Hand, the pump shall start and run continuously at an operator-adjustable speed (0-100.0%).
2. In SCADA Time, the pump shall be controlled by operator-adjustable Start Time (0:01 to 24:00) and Stop Time (0:01 to 24:00) setpoints. When the Start Time setpoint is reached, the pump shall start and run until the Stop Time setpoint is reached. BP-111-0-3 and BP-111-0-4 shall start and run at an operator-adjustable speed (0 to 100%) until the Stop Time setpoint is reached. If the current time of day is between the start and stop setpoints, the pump shall start without the time of day having to pass through the start time. The pump shall stop when the time of day reaches the stop setpoint.
3. In SCADA Pressure, provide a four-stage matrix in this PAC for control of Fairmount & Garvin Booster Pumps No. 1 through No. 4. Each pump may be assigned to any of the stages of the matrix. Operator shall make stage selections through the SCADA system. It shall not be possible to assign more than one pump to a stage.
    a. Booster pumps shall be controlled by the local discharge pressure (PIT-111-0-1) based on operator-adjustable "Start" and "Stop" pressure setpoints (0 to 150 psi) for each stage. In addition, operator-adjustable common setpoints for "Minimum Pump Runtime" (0 to 30.0 minutes) and "Control Time Delay" (0 to 30.0 minutes) shall be included.
    b. When a pump is called to run from the associated matrix stage, it shall run for the minimum pump runtime setpoint. If the stage stop setpoint is reached before the minimum runtime has expired, the pump shall continue to run for the minimum runtime.
    c. As the discharge pressure falls and remains below the Stage 1 start setpoint for the control time delay, the pump selected for Stage 1 shall be called to run. The pump(s) shall continue to run until the pressure rises and remains above the Stage 1 stop setpoint for the control time delay. After Stage 1 is active, if the pressure continues to fall and remain below a stage start setpoint for the control time delay, the pump selected for that stage shall be called to run. The pump(s) shall continue to run until the pressure rises and remains above the associated stage stop setpoint for the control time delay. This shall continue through all the stages if necessary. The active stage shall be indicated at the SCADA system.
    d. When pumps with a speed command signal from SCADA are called to run from this matrix, the pump shall start and ramp to a minimum speed. Once the pump is running at minimum speed, the speed of the pump shall be modulated to maintain an operator-adjustable station discharge pressure setpoint (0 to 150 psi). If more than one pump with a speed command signal is running, they shall all run at the same speed.
4. There shall be a high-discharge pressure setpoint (0 to 150 psi) which shall shut down the pump when the discharge pressure as measured by PIT-111-0-1 exceeds the setpoint (SCADA Hand and Time modes) and generate an alarm at SCADA. This alarm and shutdown shall be reset by switching the Hand-Off-Time-Pressure switch to the Off position then back to any other position. Provide an operator-adjustable High-discharge Pressure Shutdown Delay (0 to 30 seconds) to prevent nuisance shutdowns. This high-discharge pressure control shall have an enable-disable switch in SCADA.

E. Relocate the existing 4RF Aprisa SR+ radio from existing SCC-111-0-1 to new SCC-111-0-1. Reconfigure the radio to use Ethernet communication with the sites as shown on the SCADA Riser. Provide power, lightning arrestor, bulkhead connector, and flexible

cable within this SCC for relocated radio. Reconnect radio to existing antenna and antenna cable.

F. Provide an operator-adjustable low suction pressure lockout setpoint (0 to 100 psi) such that if the suction pressure (PT-111-0-2) is below the setpoint for an operator-adjustable low suction pressure lockout delay (0 to 60 seconds), the pumps shall shut down and be locked out until the suction pressure rises above an operator-adjustable Restore setpoint (0 to 100 psi).

G. There shall be an operator-adjustable “Door Ajar” timer (0 to 120.0 minutes) within this PAC for each of the building entry doors and hatch switches (3). If the Entry Door Switch is active for longer than the “Door Ajar” timer, a “Door Ajar Alarm” shall be generated and displayed at the SCADA system.

H. Obtain the services of OWNER's generator maintenance contractor to modify the existing generator control panel to provide the signals identified in the Section 26 09 90 I/O list. Drawings provided by the System Supplier shall identify all relays, terminals, and wiring required to obtain these signals.

I. Modify the VTSCADA graphics to display the information associated with new I/O points at this site.

3.64 SCC-110-1-1 MODIFICATIONS (FAIRMOUNT & GARVIN WTP BUILDING A)

A. Configure the existing Bristol ControlWave Micro controller in this SCC to communicate with the PAC in SCC-111-0-1 via an Ethernet-based protocol. This controller shall make available the untreated and treated water flow, and all equipment status information for each filter train as monitored by this SCC and associated RIO panels. This SCC monitors 4 filter trains. Refer to Section 26 09 90 “Typical I/O Associated With Each Filter Train” I/O list for list of I/O typical for each filter train to be communicated with SCC-111-0-1.

B. Remove all logic related to the booster station and well pumps from the Bristol ControlWave Micro in this panel. Control logic for filter vessels, associated chemical treatment, and miscellaneous equipment in the treatment plant shall remain.

C. Remove the existing Ethernet radio in this panel and associated building-mounted antenna, antenna cable, and conduit.

D. Provide new Ethernet switch as specified herein and as shown on the SCADA Riser Diagram. Provide new power supplies, fuses, and control power transformers as required to power the proposed Ethernet switch.

3.65 SCC-110-5-1 MODIFICATIONS (FAIRMOUNT & GARVIN WTP BUILDING B)

A. Configure the existing Bristol ControlWave Micro controller in this SCC to communicate with the PAC in SCC-111-0-1 via an Ethernet-based protocol. This controller shall make available the untreated and treated water flow, and all equipment status information for each filter train as monitored by this SCC and associated RIO panels. This SCC monitors 2 filter trains. Refer to Section 26 09 90 “Typical I/O Associated With Each Filter Train” I/O list for list of I/O typical for each filter train to be communicated with SCC-111-0-1.

B. Remove all logic related to the booster station and well pumps from the Bristol ControlWave Micro in this panel. Control logic for filter vessels, associated chemical treatment, and miscellaneous equipment in the treatment plant shall remain.

3.66 SCC-113-0-1 MODIFICATIONS (BLUFF STREET BOOSTER STATION)

A. The existing enclosure is a NEMA 12 wall-mounted steel enclosure that is 30 inches wide by 36 inches high by 12 inches deep. Replace the existing Bristol ControlWave Micro controller in this panel with a CompactLogix Programmable Automation Controller as specified herein. Replace the existing DIN rail-mounted, 60-watt, 24-volt DC power supply in-kind. Verify 24-volt DC power supply size is sufficient to power panel devices. Remove the existing DIN rail-mounted, 30-watt, 12-volt DC power supply. Replace the existing Ethernet switch with new switch as specified herein and shown on the SCADA Riser Diagram. Replace the existing Maple Systems HMI550H OIT with new OIT as specified herein. Provide cover plate if necessary to allow the proposed OIT to be mounted on the front of the existing enclosure in place of the existing device. Provide all new power supplies, fuses, and control power transformers as required to power the proposed controller, Ethernet switches, and OIT. The existing 500 VA UPS has been maintained by OWNER and shall be reused.

B. Reconfigure the existing 4RF Aprisa SR+ radio within this enclosure to use Ethernet communication with the sites as shown on the SCADA Riser.

C. Booster Pump Control:
   1. Booster Pumps No. 1 through No. 4 (BP-113-0-1 through BP-113-0-4): Provide an operator-selectable SCADA Hand-Off-Pressure selector switch in this PAC for each booster pump.
      a. In SCADA Hand, the pump shall start and run continuously.
      b. In SCADA Pressure, provide a four-stage matrix in this PAC for control of Bluff Street Booster Pumps No. 1 through No. 4. Each pump may be assigned to any of the stages of the matrix. Operator shall make stage selections through the SCADA system. It shall not be possible to assign more than one pump to a stage.
         (1) Booster pumps shall be controlled by the local discharge pressure (PT-113-0-1) based on operator-adjustable "Start" and "Stop" pressure setpoints (0 to 150 psi) for each stage. In addition, operator-adjustable common setpoints for "Minimum Pump Runtime" (0 to 30.0 minutes) and "Control Time Delay" (0 to 30.0 minutes) shall be included.
         (2) When a pump is called to run from the associated matrix stage, it shall run for the minimum pump runtime setpoint. If the stage stop setpoint is reached before the minimum runtime has expired, the pump shall continue to run for the minimum runtime.
         (3) As the discharge pressure falls and remains below the Stage 1 start setpoint for the control time delay, the pump selected for Stage 1 shall be called to run. The pump(s) shall continue to run until the pressure rises and remains above the Stage 1 stop setpoint for the control time delay. After Stage 1 is active, if the pressure continues to fall and remain below a stage start setpoint for the control time delay, the pump selected for that stage shall be called to run. The pump(s) shall continue to run until the pressure rises and remains above the associated stage stop setpoint for the control time delay. This shall continue through all the stages if necessary. The active stage shall be indicated at the SCADA system.
         (4) When pumps with a speed command signal from SCADA are called to run from this matrix, the pump shall start and ramp to a minimum speed. Once the

pump is running at minimum speed, the speed of the pump shall be modulated to maintain an operator-adjustable station discharge pressure setpoint (0 to 150 psi). If more than one pump with a speed command signal is running, they shall all run at the same speed.

2. The above control shall be programmed in the PAC in this SCC.

D. Provide an operator-adjustable low suction pressure lockout setpoint (0 to 100 psi) such that if the suction pressure (PT-113-0-2) is below the setpoint for an operator-adjustable low suction pressure lockout delay (0 to 60 seconds), the pumps shall shut down and be locked out until the suction pressure rises above an operator-adjustable Restore setpoint (0 to 100 psi).

E. Provide a new radio power cycle relay in this SCC. Control power to the existing radio in this panel shall be routed through this relay. Relay shall be controlled as described in the General Control Algorithms section of this specification.

F. Modify the VTSCADA graphics to display the information associated with new I/O points at this site.

G. Loss of communication with the Master Telemetry PAC shall not shut down any pumps or cause alternation of the pumps to occur.

3.67 SCC-114-0-1 MODIFICATIONS (RICHARDS STREET BOOSTER STATION)

A. The existing enclosure is a NEMA 12 wall-mounted steel enclosure that is 30 inches wide by 36 inches high by 12 inches deep. Replace the existing Bristol ControlWave Micro controller in this panel with a CompactLogix Programmable Automation Controller as specified herein. Replace the existing DIN rail-mounted, 60-watt, 24-volt DC power supply in-kind. Verify 24-volt DC power supply size is sufficient to power panel devices. Remove the existing DIN rail-mounted, 30-watt, 12-volt DC power supply. Replace the existing Ethernet switch with a new switch as specified herein and shown on the SCADA Riser Diagram. Replace the existing Maple Systems HMI550H OIT with new OIT as specified herein. Provide cover plate if necessary to allow the proposed OIT to be mounted on the front of the existing enclosure in place of the existing device. Provide all new power supplies, fuses, and control power transformers as required to power the proposed controller, Ethernet switch, and OIT. The existing 500 VA UPS has been maintained by OWNER and shall be reused. UPS shall be plug-connected inside the control panel with a dedicated receptacle and overcurrent protection device. All UPS-powered devices shall be continuously powered through the UPS under normal operating conditions. Provide UPS voltage monitoring relays to automatically bypass the UPS when the UPS output rises 110% above or falls below 90% of the nominal supply voltage. Provide a stand or shelf within the control panel for the UPS and batteries so that they do not sit on the bottom of the enclosure.

B. Provide relay logic in this SCC such that when the PRV-114-0-1 Open signal is active, as detected by the open limit switch, Booster Pumps No. 1 and No. 2 shut down and cannot start until the Open signal deactivates.

C. Provide an operator-selectable SCADA Enable-Disable switch in this PAC for PRV-114-0-1. In SCADA Enable, the valve position shall be controlled by the hydraulics on the valve. In SCADA Disable, the valve shall close.

D. Reconfigure the existing 4RF Aprisa SR+ radio within this enclosure to use Ethernet communication with the sites as shown on the SCADA Riser.

E. Provide an operator-adjustable low suction pressure lockout setpoint (0 to 100 psi) such that if the suction pressure (PT-114-0-2) is below the setpoint for an operator-adjustable low suction pressure lockout delay (0 to 60 seconds), the pumps shall shut down and be locked out until the suction pressure rises above an operator-adjustable Restore setpoint (0 to 100 psi).

F. All equipment shown in the Section 26 09 90–SCADA System I/O listing with a start/stop output from the PAC shall have an operator-selectable switch on the SCADA HMI graphics that shall allow or prevent that piece of equipment from operating on the standby generator. This control shall be functional only when the automatic transfer switch is in the emergency position.

G. Booster Pump Control: Provide a SCADA Local-Remote selector switch for control of the booster pumps at this station. In SCADA “Remote,” the pumps shall be controlled as described under SCC-Master and, if communication between this PAC and the Master Telemetry PAC fails, control shall switch to Local mode. In SCADA “Local,” the pumps shall be controlled as described below. Logic for the SCADA Local-Remote selector switch and local control described below shall be in the local PAC and not dependent on communication with the master. For Booster Pumps 1 and 2 (BP-114-0-1 and BP-114-0-2): Provide an operator-selectable SCADA Hand-Off-Pressure switch in this PAC for each booster pump.
   1. In SCADA Hand, the pump shall start and run continuously.
   2. In SCADA “Pressure,” provide a two-stage matrix in this PAC for control of Richards Street Booster Pumps No. 1 and No. 2. Each pump may be assigned to any of the stages of the matrix. Operator shall make stage selections through the SCADA system. It shall not be possible to assign more than one pump to a stage.
      a. Booster pumps shall be controlled by the local discharge pressure (PT-114-0-1) based on operator-adjustable "Start" and "Stop" pressure setpoints (0 to 150 psi) for each stage. In addition, operator-adjustable common setpoints for "Minimum Pump Runtime" (0 to 30.0 minutes) and "Control Time Delay" (0 to 30.0 minutes) shall be included.
      b. When a pump is called to run from the associated matrix stage, it shall run for the minimum pump runtime setpoint. If the stage stop setpoint is reached before the minimum runtime has expired, the pump shall continue to run for the minimum runtime.
      c. As the discharge pressure falls and remains below the Stage 1 start setpoint for the control time delay, all pumps selected for Stage 1 shall be called to run. The pump(s) shall continue to run until the pressure rises and remains above the Stage 1 stop setpoint for the control time delay. After Stage 1 is active, if the pressure continues to fall and remain below a stage start setpoint for the control time delay, the pump(s) selected for that stage shall be called to run. The pump(s) shall continue to run until the pressure rises and remains above the associated stage stop setpoint for the control time delay. This shall continue through all the stages if necessary. The active stage shall be indicated at the SCADA system.
   3. The above control shall be programmed in the PAC in this SCC.

H. Loss of communication with the Master Telemetry PAC shall not shut down any pumps or cause alternation of the pumps to occur.

3.68 SCC-115-0-1 MODIFICATIONS (PARKWOOD BOOSTER STATION)

A. The Parkwood Booster Station panel is to be abandoned. Remove the existing 4RF Aprisa SR+ radio and building-mounted antenna and turn over to OWNER. Update the SCC-Master radio polling sequence and logic to remove this SCC.

3.69 SCC-701-0-1 MODIFICATIONS (PRAIRIE AND CAMPBELL BOOSTER STATION)

A. The existing enclosure is a NEMA 12 wall-mounted steel enclosure that is 30 inches wide by 36 inches high by 12 inches deep. Replace the existing Bristol ControlWave Micro controller in this panel with a CompactLogix Programmable Automation Controller as specified herein. Replace the existing DIN rail-mounted, 60-watt, 24-volt DC power supply in-kind. Remove the existing DIN rail-mounted, 30-watt, 12-volt DC power supply. Verify 24-volt DC power supply size is sufficient to power panel devices. Replace the existing Ethernet switch with a new switch as specified herein and shown on the SCADA Riser Diagram. Replace the existing Maple Systems HMI550H OIT with new OIT as specified herein. Provide cover plate if necessary to allow the proposed OIT to be mounted on the front of the existing enclosure in place of the existing device. Provide all new power supplies, fuses, and control power transformers as required to power the proposed controller, Ethernet switch, and OIT. The existing 500 VA UPS has been maintained by OWNER and shall be reused. UPS shall be plug-connected inside the control panel with a dedicated receptacle and overcurrent protection device. All UPS-powered devices shall be continuously powered through the UPS under normal operating conditions. Provide UPS voltage monitoring relays to automatically bypass the UPS when the UPS output rises 110% above or falls below 90% of the nominal supply voltage. Provide a stand or shelf within the control panel for the UPS and batteries so that they do not sit on the bottom of the enclosure.

B. Reconfigure the existing 4RF Aprisa SR+ radio within this enclosure to use Ethernet communication with the sites as shown on the SCADA Riser.

C. Provide a new radio power cycle relay in this SCC. Control power to the existing radio in this panel shall be routed through this relay. Relay shall be controlled as described in the General Control Algorithms section of this specification.

D. Modify the VTSCADA graphics to display the information associated with new I/O points at this site.

E. Booster Pump Control: Booster Pumps 1 and 2 (BP-701-0-1 and BP-701-0-2): Provide a SCADA Hand-Off selector switch in this PAC for control of each booster pump.

F. Loss of communication with the Master Telemetry PAC shall not shut down any pumps or cause alternation of the pumps to occur.

3.70 SCC-651-1-2 (WASHINGTON STREET WTP)

A. Provide a new NEMA 12, PAC-based supervisory control center, sized 24 inches wide by 16 inches deep by 48 inches high, suitable for wall-mounting where shown on the Drawings. Provide a UPS and network switch within the enclosure as shown on the SCADA Riser. The PAC in this enclosure shall interface with the reconfigured radio in SCC-651-1-1.

B. Configure this PAC to communicate with this existing Bristol ControlWave Micro controller in SCC-651-1-1 via an Ethernet-based protocol. This PAC shall obtain the untreated and treated water flow, and all equipment status information from the existing controller and make the information available to the proposed Master Telemetry PAC. SCC-651-1-1 monitors one

filter train. Refer to Section 26 09 90 “Typical I/O Associated With Each Filter Train” I/O list for list of I/O typical for the filter train to be communicated from SCC-651-1-1.

3.71 SCC-651-1-1 MODIFICATIONS (WASHINGTON STREET WTP)

A. Reconfigure the existing 4RF Aprisa SR+ radio within this enclosure to use Ethernet communication with the sites as shown on the SCADA Riser. The radio shall be disconnected from the Bristol ControlWave Micro in this panel and connected to the proposed Ethernet switch as shown on the SCADA Riser.

B. Remove all logic related to the booster station and well pump from the Bristol ControlWave Micro in this panel. Control logic for filter vessel, associated chemical treatment, and miscellaneous equipment in the treatment plant shall remain.

C. Configure the existing Bristol ControlWave Micro controller in this SCC to communicate with the PAC in the new SCC-651-1-2 via an Ethernet-based protocol. This controller shall make available the treated water flow, and all equipment status information for the filter train as monitored by this SCC. This SCC shall monitor one filter train. Refer to Section 26 09 90 “Typical I/O Associated With Each Filter Train” I/O list for list of I/O typical for the filter train to be communicated with SCC-651-1-2.

D. Replace the existing Ethernet switch with a new switch as specified herein and as shown on the SCADA Riser Diagram. Provide new power supplies, fuses, and control power transformers as required to power the proposed Ethernet switch.

3.72 SCC-652-0-1 (WASHINGTON STREET BOOSTER STATION)

A. The existing enclosure is a NEMA 12 wall-mounted steel enclosure that is 30 inches wide by 36 inches high by 12 inches deep. The panel contains Bristol Remote I/O with 2 spare digital inputs, 7 spare digital outputs, 9 spare analog inputs, and 3 spare analog outputs.

B. Booster Pump Control: Provide a SCADA Local-Remote selector switch for control of the booster pumps at this station. In SCADA “Remote,” the pumps shall be controlled as described under SCC-Master and, if communication between this PAC and the Master Telemetry PAC fails, control shall switch to Local mode. In SCADA “Local,” the pumps shall be controlled as described below. Logic for the SCADA Local-Remote selector switch and local control described below shall be in the local PAC and not dependent on communication with the master. For Booster Pumps No. 1 through No. 3 (BP-652-0-1 through BP-652-0-3) provide an operator-selectable SCADA Hand-Off-Pressure switch in this PAC for each booster pump.
   1. In SCADA Hand, the pump shall start and run continuously.
   2. In SCADA "Pressure," provide a three-stage matrix in this PAC for control of Washington Street Booster Pumps No. 1 through No. 3. Each pump may be assigned to any of the stages of the matrix. Operator shall make stage selections through the SCADA system. It shall not be possible to assign more than one pump to a stage.
      a. Booster pumps shall be controlled by the local discharge pressure (PT-652-0-3) based on operator-adjustable "Start" and "Stop" pressure setpoints (0 to 150 psi) for each stage. In addition, operator-adjustable common setpoints for "Minimum Pump Runtime" (0 to 30.0 minutes) and "Control Time Delay" (0 to 30.0 minutes) shall be included.
      b. When a pump is called to run from the associated matrix stage, it shall run for the minimum pump runtime setpoint. If the stage stop setpoint is reached before the

minimum runtime has expired, the pump shall continue to run for the minimum runtime.

c. As the discharge pressure falls and remains below the Stage 1 start setpoint for the control time delay, all pumps selected for Stage 1 shall be called to run. The pump(s) shall continue to run until the pressure rises and remains above the Stage 1 stop setpoint for the control time delay. After Stage 1 is active, if the pressure continues to fall and remain below a stage start setpoint for the control time delay, the pump(s) selected for that stage shall be called to run. The pump(s) shall continue to run until the pressure rises and remains above the associated stage stop setpoint for the control time delay. This shall continue through all the stages if necessary. The active stage shall be indicated at the SCADA system.

3. The above control shall be programmed in the PAC in this SCC.

C. Provide an operator-adjustable low suction pressure lockout setpoint (0 to 100 psi) such that if the suction pressure (PT-652-0-1) is below the setpoint for an operator-adjustable low suction pressure lockout delay (0 to 60 seconds), the pumps shall shut down and be locked out until the suction pressure rises above an operator-adjustable Restore setpoint (0 to 100 psi).

D. Loss of communication with the Master Telemetry PAC shall not shut down any pumps or cause alternation of the pumps to occur.

E. Modify the VTSCADA graphics to display the information associated with new I/O points at this site.

END OF SECTION

SECTION 26 09 10

CONTROLS AND INSTRUMENTATION DRAWINGS

PART 1-GENERAL

1.01 SUMMARY

A. Work Included: Applicable provisions of Division 01 shall govern work in this section.

1.02 SUBMITTALS

A. Submit drawings in accordance with provisions of Section 01 33 00–Submittals.

1.03 COORDINATION

A. The requirements set forth in this section are intended to apply to the drawings provided as specified in Section 26 09 00–Controls and Instrumentation.

PART 2-PRODUCTS

NOT APPLICABLE

PART 3-EXECUTION

3.01 GENERAL REQUIREMENTS

A. All drawings shall have the following information:
   1. Project information, including name of OWNER and specific project name.
   2. Drawing title, accurately representing what is on the drawing.
   3. Unique drawing identifier, consisting of a unique drawing number or drawing number with individual sheet number. If sheet numbers are used, total number of sheets must be identified on each sheet.
   4. System Supplier company name, address, and phone number.
   5. Original design information, including person responsible for design, date of original design, person responsible for checking of design, and date of design check.
   6. Revision block indicating revision number, date, description of revision, and person responsible for revision.

B. All drawings shall have line numbers that can be uniquely referenced from other drawings.

C. All drawings showing wiring shall include unique wire numbers assigned to wiring that is installed between devices in the panel. The wire number shall be shown on the drawings.

D. All drawings showing relays shall include reference to the drawings where the relay contacts are shown. Spare relay contacts that are not used shall be identified.

3.02 DRAWINGS REQUIRED

A. Index of Drawings: Index of Drawings shall list drawing number, sheet number (if applicable), and drawing title for each drawing in drawing package.

B. Symbol Sheet: Symbol Sheet shall include:
   1. Explanation of all symbols used on the drawings, including, but not limited to, normally open/normally closed contacts, flow switches, limit switches, pressure switches, selector switches, pushbuttons, timers, control relays, solenoids, fuses, circuit breakers, terminal blocks, and contactors. Symbol sheet does not need to be specific to project, but must contain explanation of all symbols used on the drawings (i.e., special symbols used for a particular project must be added to standard symbol sheets).
   2. List of abbreviations used on the drawings.
   3. Explanation of continuation method for circuits that cannot be shown on a single sheet.

C. Exterior Enclosure Layout Drawing: Exterior layout drawing shall show location of all externally-mounted equipment. Exterior layout drawing shall include:
   1. Enclosure dimensions, enclosure NEMA rating (i.e., NEMA 1, NEMA 4X stainless steel, NEMA 4X nonmetallic, etc.), and enclosure color or finish.
   2. Location and actual depiction of panel latches, hinges, mounting holes and lifting eyes.
   3. Location and accurate representation of equipment mounted on enclosure (i.e., switches should look like actual switches being installed; indicating lights should look like actual lights being installed).
   4. Equipment nameplate location.
   5. Description for each piece of equipment or unique identifier and parts list, or bill of materials.
   6. Nameplate list including nameplate wording, size, construction (i.e., lamicoid with Black background and White letters), and mounting method (i.e., stainless steel screws). Label size must include size in inches or reference to standard sizes included on symbol sheet, or elsewhere in drawing package.
   7. Identification of area reserved for equipment located inside enclosure, but not actually mounted on enclosure back panel, such as UPSs, fiber optic patch panels, and lighting packages.

D. Interior Enclosure Layout Drawing: Interior layout drawing shall show location of all internally-mounted equipment. Interior layout drawing shall include:
   1. Back panel dimensions and finish.
   2. Location and accurate representation of equipment (i.e., terminal blocks should look like actual terminal blocks; receptacle should look like actual receptacle, etc.).
   3. Dimensions of internally-mounted equipment are not necessary, but equipment should be drawn to scale such that an accurate representation of the way equipment will be mounted is shown on the drawing.
   4. Description for each piece of equipment or unique identifier and parts list, or bill of materials.

E. Interconnection Diagram, Network Diagram or Block Diagram: Interconnection Diagram, Network Diagram or Block Diagram shall show all cabling between system components and identify any station addressing or node numbers that are assigned to equipment. All cables shall be identified by cable type, including specific manufacturer and model/part number. Party responsible for furnishing and installing cable shall also be included. Some examples of cables that must be shown are:

1. Antenna cables.
2. Communications cables between system components (fiber and/or copper). This includes fiber optic jumpers between fiber patch panels and equipment, and Ethernet patch cables between switches and devices.
3. Communications cables (fiber and/or copper) between PLCs, controllers, operator interface equipment and security devices (e.g., card readers, electric strikes, and motion detectors) that are not shown on the elementary schematics.

F. Elementary Schematic: Elementary schematics shall be developed for each motor or supplied equipment and shall include:
1. Nominal voltage, AC or DC designation, number of phases (if AC), and frequency in hertz (if AC) for each source of electrical supply to the enclosure.
2. Prospective short-circuit current available at the point of electrical supply to the enclosure.
3. Type of power supply system grounding (e.g., wye phase midpoint grounded, delta phases corner grounded, wye phases midpoint grounded, delta phases ungrounded, etc.).
4. Complete documentation of electrical circuit from supply to motor or supplied equipment. Documentation shall include disconnecting means, main overcurrent protection (when supplied), branch overcurrent protection (when supplied), control circuit and special purpose control protection, motor control, overload protection, local disconnect (when supplied) and motor horsepower, and full load amps from nameplate or supplied equipment full load amps.
5. Documentation of PLC or controller inputs and outputs.
6. Documentation of all circuit breaker/motor protector ratings, fuse sizes, control power transformer VA ratings, dip switch settings, etc.
7. Documentation of all RVSS and VFD settings (e.g., under-voltage shutdown, ramp time, overload, excessive starts/hour, etc.) which have been changed from the factory default setting.

G. Wiring Diagram: Wiring diagrams shall show all terminations for all cables external to the enclosure. Terminations may be shown on the elementary schematics as long as the termination information is concise and easily understood by the personnel installing the field wiring. Termination information shall be shown for all devices, including devices that are not part of System Supplier’s scope of supply. A box with two dots or continuation arrows indicating continuation to a piece of equipment are not acceptable. Information shown on System Supplier’s wiring diagrams shall include a description of the drawings where terminations are found (i.e., drawing title), drawing number where the terminations are found, and terminal blocks referenced on the drawing. System Supplier shall coordinate with supplier of other wiring diagram to provide information on System Supplier’s wiring diagrams.

H. Calculations Summary: Calculations summary shall include calculations performed to:
1. Determine size of UPS.
2. Determine air conditioning equipment requirement.
3. Determine control power transformer sizing. Control power transformer sizing calculations may be generic based on typical circuits.

I. Functional Testing Recommendations: Testing recommendations shall include description of functional tests that must be performed by operators. Functional test description shall be

included for UPS, indicating lights, and other devices whose condition can only be determined by testing.

3.03 SAMPLE DRAWINGS

A. Sample drawings showing an acceptable format are included in the appendix. The samples included in the appendix do not represent the only acceptable method of showing the required information.

END OF SECTION

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WATER SCADA SYSTEM DEMOLITION I/O LISTING - SCC-MAIN DEMOLITION (WESTSIDE WWTP)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
MAIN	UPS BATTERY LOW		1	0	0	0	2~#14	FROM UPS IN SCC
MAIN	CONTROL POWER FAILURE		1	0	0	0	2~#14	FROM CONTROL POWER RELAY IN THIS SCC
MAIN	ALARM HORN MAJOR ALARM		0	1	0	0	DEMO	TO ALARM HORN
MAIN	ALARM HORN MINOR ALARM		0	1	0	0	DEMO	TO ALARM HORN
MAIN	EXIT DOOR PUSHBUTTON		1	0	0	0	DEMO	FROM EXIT PUSHBUTTONS AT EXIT DOORS
MAIN	ALARM SLIENCE PB		1	0	0	0	2~#14	FROM PUSHBUTTON ON SCC DOOR
MAIN	CARD READER		0	0	0	0	DEMO	FROM CARD READERS
MAIN	DOOR SWITCH SOUTH DOOR		1	0	0	0	2~#14**	FROM DOOR SWITCH
MAIN	DOOR SWITCH WEST DOOR		1	0	0	0	2~#14**	FROM DOOR SWITCH
	** - Wire shall be marked as "SPARE". See Section 26 09 00 3.06.C.							
	TOTALS		6	2	0	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-MASTER (WESTSIDE WWTP)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
MAS.	CONTROL POWER FAILURE		1	0	0	0	2~#14	FROM CONTROL POWER RELAY IN THIS SCC
MAS.	COMMON UPS ALARM		1	0	0	0	2~#14	FROM UPS IN THIS SCC
MAS.	UPS DC BUS OK		1	0	0	0	2~#14	FROM UPS IN THIS SCC
MAS.	UPS BATTERY FAIL		1	0	0	0	2~#14	FROM UPS IN THIS SCC
MAS.	UPS BATTERY DISCHARGED		1	0	0	0	2~#14	FROM UPS IN THIS SCC
MAS.	PLC SCAN FAIL		1	1	0	0	2~#14	TO/FROM RELAY LOGIC IN THIS SCC
MAS.	NETWORK SWITCH ALARM		1	0	0	0	2~#14	FROM NETWORK SWITCH IN THIS SCC
MAS.	EAST SIDE RADIO POWER CYCLE		0	1	0	0	2~#14	TO EAST SIDE RADIO POWER CYCLE RELAY IN THIS SCC
MAS.	WEST SIDE RADIO POWER CYCLE		0	1	0	0	2~#14	TO WEST SIDE RADIO POWER CYCLE RELAY IN THIS SCC
MAS.	CONTROL PANEL HIGH TEMPERATURE		1	0	0	0	2~#14	FROM HIGH TEMPERATURE THERMOSTAT IN THIS SCC
	TOTALS		8	3	0	0		

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WATER SCADA SYSTEM I/O LISTING - RIO-101-0-1 DEMOLITION (ROCK 1 WELL)

RIO	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
101-0-1	**ROCK 1 WELL**	WP-101-R1						
101-0-1	RUNNING		1	0	0	0	EXIST	
101-0-1	IN AUTO		1	0	0	0	EXIST	
101-0-1	FAIL		1	0	0	0	EXIST	
101-0-1	START		0	1	0	0	EXIST	
101-0-1	NO FLOW	FS-101-0-1	1	0	0	0	EXIST	
101-0-1	FLOW (0 TO 1,000 GPM)	FT-101-0-1	0	0	1	0	EXIST	
101-0-1	KW	JT-101-0-1	0	0	0	0	DEMO	
101-0-1	BEARING TEMPERATURE HIGH	TS-101-0-2	1	0	0	0	EXIST	
101-0-1	DISCHARGE PRESSURE	PT-101-0-1	0	0	1	0	EXIST	
101-0-1	**WELLHOUSE**							
101-0-1	TEMPERATURE LOW	TS-101-0-1	1	0	0	0	EXIST	
101-0-1	ROOM FLOODING	LS-101-0-1	1	0	0	0	EXIST	
101-0-1	ENTRY DOOR SWTICH	DS-101-0-1	1	0	0	0	EXIST	
101-0-1	OVERHEAD DOOR SWITCH	DS-101-0-2	1	0	0	0	EXIST	
101-0-1	THREE-PHASE POWER FAIL		1	0	0	0	EXIST	
101-0-1	CONTROL POWER FAILURE		1	0	0	0	EXIST	
101-0-1	UPS REPLACE BATTERY		1	0	0	0	EXIST	
101-0-1	SMOKE DETECTED	SD-101-0-1	1	0	0	0	EXIST	
101-0-1	EXIT PUSHBUTTON	PB-101-0-1	0	0	0	0	DEMO	
101-0-1	CARD READER		0	0	0	0	DEMO	
	TOTALS		13	1	2	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-001-0-1 (ROCK 1 WELL)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
001-0-1	**ROCK 1 WELL**	WP-101-R1						
001-0-1	RUNNING		1	0	0	0	EXIST	
001-0-1	IN AUTO		1	0	0	0	EXIST	
001-0-1	FAIL		1	0	0	0	EXIST	
001-0-1	START		0	1	0	0	EXIST	
001-0-1	NO FLOW	FS-101-0-1	1	0	0	0	EXIST	
001-0-1	FLOW (0 TO 1,000 GPM)	FT-101-0-1	0	0	1	0	EXIST	
001-0-1	BEARING TEMPERATURE HIGH	TS-101-0-2	1	0	0	0	EXIST	
001-0-1	DISCHARGE PRESSURE	PT-101-0-1	0	0	1	0	EXIST	
001-0-1	**WELLHOUSE**							
001-0-1	TEMPERATURE LOW	TS-101-0-1	1	0	0	0	EXIST	
001-0-1	ROOM FLOODING	LS-101-0-1	1	0	0	0	EXIST	
001-0-1	ENTRY DOOR SWTICH	DS-101-0-1	1	0	0	0	EXIST	
001-0-1	OVERHEAD DOOR SWITCH	DS-101-0-2	1	0	0	0	EXIST	
001-0-1	THREE-PHASE POWER FAIL		1	0	0	0	EXIST	
001-0-1	CONTROL POWER FAILURE		1	0	0	0	EXIST	
001-0-1	UPS REPLACE BATTERY		1	0	0	0	EXIST	
001-0-1	SMOKE DETECTED	SD-101-0-1	1	0	0	0	EXIST	
001-0-1	RADIO POWER CYCLE		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
	TOTALS		13	2	2	0		

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WATER SCADA SYSTEM I/O LISTING - RIO-101-0-1 (GRAVEL 101 WELL) (FORMERLY SCC-101-0-1)

RIO	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
101-0-1	**GRAVEL 101 WELL**	WP-101-G1						
101-0-1	RUNNING		1	0	0	0	EXIST	
101-0-1	IN AUTO		1	0	0	0	EXIST	
101-0-1	FAIL		1	0	0	0	EXIST	
101-0-1	START		0	1	0	0	EXIST	
101-0-1	STOP		0	1	0	0	EXIST	
101-0-1	NO FLOW	FS-101-0-2	1	0	0	0	EXIST	
101-0-1	FLOW (0 TO 700 GPM)	FT-101-0-2	0	0	1	0	EXIST	
101-0-1	KW	JT-101-0-2	0	0	0	0	DEMO	
101-0-1	DISCHARGE PRESSURE	PT-101-0-2	0	0	1	0	EXIST	
101-0-1	**CONTROL PANEL TEMPERATURE LOW**	TS-101-0-1	1	0	0	0	EXIST	
101-0-1	**CONTROL PANEL ENTRY DOOR SWTICH**	DS-101-0-1	1	0	0	0	EXIST	
101-0-1	**THREE-PHASE POWER FAIL**		1	0	0	0	EXIST	
101-0-1	**CONTROL POWER FAILURE**		1	0	0	0	EXIST	
101-0-1	**UPS REPLACE BATTERY**		1	0	0	0	EXIST	
101-0-1	**EXIT PUSHBUTTON**	PB-101-0-1	0	0	0	0	DEMO	
101-0-1	**CARD READER**		0	0	0	0	DEMO	
101-0-1	**GROUNDED PHASE DETECTED**		0	1	0	0	EXIST	
101-0-1	**METERING MANHOLE FLOODING**	LS-101-0-1	0	1	0	0	EXIST	
	TOTALS		9	4	2	0		

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WATER SCADA SYSTEM I/O LISTING - RIO-103-0-1 DEMOLITION (ROCK 2 WELL)

RIO	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
103-0-1	**ROCK 2 WELL**	WP-103-R1						
103-0-1	RUNNING		1	0	0	0	EXIST	
103-0-1	IN AUTO		1	0	0	0	EXIST	
103-0-1	POWER FAIL		1	0	0	0	EXIST	
103-0-1	START		0	1	0	0	EXIST	
103-0-1	NO FLOW	FS-103-0-1	1	0	0	0	EXIST	
103-0-1	FLOW (0 TO 1,000 GPM)	FT-103-0-1	0	0	1	0	EXIST	
103-0-1	KW	JT-103-0-1	0	0	0	0	DEMO	
103-0-1	BEARING TEMPERATURE HIGH	TS-103-0-2	1	0	0	0	EXIST	
103-0-1	DISCHARGE PRESSURE	PT-103-0-1	0	0	1	0	EXIST	
103-0-1	**WELLHOUSE**							
103-0-1	LOW TEMPERATURE	TS-103-0-1	1	0	0	0	EXIST	
103-0-1	ROOM FLOODING	LS-103-0-1	1	0	0	0	EXIST	
103-0-1	ENTRY DOOR SWTICH	DS-103-0-1	1	0	0	0	EXIST	
103-0-1	OVERHEAD DOOR SWITCH	DS-103-0-2	1	0	0	0	EXIST	
103-0-1	THREE-PHASE POWER FAIL		1	0	0	0	EXIST	
103-0-1	CONTROL POWER FAILURE		1	0	0	0	EXIST	
103-0-1	UPS REPLACE BATTERY		1	0	0	0	EXIST	
103-0-1	SMOKE DETECTED	SD-103-0-1	1	0	0	0	EXIST	
103-0-1	EXIT PUSHBUTTON	PB-103-0-1	0	0	0	0	DEMO	
103-0-1	CARD READER		0	0	0	0	DEMO	
	TOTALS		13	1	2	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-002-0-1 (ROCK 2 WELL)

scc	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
002-0-1	**ROCK 2 WELL**	WP-101-R1						
002-0-1	RUNNING		1	0	0	0	EXIST	
002-0-1	IN AUTO		1	0	0	0	EXIST	
002-0-1	POWER FAIL		1	0	0	0	EXIST	
002-0-1	START		0	1	0	0	EXIST	
002-0-1	STOP		0	1	0	0	EXIST	
002-0-1	NO FLOW	FS-103-0-1	1	0	0	0	EXIST	
002-0-1	FLOW (0 TO 1,000 GPM)	FT-103-0-1	0	0	1	0	EXIST	
002-0-1	BEARING TEMPERATURE HIGH	TS-103-0-2	1	0	0	0	EXIST	
002-0-1	DISCHARGE PRESSURE	PT-103-0-1	0	0	1	0	EXIST	
002-0-1	**WELLHOUSE**							
002-0-1	LOW TEMPERATURE	TS-103-0-1	1	0	0	0	EXIST	
002-0-1	ROOM FLOODING	LS-103-0-1	1	0	0	0	2~#14	FROM ROOM FLOODING FLOAT SWITCH
002-0-1	ENTRY DOOR SWTICH	DS-103-0-1	1	0	0	0	EXIST	
002-0-1	OVERHEAD DOOR SWITCH	DS-103-0-2	1	0	0	0	EXIST	
002-0-1	THREE-PHASE POWER FAIL		1	0	0	0	EXIST	
002-0-1	CONTROL POWER FAILURE		1	0	0	0	EXIST	
002-0-1	UPS REPLACE BATTERY		1	0	0	0	EXIST	
002-0-1	SMOKE DETECTED	SD-103-0-1	1	0	0	0	EXIST	
002-0-1	RADIO POWER CYCLE		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
	TOTALS		13	3	2	0		

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WATER SCADA SYSTEM I/O LISTING - RIO-103-0-1 (GRAVEL 103 WELL) (FORMERLY SCC-103-0-1)

RIO	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
103-0-1	**GRAVEL 103 WELL**	WP-103-G1						
103-0-1	RUNNING		1	0	0	0	EXIST	
103-0-1	IN AUTO		1	0	0	0	EXIST	
103-0-1	FAIL		1	0	0	0	EXIST	
103-0-1	START		0	1	0	0	EXIST	
103-0-1	STOP		0	1	0	0	EXIST	
103-0-1	NO FLOW	FS-103-0-2	1	0	0	0	EXIST	
103-0-1	FLOW (0 TO 700 GPM)	FT-103-0-2	0	0	1	0	EXIST	
103-0-1	KW	JT-103-0-2	0	0	0	0	DEMO	
103-0-1	DISCHARGE PRESSURE	PT-103-0-2	0	0	1	0	EXIST	
103-0-1	**CONTROL PANEL LOW TEMPERATURE**	TS-103-0-1	1	0	0	0	EXIST	
103-0-1	**CONTROL PANEL ENTRY DOOR SWTICH**	DS-103-0-1	1	0	0	0	EXIST	
103-0-1	**THREE-PHASE POWER FAIL**		1	0	0	0	EXIST	
103-0-1	**POWER FAILURE**		1	0	0	0	EXIST	
103-0-1	**UPS REPLACE BATTERY ALARM**		1	0	0	0	EXIST	
103-0-1	**EXIT PUSHBUTTON**	PB-103-0-1	0	0	0	0	DEMO	
103-0-1	**CARD READER**		0	0	0	0	DEMO	
103-0-1	**GROUNDED PHASE DETECTED**		0	1	0	0	EXIST	
103-0-1	**METERING MANHOLE FLOODING**		0	1	0	0	EXIST	
	TOTALS		9	4	2	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-003-0-1 (ROCK 3 WELL)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
003-0-1	**ROCK 3 WELL**	WP-003						
003-0-1	RUNNING		1	0	0	0	EXIST	
003-0-1	IN AUTO		1	0	0	0	EXIST	
003-0-1	FAIL		1	0	0	0	EXIST	
003-0-1	START		0	1	0	0	EXIST	
003-0-1	STOP		0	1	0	0	2~#14	TO EXISTING STARTER
003-0-1	NO FLOW	FS-003-0-1	1	0	0	0	EXIST	
003-0-1	FLOW (0 TO 1,200 GPM)	FT-003-0-1	0	0	1	0	EXIST	
003-0-1	KW	JT-003-0-1	0	0	0	0	DEMO	
003-0-1	DISCHARGE PRESSURE	PT-003-0-1	0	0	1	0	EXIST	
003-0-1	**WELLHOUSE**							
003-0-1	TEMPERATURE LOW	TS-003-0-1	1	0	0	0	EXIST	FROM TEMPERATURE SWITCH
003-0-1	ROOM FLOODING	LS-003-0-1	1	0	0	0	EXIST	FROM FLOODING SWITCH
003-0-1	ENTRY DOOR SWITCH	DS-003-0-1	1	0	0	0	EXIST	FROM DOOR SWITCH
003-0-1	OVERHEAD DOOR SWITCH	DS-003-0-2	1	0	0	0	EXIST	FROM DOOR SWITCH
003-0-1	THREE-PHASE POWER FAIL		1	0	0	0	EXIST	FROM PHASE RELAY
003-0-1	CONTROL POWER FAILURE		1	0	0	0	EXIST	FROM CONTROL PANEL POWER RELAY IN SCC
003-0-1	UPS REPLACE BATTERY		1	0	0	0	EXIST	FROM UPS IN SCC
003-0-1	SMOKE DETECTED	SD-003-0-1	1	0	0	0	EXIST	FROM SMOKE DETECTOR
003-0-1	EXIT PUSHBUTTON	PB-003-0-1	0	0	0	0	DEMO	
003-0-1	CARD READER		0	0	0	0	DEMO	
003-0-1	RADIO POWER CYCLE		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
	TOTALS		12	3	2	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-102-0-1 (GRAVEL 102 WELL)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
102-0-1	**GRAVEL 102 WELL**	WP-102						
102-0-1	RUNNING		1	0	0	0	EXIST	FROM INTERPOSING RELAY IN EXISTING STARTER
102-0-1	IN AUTO		1	0	0	0	EXIST	FROM HOA SELECTOR SWITCH
102-0-1	FAIL		1	0	0	0	EXIST	FROM INTERPOSING RELAY IN EXISTING STARTER
102-0-1	START		0	1	0	0	EXIST	TO EXISTING STARTER
102-0-1	STOP		0	1	0	0	EXIST	TO EXISTING STARTER
102-0-1	NO FLOW	FS-102-0-1	1	0	0	0	EXIST	
102-0-1	FLOW (0 TO 700 GPM)	FT-102-0-1	0	0	1	0	EXIST	
102-0-1	KW	JT-102-0-1	0	0	1	0	EXIST	
102-0-1	DISCHARGE PRESSURE	PT-102-0-1	0	0	1	0	EXIST	FROM PRESSURE TRANSDUCER
102-0-1	**CONTROL PANEL TEMPERATURE LOW**	TS-102-0-1	1	0	0	0	EXIST	
102-0-1	**CONTROL PANEL ENTRY DOOR SWTICH**	DS-102-0-1	1	0	0	0	EXIST	FROM DOOR SWITCH
102-0-1	**THREE-PHASE POWER FAIL**		1	0	0	0	EXIST	
102-0-1	**CONTROL POWER FAILURE**		1	0	0	0	EXIST	
102-0-1	**UPS REPLACE BATTERY**		1	0	0	0	EXIST	
102-0-1	**EXIT PUSHBUTTON**	PB-102-0-1	0	0	0	0	DEMO	
102-0-1	**CARD READER**		0	0	0	0	DEMO	
102-0-1	**GROUNDED PHASE DETECTED**		0	1	0	0	EXIST	
102-0-1	**METERING MANHOLE FLOODING**		0	1	0	0	EXIST	
102-0-1	**RADIO POWER CYCLE**		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
	TOTALS		9	5	3	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-104-0-1 (GRAVEL 104 WELL)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
104-0-1	**GRAVEL 104 WELL**	WP-104						
104-0-1	RUNNING		1	0	0	0	EXIST	FROM EXISTING TERMINALS IN MOTOR CONTROL PANEL
104-0-1	IN AUTO		1	0	0	0	EXIST	FROM EXISTING TERMINALS IN MOTOR CONTROL PANEL
104-0-1	FAIL		1	0	0	0	EXIST	FROM EXISTING TERMINALS IN MOTOR CONTROL PANEL
104-0-1	START		0	1	0	0	EXIST	TO EXISTING TERMINALS IN MOTOR CONTROL PANEL
104-0-1	STOP		0	1	0	0	EXIST	TO EXISTING TERMINALS IN MOTOR CONTROL PANEL
104-0-1	NO FLOW	FS-104-0-1	1	0	0	0	EXIST	FROM EXISTING TERMINALS IN MOTOR CONTROL PANEL
104-0-1	FLOW (0 TO 700 GPM)	FT-104-0-1	0	0	1	0	EXIST	FROM EXISTING TERMINALS IN MOTOR CONTROL PANEL
104-0-1	KW	JT-104-0-1	0	0	1	0	EXIST	FROM KW TRANSDUCER IN EXISTING STARTER
104-0-1	DISCHARGE PRESSURE	PT-104-0-1	0	0	1	0	EXIST	FROM EXISTING TERMINALS IN MOTOR CONTROL PANEL
104-0-1	**CONTROL PANEL TEMPERATURE LOW**	TS-104-0-1	1	0	0	0	EXIST	
104-0-1	**CONTROL PANEL ENTRY DOOR SWTICH**	DS-104-0-1	1	0	0	0	EXIST	FROM DOOR SWITCH
104-0-1	**THREE-PHASE POWER FAIL**		1	0	0	0	EXIST	
104-0-1	**CONTROL POWER FAILURE**		1	0	0	0	EXIST	
104-0-1	**UPS REPLACE BATTERY**		1	0	0	0	EXIST	
104-0-1	**EXIT PUSHBUTTON**	PB-104-0-1	0	0	0	0	DEMO	
104-0-1	**CARD READER**		0	0	0	0	DEMO	
104-0-1	**GROUNDED PHASE DETECTED**		0	1	0	0	EXIST	
104-0-1	**METERING MANHOLE FLOODING**		0	1	0	0	EXIST	
104-0-1	**RADIO POWER CYCLE**		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
	TOTALS		9	5	3	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-105-0-1 (GRAVEL 105 WELL)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
105-0-1	**GRAVEL 105 WELL**	WP-105						
105-0-1	RUNNING		1	0	0	0	EXIST	FROM EXISTING TERMINALS IN MOTOR CONTROL PANEL
105-0-1	IN AUTO		1	0	0	0	EXIST	FROM EXISTING TERMINALS IN MOTOR CONTROL PANEL
105-0-1	FAIL		1	0	0	0	EXIST	FROM EXISTING TERMINALS IN MOTOR CONTROL PANEL
105-0-1	START		0	1	0	0	EXIST	TO EXISTING TERMINALS IN MOTOR CONTROL PANEL
105-0-1	STOP		0	1	0	0	EXIST	TO EXISTING TERMINALS IN MOTOR CONTROL PANEL
105-0-1	NO FLOW	FS-105-0-1	1	0	0	0	EXIST	FROM EXISTING TERMINALS IN MOTOR CONTROL PANEL
105-0-1	FLOW (0 TO 700 GPM)	FT-105-0-1	0	0	1	0	EXIST	FROM EXISTING TERMINALS IN MOTOR CONTROL PANEL
105-0-1	KW	JT-105-0-1	0	0	1	0	EXIST	FROM KW TRANSDUCER IN EXISTING STARTER
105-0-1	DISCHARGE PRESSURE	PT-105-0-1	0	0	1	0	EXIST	FROM EXISTING TERMINALS IN MOTOR CONTROL PANEL
105-0-1	**CONTROL PANEL TEMPERATURE LOW**	TS-105-0-1	1	0	0	0	EXIST	
105-0-1	**CONTROL PANEL ENTRY DOOR SWTICH**	DS-105-0-1	1	0	0	0	EXIST	FROM DOOR SWITCH
105-0-1	**THREE-PHASE POWER FAIL**		1	0	0	0	EXIST	
105-0-1	**CONTROL POWER FAILURE**		1	0	0	0	EXIST	
105-0-1	**UPS REPLACE BATTERY**		1	0	0	0	EXIST	
105-0-1	**EXIT PUSHBUTTON**	PB-105-0-1	0	0	0	0	DEMO	
105-0-1	**CARD READER**		0	0	0	0	DEMO	
105-0-1	**GROUNDED PHASE DETECTED**		0	1	0	0	EXIST	
105-0-1	**METERING MANHOLE FLOODING**		0	1	0	0	EXIST	
105-0-1	**RADIO POWER CYCLE**		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
	TOTALS		9	5	3	0		

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WATER SCADA SYSTEM I/O LISTING - RIO-009-0-1 (WELL 30D)

RIO	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
009-0-1	**WELL 30D PUMP**	WP-009						
009-0-1	RUNNING		1	0	0	0	EXIST	
009-0-1	IN AUTO		1	0	0	0	EXIST	
009-0-1	FAIL		1	0	0	0	EXIST	
009-0-1	START		0	1	0	0	EXIST	
009-0-1	STOP		0	1	0	0	EXIST	
009-0-1	NO FLOW	FS-009-00-1	1	0	0	0	EXIST	
009-0-1	FLOW	FM-009-0-1	0	0	1	0	EXIST	
009-0-1	KW	JT-009-00-1	0	0	0	0	DEMO	
009-0-1	**WELLHOUSE**							
009-0-1	TEMPERATURE LOW	TS-009-00-1	1	0	0	0	EXIST	
009-0-1	ROOM FLOODING	LS-009-00-1	1	0	0	0	EXIST	
009-0-1	ENTRY DOOR SWITCH	DS-009-00-1	1	0	0	0	EXIST	
009-0-1	THREE-PHASE POWER FAIL		1	0	0	0	EXIST	
009-0-1	CONTROL POWER FAILURE		1	0	0	0	EXIST	
009-0-1	UPS REPLACE BATTERY		1	0	0	0	EXIST	
009-0-1	SMOKE DETECTED	SD-009-00-1	1	0	0	0	EXIST	
009-0-1	EXIT PUSHBUTTON	PB-009-00-1	0	0	0	0	DEMO	
009-0-1	ALARM HORN		0	1	0	0	EXIST	
009-0-1	**CAMPBELL STREET TANK**							
009-0-1	LEVEL	LT-009-00-1	0	0	1	0	EXIST	
009-0-1	**REMOTE I/O TO/FROM SCC-009-0-1**		X	X	X	X	ENET	ALL SIGNALS TO/FROM SCC-009-0-1
	TOTALS		11	3	2	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-009-0-1 (CAMPBELL STREET TANK)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
009-0-1	**TOWER**							
009-0-1	CATHODIC PROTECTION TROUBLE		1	0	0	0	EXIST	
009-0-1	**CONTROL PANEL CONTROL POWER FAILURE**		1	0	0	0	EXIST	
009-0-1	**CONTROL PANEL UPS REPLACE BATTERY**		1	0	0	0	EXIST	
009-0-1	**CONTROL PANEL DOOR SWITCH**	DS-009-00-1	1	0	0	0	EXIST	
009-0-1	**CONTROL PANEL LOW TEMPERATURE**	TS-009-00-1	1	0	0	0	EXIST	
009-0-1	**CONTROL PANEL EXIT PUSHBUTTON**	PB-009-00-1	0	0	0	0	DEMO	
009-0-1	**CONTROL PANEL CARD READER**		0	0	0	0	DEMO	
009-0-1	**REMOTE I/O TO/FROM RIO-009-0-1**		X	X	X	X	ENET	ALL SIGNALS TO/FROM RIO-009-0-1
009-0-1	**REMOTE I/O TO/FROM SCC-501-1-1**		X	X	X	X	ENET	ALL SIGNALS TO/FROM SCC-501-1-1
009-0-1	**RADIO POWER CYCLE**		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
	TOTALS		5	1	0	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-010-0-1 (WELL 10D BOOSTER STATION/WELL 10D)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
010-0-1	**WELL 10D PUMP**	WP-010-00-1						
010-0-1	RUNNING		1	0	0	0	2~#14	FROM STARTER IN MCC
010-0-1	IN AUTO		1	0	0	0	2~#14	FROM STARTER IN MCC
010-0-1	FAIL		1	0	0	0	2~#14	FROM STARTER IN MCC
010-0-1	START		0	1	0	0	2~#14	TO STARTER IN MCC
010-0-1	STOP		0	1	0	0	2~#14	TO STARTER IN MCC
010-0-1	NO FLOW	FS-010-00-1	1	0	0	0	2~#14	FROM STARTER IN MCC
010-0-1	BEARING TEMPERATURE HIGH	TS-010-00-2	1	0	0	0	2~#14	FROM TEMPERATURE SWITCH
010-0-1	KW	JT-010-00-1	0	0	0	0	DEMO	FROM STARTER IN MCC
010-0-1	**WASTE VALVE**	WV-010-00-1						
010-0-1	OPENED		1	0	0	0	2~#14	FROM WASTE VALVE OPENED LIMIT SWITCH
010-0-1	CLOSED		1	0	0	0	2~#14	FROM WASTE VALVE CLOSED LIMIT SWITCH
010-0-1	IN REMOTE		1	0	0	0	2~#14	FROM WASTE VALVE CONTROLLER
010-0-1	OPEN		0	1	0	0	2~#14	TO WASTE VALVE CONTROLLER
010-0-1	CLOSE		0	1	0	0	2~#14	TO WASTE VALVE CONTROLLER
010-0-1	**BOOSTER PUMP NO. 1**	BP-010-00-1						
010-0-1	RUNNING		1	0	0	0	2~#14	FROM STARTER IN MCC
010-0-1	IN AUTO		1	0	0	0	2~#14	FROM STARTER IN MCC
010-0-1	FAIL		1	0	0	0	2~#14	FROM STARTER IN MCC
010-0-1	START		0	1	0	0	2~#14	TO STARTER IN MCC
010-0-1	STOP		0	1	0	0	2~#14	TO STARTER IN MCC
010-0-1	NO FLOW	FS-010-00-2	1	0	0	0	2~#14	FROM FLOW SWITCH ON PUMP DISCHARGE
010-0-1	KW	JT-010-00-2	0	0	0	0	DEMO	FROM STARTER IN MCC
010-0-1	**BOOSTER PUMP NO. 2**	BP-010-00-2						
010-0-1	RUNNING		1	0	0	0	2~#14	FROM STARTER IN MCC
010-0-1	IN AUTO		1	0	0	0	2~#14	FROM STARTER IN MCC
010-0-1	FAIL		1	0	0	0	2~#14	FROM STARTER IN MCC
010-0-1	SPEED COMMAND		0	0	0	1	SH.PR.	TO STARTER IN MCC
010-0-1	SPEED FEEDBACK		0	0	1	0	SH.PR.	FROM STARTER IN MCC
010-0-1	START		0	1	0	0	2~#14	TO STARTER IN MCC
010-0-1	STOP		0	1	0	0	2~#14	TO STARTER IN MCC
010-0-1	NO FLOW	FS-010-00-3	1	0	0	0	2~#14	FROM FLOW SWITCH ON PUMP DISCHARGE
010-0-1	KW	JT-010-00-3	0	0	0	0	DEMO	FROM STARTER IN MCC
010-0-1	**BOOSTER PUMP NO. 3**	BP-010-00-3						
010-0-1	RUNNING		1	0	0	0	2~#14	FROM STARTER IN MCC
010-0-1	IN AUTO		1	0	0	0	2~#14	FROM STARTER IN MCC

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WATER SCADA SYSTEM I/O LISTING - SCC-010-0-1 (WELL 10D BOOSTER STATION/WELL 10D)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
010-0-1	FAIL		1	0	0	0	2~#14	FROM STARTER IN MCC
010-0-1	START		0	1	0	0	2~#14	TO STARTER IN MCC
010-0-1	STOP		0	1	0	0	2~#14	TO STARTER IN MCC
010-0-1	NO FLOW	FS-010-00-4	1	0	0	0	2~#14	FROM FLOW SWITCH ON PUMP DISCHARGE
010-0-1	KW	JT-010-00-4	0	0	0	0	DEMO	FROM STARTER IN MCC
010-0-1	**WELL FLOW METER**	FT-010-0-3						
010-0-1	INSTANTANEOUS FLOW (0-5000 GPM)		0	0	1	0	SH. PR.	FROM EXISTING FLOW METER
010-0-1	TOTALIZED FLOW PULSE		1	0	0	0	2~#14	FROM EXISTING FLOW METER
010-0-1	**WASTE FLOW METER**	FT-010-0-2						
010-0-1	INSTANTANEOUS FLOW (0-5000 GPM)		0	0	1	0	SH. PR.	FROM EXISTING FLOW METER
010-0-1	TOTALIZED FLOW PULSE		1	0	0	0	2~#14	FROM EXISTING FLOW METER
010-0-1	**STATION DISCHARGE FLOW METER**	FT-010-0-1						
010-0-1	INSTANTANEOUS FLOW (0-5000 GPM)		0	0	1	0	SH. PR.	FROM EXISTING FLOW METER
010-0-1	TOTALIZED FLOW PULSE		1	0	0	0	2~#14	FROM EXISTING FLOW METER
010-0-1	**CHLORINE SCALE**							
010-0-1	SCALE WEIGHT	WT-010-0-1	0	0	0	0	DEMO	FROM CHLORINE CYLINDER WEIGHT TRANSMITTER
010-0-1	FEED PUMP DEMAND	CP-010-0-1	0	0	0	0	DEMO	TO CHEMICAL FEED PUMP
010-0-1	CHLORINE RESIDUAL	AE-010-0-1	0	0	0	0	DEMO	FROM CHLORINE ANALYZER
010-0-1	**BOOSTER STATION**							
010-0-1	SYSTEM PRESSURE (0-150 PSIG)	PT-010-00-1	0	0	1	0	SH. PR.	FROM DISCHARGE PRESSURE TRANSMITTER
010-0-1	LOW TEMPERATURE	TS-010-00-1	1	0	0	0	2~#14	FROM LOW TEMPERATURE SWITCH
010-0-1	BUILDING FLOODING	LS-010-00-1	1	0	0	0	2~#14	FROM FLOODING FLOAT SWITCH
010-0-1	ENTRY DOOR DOOR SWITCH	DS-010-00-1	1	0	0	0	2~#14	FROM PUMP ROOM DOOR SWITCH
010-0-1	CHLORINE ROOM DOOR SWITCH	DS-010-0-2	1	0	0	0	2~#14	FROM CHLORINE ROOM DOOR SWITCH
010-0-1	THREE-PHASE POWER FAIL		1	0	0	0	2~#14	FROM POWER MONITOR IN EXISTING MCC
010-0-1	CONTROL POWER FAILURE		1	0	0	0	2~#14	FROM CONTROL POWER RELAY IN THIS SCC
010-0-1	UPS REPLACE BATTERY		1	0	0	0	2~#14	FROM UPS IN THIS SCC
010-0-1	SMOKE DETECTED	SD-010-00-1	1	0	0	0	2~#14	FROM PUMP ROOM SMOKE DETECTOR
010-0-1	EXIT PUSHBUTTONS		1	0	0	0	DEMO	FROM PUMP AND CHLORINE ROOM EXIT PUSHBUTTONS
010-0-1	CARD READERS		0	0	0	0	DEMO	FROM CARD READERS ON BUILDING EXTERIOR
010-0-1	RADIO POWER CYCLE		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
010-0-1	**RESERVOIR**							
010-0-1	LEVEL	LT-010-00-1	0	0	1	0	SH. PR.	FROM LEVEL TRANSMITTER
010-0-1	HATCH SWITCH NO. 1	DS-010-0-3	1	0	0	0	2~#14	FROM HATCH SWITCH
010-0-1	HATCH SWITCH NO. 2	DS-010-0-4	1	0	0	0	2~#14	FROM HATCH SWITCH
010-0-1	DRAIN PUMP NO. 1 FAIL	DP-010-0-1	1	0	0	0	2~#14	FROM DRAIN PUMP NO. 1

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WATER SCADA SYSTEM I/O LISTING - SCC-010-0-1 (WELL 10D BOOSTER STATION/WELL 10D)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
010-0-1	DRAIN PUMP NO. 2 FAIL	DP-010-0-2	1	0	0	0	2~#14	FROM DRAIN PUMP NO. 2
010-0-1	SUMP PUMP NO. 1 FAIL	SP-010-0-1	1	0	0	0	2~#14	FROM SUMP PUMP NO. 1
010-0-1	SUMP PUMP NO. 2 FAIL	SP-010-0-2	1	0	0	0	2~#14	FROM SUMP PUMP NO. 2
010-0-1	**RESERVOIR VALVE**	RV-010-0-1						
010-0-1	OPENED		1	0	0	0	2~#14	FROM RESERVOIR VALVE OPENED LIMIT SWITCH
010-0-1	CLOSED		1	0	0	0	2~#14	FROM RESERVOIR VALVE CLOSED LIMIT SWITCH
010-0-1	IN REMOTE		1	0	0	0	2~#14	FROM RESERVOIR VALVE CONTROLLER
010-0-1	OPEN		0	1	0	0	2~#14	TO RESERVOIR VALVE CONTROLLER
010-0-1	CLOSE		0	1	0	0	2~#14	TO RESERVOIR VALVE CONTROLLER
	TOTALS		41	13	6	1		

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WATER SCADA SYSTEM I/O LISTING - SCC-011-0-1 (WELL 11D BOOSTER STATION)

RIO	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
011-0-1	**WELL 11D PUMP**	WP-011-0-1						
011-0-1	RUNNING		1	0	0	0	2~#14	FROM STARTER IN MCC
011-0-1	IN AUTO		1	0	0	0	2~#14	FROM STARTER IN MCC
011-0-1	FAIL		1	0	0	0	2~#14	FROM STARTER IN MCC
011-0-1	START		0	1	0	0	2~#14	TO STARTER IN MCC
011-0-1	STOP		0	1	0	0	2~#14	TO STARTER IN MCC
011-0-1	NO FLOW	FS-011-00-1	1	0	0	0	2~#14	FROM STARTER IN MCC
011-0-1	BEARING TEMPERATURE HIGH	TS-011-00-2	1	0	0	0	2~#14	FROM TEMPERATURE SWITCH
011-0-1	KW	JT-011-00-1	0	0	0	0	DEMO	FROM STARTER IN MCC
011-0-1	**WASTE VALVE**	WV-011-00-1						
011-0-1	OPENED		1	0	0	0	2~#14	FROM WASTE VALVE OPENED LIMIT SWITCH
011-0-1	CLOSED		1	0	0	0	2~#14	FROM WASTE VALVE CLOSED LIMIT SWITCH
011-0-1	IN REMOTE		1	0	0	0	2~#14	FROM WASTE VALVE CONTROLLER
011-0-1	OPEN		0	1	0	0	2~#14	TO WASTE VALVE CONTROLLER
011-0-1	CLOSE		0	1	0	0	2~#14	TO WASTE VALVE CONTROLLER
011-0-1	**BOOSTER PUMP NO. 1**	BP-011-00-1						
011-0-1	RUNNING		1	0	0	0	2~#14	FROM STARTER IN MCC
011-0-1	IN AUTO		1	0	0	0	2~#14	FROM STARTER IN MCC
011-0-1	FAIL		1	0	0	0	2~#14	FROM STARTER IN MCC
011-0-1	START		0	1	0	0	2~#14	TO STARTER IN MCC
011-0-1	STOP		0	1	0	0	2~#14	TO STARTER IN MCC
011-0-1	NO FLOW	FS-011-00-2	1	0	0	0	2~#14	FROM FLOW SWITCH ON PUMP DISCHARGE
011-0-1	KW	JT-011-00-2	0	0	0	0	DEMO	FROM STARTER IN MCC
011-0-1	**BOOSTER PUMP NO. 2**	BP-011-00-2						
011-0-1	RUNNING		1	0	0	0	2~#14	FROM STARTER IN MCC
011-0-1	IN AUTO		1	0	0	0	2~#14	FROM STARTER IN MCC
011-0-1	SPEED COMMAND		0	0	0	1	2~#14	FROM STARTER IN MCC
011-0-1	SPEED FEEDBACK		0	0	1	0	SH.PR.	TO STARTER IN MCC
011-0-1	FAIL		1	0	0	0	SH.PR.	FROM STARTER IN MCC
011-0-1	START		0	1	0	0	2~#14	TO STARTER IN MCC
011-0-1	STOP		0	1	0	0	2~#14	TO STARTER IN MCC
011-0-1	NO FLOW	FS-011-00-3	1	0	0	0	2~#14	FROM FLOW SWITCH ON PUMP DISCHARGE
011-0-1	KW	JT-011-00-3	0	0	0	0	DEMO	FROM STARTER IN MCC
011-0-1	**BOOSTER PUMP NO. 3**	BP-011-00-3						
011-0-1	RUNNING		1	0	0	0	2~#14	FROM STARTER IN MCC
011-0-1	IN AUTO		1	0	0	0	2~#14	FROM STARTER IN MCC

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RIO	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
011-0-1	FAIL		1	0	0	0	2~#14	FROM STARTER IN MCC
011-0-1	START		0	1	0	0	2~#14	TO STARTER IN MCC VIA
011-0-1	STOP		0	1	0	0	2~#14	TO STARTER IN MCC VIA
011-0-1	NO FLOW	FS-011-00-4	1	0	0	0	2~#14	FROM FLOW SWITCH ON PUMP DISCHARGE
011-0-1	KW	JT-011-00-4	0	0	0	0	DEMO	FROM STARTER IN MCC
011-0-1	**WELL FLOW METER**	FT-011-0-2						
011-0-1	INSTANTANEOUS FLOW (0-5000 GPM)		0	0	1	0	SH. PR.	FROM EXISTING FLOW METER
011-0-1	TOTALIZED FLOW PULSE		1	0	0	0	2~#14	FROM EXISTING FLOW METER
011-0-1	**STATION DISCHARGE FLOW METER**	FT-011-0-1						
011-0-1	INSTANTANEOUS FLOW (0-5000 GPM)		0	0	1	0	SH. PR.	FROM EXISTING FLOW METER
011-0-1	TOTALIZED FLOW PULSE		1	0	0	0	2~#14	FROM EXISTING FLOW METER
011-0-1	**CHLORINE SCALE**							
011-0-1	SCALE WEIGHT	WT-011-0-1	0	0	0	0	DEMO	FROM CHLORINE CYLINDER WEIGHT TRANSMITTER
011-0-1	FEED PUMP DEMAND	CP-011-0-1	0	0	0	0	DEMO	TO CHEMICAL FEED PUMP
011-0-1	CHLORINE RESIDUAL	AE-011-0-1	0	0	0	0	DEMO	FROM CHLORINE ANALYZER
011-0-1	**BOOSTER STATION**							
011-0-1	SYSTEM PRESSURE (0-150 PSIG)	PT-011-00-1	0	0	1	0	SH. PR.	FROM DISCHARGE PRESSURE TRANSMITTER
011-0-1	LOW TEMPERATURE	TS-011-00-1	1	0	0	0	SH. PR.	FROM LOW TEMPERATURE SWITCH
011-0-1	BUILDING FLOODING	LS-011-00-1	1	0	0	0	SH. PR.	FROM FLOODING FLOAT SWITCH
011-0-1	ENTRY DOOR DOOR SWITCH	DS-011-00-1	1	0	0	0	2~#14	FROM PUMP ROOM DOOR SWITCH
011-0-1	CHLORINE ROOM DOOR SWITCH	DS-011-0-2	1	0	0	0	2~#14	FROM CHLORINE ROOM DOOR SWITCH
011-0-1	THREE-PHASE POWER FAIL		1	0	0	0	2~#14	FROM POWER MONITOR IN EXISTING MCC
011-0-1	CONTROL POWER FAILURE		1	0	0	0	2~#14	FROM CONTROL POWER RELAY IN THIS SCC
011-0-1	UPS REPLACE BATTERY		1	0	0	0	2~#14	FROM UPS IN THIS SCC
011-0-1	SMOKE DETECTED	SD-011-00-1	1	0	0	0	2~#14	FROM PUMP ROOM SMOKE DETECTOR
011-0-1	DRAINAGE SUMP HIGH LEVEL	FS-011-00-2	1	0	0	0	2~#14	FROM SUMP PUMP
011-0-1	EXIT DOOR PUSHBUTTONS		0	0	0	0	DEMO	FROM PUMP AND CHLORINE ROOM EXIT PUSHBUTTONS
011-0-1	CARD READERS		0	0	0	0	DEMO	FROM CARD READERS ON BUILDING EXTERIOR
011-0-1	**RESERVOIR**							
011-0-1	LEVEL	LT-011-00-1	0	0	1	0	SH. PR.	FROM LEVEL TRANSMITTER
011-0-1	RESERVOIR HATCH SWITCH NO. 1	DS-011-0-3	1	0	0	0	2~#14	FROM HATCH SWITCH
011-0-1	RESERVOIR HATCH SWITCH NO. 2	DS-011-0-4	1	0	0	0	2~#14	FROM HATCH SWITCH
011-0-1	RESERVOIR DRAIN PUMP NO. 1 FAIL		1	0	0	0	2~#14	FROM DRAIN PUMP NO. 1
011-0-1	RESERVOIR DRAIN PUMP NO. 2 FAIL		1	0	0	0	2~#14	FROM DRAIN PUMP NO. 2
011-0-1	SUMP PUMP NO. 1 FAIL		1	0	0	0	2~#14	FROM SUMP PUMP NO. 1
011-0-1	SUMP PUMP NO. 2 FAIL		1	0	0	0	2~#14	FROM SUMP PUMP NO. 2

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WATER SCADA SYSTEM I/O LISTING - SCC-011-0-1 (WELL 11D BOOSTER STATION)

RIO	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
011-0-1	RADIO POWER CYCLE		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
	TOTALS		37	10	5	1		

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WATER SCADA SYSTEM I/O LISTING - RIO-012-0-1 (WELL 12D / JOLIET MALL TANK)

RIO	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
012-0-1	**WELL 12D PUMP**	WP-012						
012-0-1	RUNNING		1	0	0	0	EXIST	
012-0-1	IN AUTO		1	0	0	0	EXIST	
012-0-1	FAIL		1	0	0	0	EXIST	
012-0-1	START		0	1	0	0	EXIST	
012-0-1	STOP		0	1	0	0	EXIST	
012-0-1	NO FLOW	FS-012-0-1	1	0	0	0	EXIST	
012-0-1	FLOW (0-5000 GPM)	FIT-012-0-1	0	0	1	0	EXIST	
012-0-1	KW	JT-012-0-1	0	0	0	0	DEMO	
012-0-1	**WASTE VALVE**	WV-012-0-1						
012-0-1	OPENED		1	0	0	0	EXIST	
012-0-1	CLOSED		1	0	0	0	EXIST	
012-0-1	IN REMOTE		1	0	0	0	EXIST	
012-0-1	OPEN		0	1	0	0	EXIST	
012-0-1	CLOSE		0	1	0	0	EXIST	
012-0-1	**WELLHOUSE**							
012-0-1	LOW TEMPERATURE	TS-012-0-1	1	0	0	0	EXIST	
012-0-1	ROOM FLOODING	LS-012-0-1	1	0	0	0	EXIST	
012-0-1	DOOR SWITCH	DS-012-0-1	1	0	0	0	EXIST	
012-0-1	THREE-PHASE POWER FAIL		1	0	0	0	EXIST	
012-0-1	CONTROL POWER FAILURE		1	0	0	0	EXIST	
012-0-1	UPS REPLACE BATTERY		1	0	0	0	EXIST	
012-0-1	SMOKE DETECTED	SD-012-0-1	1	0	0	0	EXIST	
012-0-1	EXIT PUSHBUTTON	PB-012-0-1	0	0	0	0	DEMO	
012-0-1	ALARM HORN		0	1	0	0	EXIST	
012-0-1	CARD READER		0	0	0	0	DEMO	
012-0-1	**JOLIET MALL TANK**							
012-0-1	LEVEL (0-23.7 FT)	LT-012-0-1	0	0	1	0	EXIST	
012-0-1	**REMOTE I/O TO/FROM SCC-012-0-1**		X	X	X	X	ENET	ALL SIGNALS TO/FROM SCC-012-0-1
	TOTALS		14	5	2	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-012-0-1 (JOLIET MALL TANK)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
012-0-1	**TOWER**							
012-0-1	LEVEL (0-23.7 FT)	LT-012-0-1	0	0	1	0	SH. PR.	FROM LEVEL TRANSMITTER VIA SCC JUNCTION BOX
012-0-1	CATHODIC PROTECTION TROUBLE		1	0	0	0	2~#14	FROM CATHODIC PROTECTION VIA SCC JUNCTION BOX
012-0-1	FLOW (0-5000 GPM)	FIT-012-0-1	0	0	1	0		FUTURE
012-0-1	FLOW DIRECTION	FIT-012-0-1	1	0	0	0		FUTURE
012-0-1	**TANK ENTRY DOOR SWITCH**	DS-012-00-1	1	0	0	0	2~#14	FROM DOOR SWITCH VIA SCC JUNCTION BOX
012-0-1	**CONTROL PANEL CONTROL POWER FAILURE**		1	0	0	0	2~#14	FROM CONTROL POWER FAIL RELAY IN THIS SCC
012-0-1	**CONTROL PANEL UPS REPLACE BATTERY**		1	0	0	0	2~#14	FROM UPS IN THIS SCC
012-0-1	**CONTROL PANEL LOW TEMPERATURE**	TS-012-00-1	1	0	0	0	2~#14	FROM LOW TEMPERATURE THERMOSTAT IN THIS SCC
012-0-1	**REMOTE I/O TO/FROM RIO-012-0-1**		X	X	X	X	ENET	ALL SIGNALS TO/FROM RIO-012-0-1
012-0-1	**REMOTE I/O TO/FROM SCC-551-1-1**		X	X	X	X	ENET	ALL SIGNALS TO/FROM SCC-551-1-1
012-0-1	**RADIO POWER CYCLE**		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
	TOTALS		6	1	2	0		

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WATER SCADA SYSTEM I/O LISTING - RIO-015-0-1 DEMOLITION (WELL 15D)

RIO	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
015-0-1	**WELL 15D PUMP**	WP-015						
015-0-1	RUNNING		1	0	0	0	EXIST	
015-0-1	IN AUTO		1	0	0	0	EXIST	
015-0-1	FAIL		1	0	0	0	EXIST	
015-0-1	START		0	1	0	0	EXIST	
015-0-1	STOP		0	1	0	0	EXIST	
015-0-1	NO FLOW	FS-015-0-1	1	0	0	0	EXIST	
015-0-1	FLOW (0-1,500 GPM)	FM-015-0-1	0	0	1	0	EXIST	
015-0-1	KW	JT-015-0-1	0	0	0	0	DEMO	
015-0-1	**WASTE VALVE**	WV-015-0-1						
015-0-1	OPENED		1	0	0	0	EXIST	
015-0-1	CLOSED		1	0	0	0	EXIST	
015-0-1	IN REMOTE		1	0	0	0	EXIST	
015-0-1	OPEN		0	1	0	0	EXIST	
015-0-1	CLOSE		0	1	0	0	EXIST	
015-0-1	**WELLHOUSE**							
015-0-1	SYSTEM PRESSURE (0-150 PSIG)	PT-015-0-1	0	0	1	0	EXIST	
015-0-1	TEMPERATURE LOW	TS-015-0-1	1	0	0	0	EXIST	
015-0-1	ROOM FLOODING	LS-015-0-1	1	0	0	0	EXIST	
015-0-1	DOOR SWITCH	DS-015-0-1	1	0	0	0	EXIST	
015-0-1	ELECTRICAL ROOM DOOR SWITCH	DS-015-0-2	1	0	0	0	EXIST	
015-0-1	THREE-PHASE POWER FAIL		1	0	0	0	EXIST	
015-0-1	CONTROL POWER FAILURE		1	0	0	0	EXIST	
015-0-1	UPS REPLACE BATTERY		1	0	0	0	EXIST	
015-0-1	SMOKE DETECTED	SD-015-0-1	1	0	0	0	EXIST	
015-0-1	EXIT PUSHBUTTON	PB-015-0-1	0	0	0	0	DEMO	
015-0-1	CARD READER		0	0	0	0	DEMO	
	TOTALS		15	4	2	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-015-0-1 (WELL 15D)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
015-0-1	**WELL 15D PUMP**	WP-015						
015-0-1	RUNNING		1	0	0	0	EXIST	
015-0-1	IN AUTO		1	0	0	0	EXIST	
015-0-1	FAIL		1	0	0	0	EXIST	
015-0-1	START		0	1	0	0	EXIST	
015-0-1	STOP		0	1	0	0	EXIST	
015-0-1	NO FLOW	FS-015-0-1	1	0	0	0	EXIST	
015-0-1	FLOW (0-1,500 GPM)	FM-015-0-1	0	0	1	0	EXIST	
015-0-1	**WASTE VALVE**	WV-015-0-1						
015-0-1	OPENED		1	0	0	0	EXIST	
015-0-1	CLOSED		1	0	0	0	EXIST	
015-0-1	IN REMOTE		1	0	0	0	EXIST	
015-0-1	OPEN		0	1	0	0	EXIST	
015-0-1	CLOSE		0	1	0	0	EXIST	
015-0-1	**WELLHOUSE**							
015-0-1	SYSTEM PRESSURE (0-150 PSIG)	PT-015-0-1	0	0	1	0	EXIST	
015-0-1	TEMPERATURE LOW	TS-015-0-1	1	0	0	0	EXIST	
015-0-1	ROOM FLOODING	LS-015-0-1	1	0	0	0	EXIST	
015-0-1	DOOR SWITCH	DS-015-0-1	1	0	0	0	EXIST	
015-0-1	ELECTRICAL ROOM DOOR SWITCH	DS-015-0-2	1	0	0	0	EXIST	
015-0-1	THREE-PHASE POWER FAIL		1	0	0	0	EXIST	
015-0-1	CONTROL POWER FAILURE		1	0	0	0	EXIST	
015-0-1	UPS REPLACE BATTERY		1	0	0	0	EXIST	
015-0-1	SMOKE DETECTED	SD-015-0-1	1	0	0	0	EXIST	
015-0-1	RADIO POWER CYCLE		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
	TOTALS		15	5	2	0		

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WATER SCADA SYSTEM I/O LISTING - RIO-016-0-1 DEMOLITION (WELL 16D)

RIO	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
016-0-1	**WELL 16D PUMP**	WP-016						
016-0-1	RUNNING		1	0	0	0	EXIST	
016-0-1	IN AUTO		1	0	0	0	EXIST	
016-0-1	FAIL		1	0	0	0	EXIST	
016-0-1	START		0	1	0	0	EXIST	
016-0-1	STOP		0	1	0	0	EXIST	
016-0-1	NO FLOW	FS-016-0-1	1	0	0	0	EXIST	
016-0-1	FLOW	FM-016-0-1	0	0	1	0	EXIST	
016-0-1	KW	JT-016-0-1	0	0	0	0	DEMO	
016-0-1	**WASTE VALVE**	WV-016-0-1						
016-0-1	OPENED		1	0	0	0	EXIST	
016-0-1	CLOSED		1	0	0	0	EXIST	
016-0-1	IN REMOTE		1	0	0	0	EXIST	
016-0-1	OPEN		0	1	0	0	EXIST	
016-0-1	CLOSE		0	1	0	0	EXIST	
016-0-1	**WELLHOUSE**							
016-0-1	SYSTEM PRESSURE (0-150 PSIG)	PT-016-0-1	0	0	1	0	EXIST	
016-0-1	LOW TEMPERATURE	TS-016-0-1	1	0	0	0	EXIST	
016-0-1	ROOM FLOODING	LS-016-0-1	1	0	0	0	EXIST	
016-0-1	DOOR SWITCH	DS-016-0-1	1	0	0	0	EXIST	
016-0-1	ELECTRICAL ROOM DOOR SWITCH	DS-016-0-2	1	0	0	0	EXIST	
016-0-1	THREE-PHASE POWER FAIL		1	0	0	0	EXIST	
016-0-1	CONTROL POWER FAILURE		1	0	0	0	EXIST	
016-0-1	UPS REPLACE BATTERY		1	0	0	0	EXIST	
016-0-1	SMOKE DETECTED	SD-016-0-1	1	0	0	0	EXIST	
016-0-1	EXIT PUSHBUTTON	PB-016-0-1	0	0	0	0	DEMO	
016-0-1	CARD READERS		0	0	0	0	DEMO	
016-0-1	**WWTP OUTFALL DO**	AE-096-0-1	0	0	1	0	EXIST	
	TOTALS		15	4	3	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-016-0-1 (WELL 16D)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
016-0-1	**WELL 16D PUMP**	WP-016						
016-0-1	RUNNING		1	0	0	0	EXIST	
016-0-1	IN AUTO		1	0	0	0	EXIST	
016-0-1	FAIL		1	0	0	0	EXIST	
016-0-1	START		0	1	0	0	EXIST	
016-0-1	STOP		0	1	0	0	EXIST	
016-0-1	NO FLOW	FS-016-0-1	1	0	0	0	EXIST	
016-0-1	FLOW (0 - 150 GPM)	FM-016-0-1	0	0	1	0	EXIST	
016-0-1	**WASTE VALVE**	WV-016-0-1						
016-0-1	OPENED		1	0	0	0	EXIST	
016-0-1	CLOSED		1	0	0	0	EXIST	
016-0-1	IN REMOTE		1	0	0	0	EXIST	
016-0-1	OPEN		0	1	0	0	EXIST	
016-0-1	CLOSE		0	1	0	0	EXIST	
016-0-1	**WELLHOUSE**							
016-0-1	SYSTEM PRESSURE (0-150 PSIG)	PT-016-0-1	0	0	1	0	EXIST	
016-0-1	LOW TEMPERATURE	TS-016-0-1	1	0	0	0	EXIST	
016-0-1	ROOM FLOODING	LS-016-0-1	1	0	0	0	EXIST	
016-0-1	DOOR SWITCH	DS-016-0-1	1	0	0	0	EXIST	
016-0-1	ELECTRICAL ROOM DOOR SWITCH	DS-016-0-2	1	0	0	0	EXIST	
016-0-1	THREE-PHASE POWER FAIL		1	0	0	0	EXIST	
016-0-1	CONTROL POWER FAILURE		1	0	0	0	EXIST	
016-0-1	UPS REPLACE BATTERY		1	0	0	0	EXIST	
016-0-1	SMOKE DETECTED	SD-016-0-1	1	0	0	0	EXIST	
016-0-1	**WWTP OUTFALL DO**	AE-096-0-1	0	0	1	0	EXIST	
016-0-1	**RADIO POWER CYCLE**		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
	TOTALS		15	5	3	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-017-0-1 (WELL 17D)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
017-0-1	**WELL 17D PUMP**	WP-017						
017-0-1	RUNNING		1	0	0	0	EXIST	
017-0-1	IN AUTO		1	0	0	0	EXIST	
017-0-1	FAIL		1	0	0	0	EXIST	
017-0-1	START		0	1	0	0	EXIST	
017-0-1	STOP		0	1	0	0	EXIST	
017-0-1	NO FLOW	FS-017-0-1	1	0	0	0	EXIST	
017-0-1	FLOW (0-1,500 GPM)	FM-017-0-1	0	0	1	0	EXIST	
017-0-1	KW	JT-017-0-1	0	0	0	0	DEMO	
017-0-1	**WASTE VALVE**	WV-017-0-1						
017-0-1	OPENED		1	0	0	0	EXIST	
017-0-1	CLOSED		1	0	0	0	EXIST	
017-0-1	IN REMOTE		1	0	0	0	EXIST	
017-0-1	OPEN		0	1	0	0	EXIST	
017-0-1	CLOSE		0	1	0	0	EXIST	
017-0-1	**WELLHOUSE**							
017-0-1	SYSTEM PRESSURE (0-100 PSIG)	PT-017-0-1	0	0	1	0	EXIST	
017-0-1	LOW TEMPERATURE	TS-017-0-1	1	0	0	0	EXIST	
017-0-1	ROOM FLOODING	LS-017-0-1	1	0	0	0	EXIST	FROM FLOODING SWITCH
017-0-1	DOOR SWITCH	DS-017-0-1	1	0	0	0	EXIST	FROM DOOR SWITCH
017-0-1	ELECTRICAL ROOM DOOR SWITCH	DS-017-0-2	1	0	0	0	EXIST	FROM DOOR SWITCH
017-0-1	THREE-PHASE POWER FAIL		1	0	0	0	EXIST	FROM ELECTRIC METER IN 2400 V STARTER
017-0-1	CONTROL POWER FAILURE		1	0	0	0	EXIST	
017-0-1	UPS REPLACE BATTERY		1	0	0	0	EXIST	
017-0-1	SMOKE DETECTED	SD-017-0-1	1	0	0	0	EXIST	
017-0-1	EXIT PUSHBUTTON	PB-017-0-1	0	0	0	0	DEMO	
017-0-1	ELECTRICAL ROOM EXIT PUSHBUTTON	PB-017-0-2	0	0	0	0	DEMO	
017-0-1	ALARM HORN		0	1	0	0	EXIST	
017-0-1	CARD READERS		0	0	0	0	DEMO	FROM CARD READERS AT DOORS
017-0-1	RADIO POWER CYCLE		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
	TOTALS		15	6	2	0		

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WATER SCADA SYSTEM I/O LISTING - RIO-018-0-1 (WELL 18D)

RIO	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
018-0-1	**WELL 18D PUMP**	WP-018						
018-0-1	RUNNING		1	0	0	0	EXIST	
018-0-1	VFD FAULT		1	0	0	0	EXIST	
018-0-1	IN AUTO		1	0	0	0	EXIST	
018-0-1	INTERNAL OVERTEMPERATURE		1	0	0	0	EXIST	
018-0-1	FAIL		1	0	0	0	EXIST	
018-0-1	START		0	1	0	0	EXIST	
018-0-1	STOP		0	1	0	0	EXIST	
018-0-1	VFD SPEED		0	0	0	1	EXIST	
018-0-1	VFD SPEED CONTROL		0	0	1	0	EXIST	
018-0-1	NO FLOW	FS-018-0-1	1	0	0	0	EXIST	
018-0-1	FLOW (0-1,500 GPM)	FM-018-0-1	0	0	1	0	EXIST	
018-0-1	KW	JT-018-0-1	0	0	0	0	DEMO	
018-0-1	**WASTE VALVE**	WV-018-0-1						
018-0-1	OPENED		1	0	0	0	EXIST	
018-0-1	CLOSED		1	0	0	0	EXIST	
018-0-1	IN REMOTE		1	0	0	0	EXIST	
018-0-1	OPEN		0	1	0	0	EXIST	
018-0-1	CLOSE		0	1	0	0	EXIST	
018-0-1	**WELLHOUSE**							
018-0-1	SYSTEM PRESSURE (0-150 PSIG)	PT-018-0-1	0	0	1	0	EXIST	
018-0-1	LOW TEMPERATURE	TS-018-0-1	1	0	0	0	EXIST	
018-0-1	ROOM FLOODING	LS-018-0-1	1	0	0	0	EXIST	
018-0-1	DOOR SWITCH	DS-018-0-1	1	0	0	0	EXIST	
018-0-1	ELECTRICAL ROOM DOOR SWITCH	DS-018-0-2	1	0	0	0	EXIST	
018-0-1	THREE-PHASE POWER FAIL		1	0	0	0	EXIST	
018-0-1	CONTROL POWER FAILURE		1	0	0	0	EXIST	
018-0-1	UPS REPLACE BATTERY		1	0	0	0	EXIST	
018-0-1	SMOKE DETECTED	SD-018-0-1	1	0	0	0	EXIST	
018-0-1	EXIT DOOR PUSHBUTTONS		0	0	0	0	DEMO	
018-0-1	CARD READERS		0	0	0	0	DEMO	
018-0-1	RADIO POWER CYCLE		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
	TOTALS		17	5	3	1		

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WATER SCADA SYSTEM I/O LISTING - SCC-020-0-1 (WELL 20D)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
020-0-1	**WELL 20D PUMP**	WP-020						
020-0-1	RUNNING		1	0	0	0	EXIST	
020-0-1	IN AUTO		1	0	0	0	EXIST	
020-0-1	FAIL		1	0	0	0	EXIST	
020-0-1	START		0	1	0	0	EXIST	
020-0-1	STOP		0	1	0	0	EXIST	
020-0-1	NO FLOW	FS-020-0-1	1	0	0	0	EXIST	
020-0-1	FLOW (0-1,500 GPM)	FM-020-0-1	0	0	1	0	EXIST	
020-0-1	KW	JT-020-0-1	0	0	0	0	DEMO	
020-0-1	**WASTE VALVE**	WV-020-0-1						
020-0-1	OPENED		1	0	0	0	EXIST	
020-0-1	CLOSED		1	0	0	0	EXIST	
020-0-1	IN REMOTE		1	0	0	0	EXIST	
020-0-1	OPEN		0	1	0	0	EXIST	
020-0-1	CLOSE		0	1	0	0	EXIST	
020-0-1	**WELLHOUSE**							
020-0-1	SYSTEM PRESSURE (0-150 PSIG)	PT-020-0-1	0	0	1	0	EXIST	
020-0-1	LOW TEMPERATURE	TS-020-0-1	1	0	0	0	EXIST	
020-0-1	ROOM FLOODING	LS-020-0-1	1	0	0	0	EXIST	
020-0-1	ENTRY DOOR SWITCH	DS-020-0-1	1	0	0	0	EXIST	
020-0-1	ELECTRICAL ROOM DOOR SWITCH	DS-020-0-2	1	0	0	0	EXIST	
020-0-1	THREE-PHASE POWER FAIL		1	0	0	0	EXIST	
020-0-1	CONTROL POWER FAILURE		1	0	0	0	EXIST	
020-0-1	UPS REPLACE BATTERY		1	0	0	0	EXIST	
020-0-1	SMOKE DETECTED	SD-020-0-1	1	0	0	0	EXIST	
020-0-1	EXIT PUSHBUTTON	PB-020-0-1	0	0	0	0	DEMO	
020-0-1	ELECTRICAL ROOM EXIT PUSHBUTTON	PB-020-0-1	0	0	0	0	DEMO	
020-0-1	ALARM HORN		0	1	0	0	EXIST	
020-0-1	CARD READERS		0	0	0	0	DEMO	
020-0-1	RADIO POWER CYCLE		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
	TOTALS		15	6	2	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-021-0-1 (WELL 21D)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
021-0-1	**WELL 21D PUMP**	WP-021						
021-0-1	RUNNING		1	0	0	0	EXIST	
021-0-1	IN AUTO		1	0	0	0	EXIST	
021-0-1	FAIL		1	0	0	0	EXIST	
021-0-1	START		0	1	0	0	EXIST	
021-0-1	STOP		0	1	0	0	EXIST	
021-0-1	NO FLOW	FS-021-0-1	1	0	0	0	EXIST	
021-0-1	FLOW (0-1,500 GPM)	FM-021-0-1	0	0	1	0	EXIST	
021-0-1	KW	JT-021-0-1	0	0	0	0	DEMO	
021-0-1	**WASTE VALVE**	WV-021-0-1						
021-0-1	OPENED		1	0	0	0	EXIST	
021-0-1	CLOSED		1	0	0	0	EXIST	
021-0-1	IN REMOTE		1	0	0	0	EXIST	
021-0-1	OPEN		0	1	0	0	EXIST	
021-0-1	CLOSE		0	1	0	0	EXIST	
021-0-1	**WELLHOUSE**							
021-0-1	SYSTEM PRESSURE (0-150 PSIG)	PT-021-0-1	0	0	1	0	EXIST	
021-0-1	LOW TEMPERATURE	TS-021-0-1	1	0	0	0	EXIST	
021-0-1	ROOM FLOODING	LS-021-0-1	1	0	0	0	EXIST	
021-0-1	ENTRY DOOR SWITCH	DS-021-0-1	1	0	0	0	EXIST	
021-0-1	ELECTRICAL ROOM DOOR DOOR SWITCH	DS-021-0-2	1	0	0	0	EXIST	
021-0-1	THREE-PHASE POWER FAIL		1	0	0	0	EXIST	
021-0-1	CONTROL POWER FAILURE		1	0	0	0	EXIST	
021-0-1	UPS REPLACE BATTERY		1	0	0	0	EXIST	
021-0-1	SMOKE DETECTED	SD-021-0-1	1	0	0	0	EXIST	
021-0-1	EXIT PUSHBUTTON	PB-021-0-1	0	0	0	0	DEMO	
021-0-1	ELECTRICAL ROOM EXIT PUSHBUTTON	PB-021-0-2	0	0	0	0	DEMO	
021-0-1	ALARM HORN		0	1	0	0	EXIST	
021-0-1	CARD READERS		0	0	0	0	DEMO	
021-0-1	RADIO POWER CYCLE		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
	TOTALS		15	6	2	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-022-0-1 (WELL 22D)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
022-0-1	**WELL 21D PUMP**	WP-022						
022-0-1	RUNNING		1	0	0	0	EXIST	
022-0-1	IN AUTO		1	0	0	0	EXIST	
022-0-1	FAIL		1	0	0	0	EXIST	
022-0-1	START		0	1	0	0	EXIST	
022-0-1	STOP		0	1	0	0	EXIST	
022-0-1	NO FLOW	FS-022-0-1	1	0	0	0	EXIST	
022-0-1	FLOW (0-1,500 GPM)	FM-022-0-1	0	0	1	0	EXIST	
022-0-1	KW	JT-022-0-1	0	0	0	0	DEMO	
022-0-1	**WASTE VALVE**	WV-022-0-1						
022-0-1	OPENED		1	0	0	0	EXIST	
022-0-1	CLOSED		1	0	0	0	EXIST	
022-0-1	IN REMOTE		1	0	0	0	EXIST	
022-0-1	OPEN		0	1	0	0	EXIST	
022-0-1	CLOSE		0	1	0	0	EXIST	
022-0-1	**WELLHOUSE**							
022-0-1	SYSTEM PRESSURE (0-150 PSIG)	PT-022-0-1	0	0	1	0	EXIST	
022-0-1	LOW TEMPERATURE	TS-022-0-1	1	0	0	0	EXIST	
022-0-1	ROOM FLOODING	LS-022-0-1	1	0	0	0	EXIST	
022-0-1	ENTRY DOOR SWITCH	DS-022-0-1	1	0	0	0	EXIST	
022-0-1	ELECTRICAL ROOM DOOR DOOR SWITCH	DS-022-0-2	1	0	0	0	EXIST	
022-0-1	THREE-PHASE POWER FAIL		1	0	0	0	EXIST	
022-0-1	CONTROL POWER FAILURE		1	0	0	0	EXIST	
022-0-1	UPS REPLACE BATTERY		1	0	0	0	EXIST	
022-0-1	SMOKE DETECTED	SD-022-0-1	1	0	0	0	EXIST	
022-0-1	EXIT PUSHBUTTON	PB-022-0-1	0	0	0	0	DEMO	
022-0-1	ELECTRICAL ROOM EXIT PUSHBUTTON	PB-022-0-2	0	0	0	0	DEMO	
022-0-1	ALARM HORN		0	1	0	0	EXIST	
022-0-1	CARD READERS		0	0	0	0	DEMO	
022-0-1	RADIO POWER CYCLE		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
	TOTALS		15	6	2	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-023-0-1 (WELL 23D)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
023-0-1	**WELL 23D PUMP**	WP-023						
023-0-1	RUNNING		1	0	0	0	EXIST	
023-0-1	IN AUTO		1	0	0	0	EXIST	
023-0-1	FAIL		1	0	0	0	EXIST	
023-0-1	START		0	1	0	0	EXIST	
023-0-1	STOP		0	1	0	0	EXIST	
023-0-1	NO FLOW	FS-023-0-1	1	0	0	0	EXIST	
023-0-1	FLOW (0-1,500 GPM)	FM-023-0-1	0	0	1	0	EXIST	
023-0-1	KW	JT-023-0-1	0	0	0	0	DEMO	
023-0-1	**WASTE VALVE**	WV-023-0-1						
023-0-1	OPENED		1	0	0	0	EXIST	
023-0-1	CLOSED		1	0	0	0	EXIST	
023-0-1	IN REMOTE		1	0	0	0	EXIST	
023-0-1	OPEN		0	1	0	0	EXIST	
023-0-1	CLOSE		0	1	0	0	EXIST	
023-0-1	**WELLHOUSE**							
023-0-1	SYSTEM PRESSURE (0-150 PSIG)	PT-023-0-1	0	0	1	0	EXIST	
023-0-1	LOW TEMPERATURE	TS-023-0-1	1	0	0	0	EXIST	
023-0-1	ROOM FLOODING	LS-023-0-1	1	0	0	0	EXIST	
023-0-1	ENTRY DOOR SWITCH	DS-023-0-1	1	0	0	0	EXIST	
023-0-1	ELECTRICAL ROOM DOOR DOOR SWITCH	DS-023-0-2	1	0	0	0	EXIST	
023-0-1	THREE-PHASE POWER FAIL		1	0	0	0	EXIST	
023-0-1	CONTROL POWER FAILURE		1	0	0	0	EXIST	
023-0-1	UPS REPLACE BATTERY		1	0	0	0	EXIST	
023-0-1	SMOKE DETECTED	SD-023-0-1	1	0	0	0	EXIST	
023-0-1	EXIT PUSHBUTTON	PB-023-0-1	0	0	0	0	DEMO	
023-0-1	ELECTRICAL ROOM EXIT PUSHBUTTON	PB-023-0-2	0	0	0	0	DEMO	
022-0-1	ALARM HORN		0	1	0	0	EXIST	
023-0-1	CARD READERS		0	0	0	0	DEMO	
023-0-1	RADIO POWER CYCLE		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
	TOTALS		15	6	2	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-024-0-1 (WELL 24D)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
024-0-1	**WELL 24D PUMP**	WP-024						
024-0-1	RUNNING		1	0	0	0	EXIST	
024-0-1	IN AUTO		1	0	0	0	EXIST	
024-0-1	FAIL		1	0	0	0	EXIST	
024-0-1	START		0	1	0	0	EXIST	
024-0-1	STOP		0	1	0	0	EXIST	
024-0-1	NO FLOW	FS-024-0-1	1	0	0	0	EXIST	
024-0-1	FLOW (0-1,500 GPM)	FM-024-0-1	0	0	1	0	EXIST	
024-0-1	KW	JT-024-0-1	0	0	0	0	DEMO	
024-0-1	**WASTE VALVE**	WV-024-0-1						
024-0-1	OPENED		1	0	0	0	EXIST	
024-0-1	CLOSED		1	0	0	0	EXIST	
024-0-1	IN REMOTE		1	0	0	0	EXIST	
024-0-1	OPEN		0	1	0	0	EXIST	
024-0-1	CLOSE		0	1	0	0	EXIST	
024-0-1	**WELLHOUSE**							
024-0-1	SYSTEM PRESSURE (0-150 PSIG)	PT-024-0-1	0	0	1	0	EXIST	
024-0-1	LOW TEMPERATURE	TS-024-0-1	1	0	0	0	EXIST	
024-0-1	ROOM FLOODING	LS-024-0-1	1	0	0	0	EXIST	
024-0-1	DOOR SWITCH	DS-024-0-1	1	0	0	0	EXIST	
024-0-1	ELECTRICAL ROOM DOOR SWITCH	DS-024-0-2	1	0	0	0	EXIST	
024-0-1	THREE-PHASE POWER FAIL		1	0	0	0	EXIST	
024-0-1	CONTROL POWER FAILURE		1	0	0	0	EXIST	
024-0-1	UPS REPLACE BATTERY		1	0	0	0	EXIST	
024-0-1	SMOKE DETECTED	SD-024-0-1	1	0	0	0	EXIST	
024-0-1	EXIT PUSHBUTTON	PB-024-0-1	0	0	0	0	DEMO	
024-0-1	ELECTRICAL ROOM EXIT PUSHBUTTON	PB-024-0-2	0	0	0	0	DEMO	
024-0-1	CARD READERS		0	0	0	0	DEMO	
024-0-1	RADIO POWER CYCLE		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
	TOTALS		15	5	2	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-025-0-1 (WELL 25D)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
025-0-1	**WELL 25D PUMP**	WP-025						
025-0-1	RUNNING		1	0	0	0	EXIST	
025-0-1	IN AUTO		1	0	0	0	EXIST	
025-0-1	FAIL		1	0	0	0	EXIST	
025-0-1	START		0	1	0	0	EXIST	
025-0-1	STOP		0	1	0	0	EXIST	
025-0-1	NO FLOW	FS-025-0-1	1	0	0	0	EXIST	
025-0-1	FLOW	FM-025-0-1	0	0	1	0	EXIST	
025-0-1	KW	JT-025-0-1	0	0	0	0	DEMO	
025-0-1	**WASTE VALVE**	WV-025-0-1						
025-0-1	OPENED		1	0	0	0	EXIST	
025-0-1	CLOSED		1	0	0	0	EXIST	
025-0-1	IN REMOTE		1	0	0	0	EXIST	
025-0-1	OPEN		0	1	0	0	EXIST	
025-0-1	CLOSE		0	1	0	0	EXIST	
025-0-1	**WELLHOUSE**							
025-0-1	SYSTEM PRESSURE (0-150 PSIG)	PT-025-0-1	0	0	1	0	EXIST	
025-0-1	LOW TEMPERATURE	TS-025-0-1	1	0	0	0	EXIST	
025-0-1	ROOM FLOODING	LS-025-0-1	1	0	0	0	EXIST	
025-0-1	ENTRY DOOR SWITCH	DS-025-0-1	1	0	0	0	EXIST	
025-0-1	ELECTRICAL ROOM DOOR SWITCH	DS-025-0-2	1	0	0	0	EXIST	
025-0-1	THREE-PHASE POWER FAIL		1	0	0	0	EXIST	
025-0-1	CONTROL POWER FAILURE		1	0	0	0	EXIST	
025-0-1	UPS REPLACE BATTERY		1	0	0	0	EXIST	
025-0-1	SMOKE DETECTED	SD-025-0-1	1	0	0	0	EXIST	
025-0-1	EXIT PUSHBUTTON	PB-025-0-1	0	0	0	0	DEMO	
025-0-1	ELECTRICAL ROOM EXIT PUSHBUTTON	PB-025-0-2	0	0	0	0	DEMO	
025-0-1	CARD READERS		0	0	0	0	DEMO	
025-0-1	RADIO POWER CYCLE		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
	TOTALS		15	5	2	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-027-0-1 (WELL 27D)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
027-0-1	**WELL 27D PUMP**	WP-027						
027-0-1	RUNNING		1	0	0	0	EXIST	
027-0-1	IN AUTO		1	0	0	0	EXIST	
027-0-1	FAIL		1	0	0	0	EXIST	
027-0-1	START		0	1	0	0	EXIST	
027-0-1	STOP		0	1	0	0	EXIST	
027-0-1	NO FLOW	FS-027-0-1	1	0	0	0	EXIST	
027-0-1	FLOW (0-1,500 GPM)	FM-027-0-1	0	0	1	0	EXIST	
027-0-1	KW	JT-027-0-1	0	0	0	0	DEMO	
027-0-1	**WASTE VALVE**	WV-027-0-1						
027-0-1	OPENED		1	0	0	0	EXIST	
027-0-1	CLOSED		1	0	0	0	EXIST	
027-0-1	IN REMOTE		1	0	0	0	EXIST	
027-0-1	OPEN		0	1	0	0	EXIST	
027-0-1	CLOSE		0	1	0	0	EXIST	
027-0-1	**WELLHOUSE**							
027-0-1	SYSTEM PRESSURE (0-150 PSIG)	PT-027-0-1	0	0	1	0	EXIST	
027-0-1	LOW TEMPERATURE	TS-027-0-1	1	0	0	0	EXIST	
027-0-1	ROOM FLOODING	LS-027-0-1	1	0	0	0	EXIST	
027-0-1	ENTRY DOOR SWITCH	DS-027-0-1	1	0	0	0	EXIST	
027-0-1	ELECTRICAL ROOM DOOR SWITCH	DS-027-0-2	1	0	0	0	EXIST	
027-0-1	THREE-PHASE POWER FAIL		1	0	0	0	EXIST	
027-0-1	CONTROL POWER FAILURE		1	0	0	0	EXIST	
027-0-1	UPS REPLACE BATTERY		1	0	0	0	EXIST	
027-0-1	SMOKE DETECTED	SD-027-0-1	1	0	0	0	EXIST	
027-0-1	EXIT PUSHBUTTON	PB-027-0-1	0	0	0	0	DEMO	
027-0-1	ELECTRICAL ROOM EXIT PUSHBUTTON	PB-027-0-2	0	0	0	0	DEMO	
027-0-1	ALARM HORN		0	1	0	0	EXIST	
027-0-1	CARD READERS		0	0	0	0	DEMO	
027-0-1	RADIO POWER CYCLE		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
027-0-1	**PRESSURE RELIEF VALVE OPENED**	ZS-027-0-1	1	0	0	0	2~#14	FROM PRESSURE RELIEF VALVE LIMIT SWITCH
	TOTALS		16	6	2	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-028-0-1 (WELL 28D)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
028-0-1	**WELL 28D PUMP**	WP-028						
028-0-1	RUNNING		1	0	0	0	EXIST	
028-0-1	IN AUTO		1	0	0	0	EXIST	
028-0-1	FAIL		1	0	0	0	EXIST	
028-0-1	START		0	1	0	0	EXIST	
028-0-1	STOP		0	1	0	0	EXIST	
028-0-1	NO FLOW	FS-028-0-1	1	0	0	0	EXIST	
028-0-1	FLOW (0-1,500 GPM)	FM-028-0-1	0	0	1	0	EXIST	
028-0-1	KW	JT-028-0-1	0	0	0	0	DEMO	
028-0-1	**WASTE VALVE**	WV-028-0-1						
028-0-1	OPENED		1	0	0	0	EXIST	
028-0-1	CLOSED		1	0	0	0	EXIST	
028-0-1	IN REMOTE		1	0	0	0	EXIST	
028-0-1	OPEN		0	1	0	0	EXIST	
028-0-1	CLOSE		0	1	0	0	EXIST	
028-0-1	**WELLHOUSE**							
028-0-1	SYSTEM PRESSURE (0-150 PSIG)	PT-028-0-1	0	0	1	0	EXIST	
028-0-1	TEMPERATURE LOW	TS-028-0-1	1	0	0	0	EXIST	
028-0-1	ROOM FLOODING	LS-028-0-1	1	0	0	0	EXIST	
028-0-1	ENTRY DOOR SWITCH	DS-028-0-1	1	0	0	0	EXIST	
028-0-1	ELECTRICAL ROOM DOOR SWITCH	DS-028-0-2	1	0	0	0	EXIST	
028-0-1	THREE-PHASE POWER FAIL		1	0	0	0	EXIST	
028-0-1	CONTROL POWER FAILURE		1	0	0	0	EXIST	
028-0-1	UPS REPLACE BATTERY		1	0	0	0	EXIST	
028-0-1	SMOKE DETECTED	SD-028-0-1	1	0	0	0	EXIST	
028-0-1	EXIT PUSHBUTTON	PB-028-0-1	0	0	0	0	DEMO	
028-0-1	ELECTRICAL ROOM EXIT PUSHBUTTON	PB-028-0-1	0	0	0	0	DEMO	
028-0-1	ALARM HORN		0	1	0	0	EXIST	
028-0-1	CARD READERS		0	0	0	0	DEMO	
028-0-1	RADIO POWER CYCLE		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
028-0-1	**PRESSURE RELIEF VALVE OPENED**	ZS-028-0-1	1	0	0	0	2~#14	FROM PRESSURE RELIEF VALVE LIMIT SWITCH
	TOTALS		16	6	2	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-111-0-1 (FAIRMOUNT & GARVIN BOOSTER STATION)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
111-0-1	**BOOSTER PUMP NO. 1**	BP-111-0-1						
111-0-1	RUNNING		1	0	0	0	2~#14	FROM EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	IN AUTO		1	0	0	0	2~#14	FROM EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	FAIL		1	0	0	0	2~#14	FROM EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	START		0	1	0	0	2~#14	TO EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	STOP		0	1	0	0	2~#14	TO EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	KW		0	0	0	0	DEMO	FROM EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	NO FLOW	FS-111-0-1	1	0	0	0	2~#14	FROM EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	**BOOSTER PUMP NO. 2**	BP-111-0-2						
111-0-1	RUNNING		1	0	0	0	2~#14	FROM EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	IN AUTO		1	0	0	0	2~#14	FROM EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	FAIL		1	0	0	0	2~#14	FROM EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	START		0	1	0	0	2~#14	TO EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	STOP		0	1	0	0	2~#14	TO EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	KW		0	0	0	0	DEMO	FROM EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	NO FLOW	FS-111-0-2	1	0	0	0	2~#14	FROM EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	**BOOSTER PUMP NO. 3**	BP-111-0-3						
111-0-1	RUNNING		1	0	0	0	2~#14	FROM EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	IN AUTO		1	0	0	0	2~#14	FROM EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	FAULT/OVERTEMP		1	0	0	0	2~#14	FROM EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	START		0	1	0	0	2~#14	TO EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	STOP		0	1	0	0	2~#14	TO EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	KW		0	0	0	0	DEMO	FROM EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	NO FLOW	FS-111-0-3	1	0	0	0	2~#14	FROM EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	SPEED INDICATION		0	0	1	0	SH. PR.	FROM EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	SPEED CONTROL		0	0	0	1	SH. PR.	TO EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	**BOOSTER PUMP NO. 4**	BP-111-0-4						
111-0-1	RUNNING		1	0	0	0	2~#14	FROM EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	IN AUTO		1	0	0	0	2~#14	FROM EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	FAULT/OVERTEMP		1	0	0	0	2~#14	FROM EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	START		0	1	0	0	2~#14	TO EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	STOP		0	1	0	0	2~#14	TO EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	KW		0	0	0	0	DEMO	FROM EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	NO FLOW	FS-111-0-4	1	0	0	0	2~#14	FROM EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	SPEED INDICATION		0	0	1	0	SH. PR.	FROM EXISTING STARTER VIA MCC JUNCTION BOX
111-0-1	SPEED CONTROL		0	0	0	1	SH. PR.	TO EXISTING STARTER VIA MCC JUNCTION BOX

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WATER SCADA SYSTEM I/O LISTING - SCC-111-0-1 (FAIRMOUNT & GARVIN BOOSTER STATION)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
111-0-1	**BOOSTER STATION**							
111-0-1	DISCHARGE PRESSURE (0-150 PSIG)	PIT-111-0-1	0	0	1	0	SH. PR.	FROM EXISTING PRESSURE TRANSMITTER
111-0-1	SUCTION PRESSURE (0-100 PSIG)	PIT-111-0-2	0	0	1	0	SH. PR.	FROM EXISTING PRESSURE TRANSMITTER
111-0-1	RESERVOIR LEVEL	LT-111-0-1	0	0	1	0	EXIST.	FROM EXISTING LEVEL TRANSMITTER IN VALVE VAULT
111-0-1	PUMP ROOM LOW TEMPERATURE	TSL-111-0-1	1	0	0	0	2~#14	FROM EXISTNG TEMPERATURE SWITCH
111-0-1	BUILDING FLOODING	LS-111-0-1	1	0	0	0	2~#14	FROM EXISTING FLOODING SWITCH
111-0-1	PUMP ROOM DOOR SWITCH	ZS-111-0-1A/B	1	0	0	0	2~#14	FROM EXISTING DOOR SWITCH
111-0-1	THREE-PHASE POWER FAIL		1	0	0	0	2~#14	FROM EXISTING POWER MONITOR
111-0-1	CONTROL POWER FAILURE		1	0	0	0	2~#14	FROM CONTROL POWER RELAY IN THIS SCC
111-0-1	UPS REPLACE BATTERY		1	0	0	0	2~#14	FROM UPS IN THIS SCC
111-0-1	PUMP ROOM SMOKE DETECTED	SD-111-0-1	1	0	0	0	2~#14	FROM EXISTING SMOKE DETECTOR
111-0-1	PUMP ROOM EXIT DOOR PUSHBUTTON	PB-111-0-1	0	0	0	0	DEMO	FROM EXISTING PUSHBUTTON
111-0-1	ALARM HORN		0	0	0	0	DEMO	TO EXISTING ALARM HORN
111-0-1	CARD READERS		0	0	0	0	DEMO	
111-0-1	RADIO POWER CYCLE		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
111-0-1	ROOF HATCH SWITCHES	ZS-111-0-4 A/B/C/D	1	0	0	0	2~#14	FROM EXISTING HATCH SWITCH
111-0-1	CHEMICAL ROOM LOW TEMPERATURE	TSL-111-0-2	1	0	0	0	2~#14	FROM EXISTING TEMPERATURE SWITCH
111-0-1	CHEMICAL ROOM EXIT DOOR PUSHBUTTON	PB-111-2-2	1	0	0	0	DEMO	FROM EXISTING PUSHBUTTON
111-0-1	CHEMICAL ROOM DOOR SWITCH	ZS-111-0-2A/B	1	0	0	0	2~#14	FROM EXISTING DOOR SWITCH
111-0-1	CHEMICAL ROOM SMOKE DETECTED	SD-111-0-2	1	0	0	0	2~#14	FROM EXISTING SMOKE DETECTOR
111-0-1	CHEMICAL TANK HIGH LEVEL	LS2	0	0	0	0	DEMO	FROM EXISTSING LEVEL SWITCH IN CHEMICAL TANK
111-0-1	**PLANT CHLORINE ANALYZER**	AIT-111-0-1						
111-0-1	CHLORINE RESIDUAL (0-5 MG/L)		0	0	1	0	SH. PR.	FROM EXISTING CHLORINE ANALYZER
111-0-1	COMMON ALARM		1	0	0	0	2~#14	FROM EXISTING CHLORINE ANALYZER
111-0-1	**RESERVOIR CHLORINE ANALYZER**	AIT-111-0-2						
111-0-1	CHLORINE RESIDUAL (0-5 MG/L)		0	0	1	0	SH. PR.	FROM EXISTING CHLORINE ANALYZER
111-0-1	PH		0	0	1	0	SH. PR.	FROM EXISTING CHLORINE ANALYZER
111-0-1	COMMON ALARM		1	0	0	0	2~#14	FROM EXISTING CHLORINE ANALYZER
111-0-1	**TRANSFER PUMP RUNNING**		0	0	0	0	DEMO	FROM EXISTING TRANSFER PUMP PANEL
111-0-1	**TRANSFER PUMP FAIL**		0	0	0	0	DEMO	FROM EXISTING TRANSFER PUMP PANEL
111-0-1	**STATION FLOW**	FIT-111-0-1						
111-0-1	INSTANTANEOUS FLOW (0-4,000 GPM)		0	0	1	0	SH. PR.	FROM EXISTING FLOW METER
111-0-1	TOTALIZED FLOW PULSE		1	0	0	0	2~#14	FROM EXISTING FLOW METER
111-0-1	**RESERVOIR DRAW FLOW**	FIT-111-0-2						
111-0-1	INSTANTANEOUS FLOW (0-4,000 GPM)		0	0	1	0	SH. PR.	FROM EXISTING FLOW METER

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SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
111-0-1	TOTALIZED FLOW PULSE		1	0	0	0	2~#14	FROM EXISTING FLOW METER
111-0-1	**VALVE VAULT FLOODING**	LS-111-0-3	1	0	0	0	EXIST.	FROM EXISTING FLOAT SWITCH IN VALVE VAULT
111-0-1	**VAULT HATCH SWITCH**	ZS-111-0-3	1	0	0	0	EXIST.	FROM EXISTING HATCH SWITCH
111-0-1	**REMOTE I/O TO/FROM SCC-110-1-1**		X	X	X	X	ENET	ALL SIGNALS TO/FROM SCC-110-1-1
111-0-1	**REMOTE I/O TO/FROM SCC-110-5-1**		X	X	X	X	ENET	ALL SIGNALS TO/FROM SCC-110-5-1
111-0-1	**GENERATOR**							
111-0-1	RUNNING		1	0	0	0	2~#14	FROM GENERATOR CONTROL PANEL
111-0-1	FAULT		1	0	0	0	2~#14	FROM GENERATOR CONTROL PANEL
111-0-1	**AUTOMATIC TRANSFER SWITCH**							
111-0-1	NORMAL POSITION		1	0	0	0	2~#14	FROM ATS
111-0-1	STANDBY POSITION		1	0	0	0	2~#14	FROM ATS
111-0-1	**SURGE VALVE OPENED**	ZS-111-0-5	1	0	0	0	2~#14	FRIM SURGE VALVE LIMIT SWITCH
	TOTALS		39	9	10	2		

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WATER SCADA SYSTEM I/O LISTING - SCC-113-0-1 (BLUFF STREET BOOSTER STATION)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
113-0-1	**BOOSTER PUMP NO. 1**	BP-113-0-1						
113-0-1	RUNNING		1	0	0	0	EXIST	
113-0-1	IN AUTO		1	0	0	0	EXIST	
113-0-1	FAIL		1	0	0	0	EXIST	
113-0-1	START/STOP		0	1	0	0	EXIST	
113-0-1	NO FLOW	FS-113-00-1	1	0	0	0	EXIST	
113-0-1	KW	JT-113-00-1	0	0	0	0	DEMO	
113-0-1	**BOOSTER PUMP NO. 2**	BP-113-00-2						
113-0-1	RUNNING		1	0	0	0	EXIST	
113-0-1	IN AUTO		1	0	0	0	EXIST	
113-0-1	FAIL		1	0	0	0	EXIST	
113-0-1	START/STOP		0	1	0	0	EXIST	
113-0-1	NO FLOW	FS-113-00-2	1	0	0	0	EXIST	
113-0-1	KW	JT-113-00-2	0	0	0	0	DEMO	
113-0-1	**BOOSTER PUMP NO. 3**	BP-113-0-3						
113-0-1	RUNNING		1	0	0	0	EXIST	
113-0-1	IN AUTO		1	0	0	0	EXIST	
113-0-1	FAULT/OVERTEMP		1	0	0	0	EXIST	
113-0-1	START/STOP		0	1	0	0	EXIST	
113-0-1	NO FLOW	FS-113-00-3	1	0	0	0	EXIST	
113-0-1	SPEED INDICATION		0	0	1	0	EXIST	
113-0-1	SPEED CONTROL		0	0	0	1	EXIST	
113-0-1	KW	JT-113-00-3	0	0	0	0	DEMO	
113-0-1	**BOOSTER PUMP NO. 4**	BP-113-0-4						
113-0-1	RUNNING		1	0	0	0	EXIST	
113-0-1	IN AUTO		1	0	0	0	EXIST	
113-0-1	FAULT/OVERTEMP		1	0	0	0	EXIST	
113-0-1	START/STOP		0	1	0	0	EXIST	
113-0-1	NO FLOW	FS-113-00-4	1	0	0	0	EXIST	
113-0-1	SPEED INDICATION		0	0	1	0	EXIST	
113-0-1	SPEED CONTROL		0	0	0	1	EXIST	
113-0-1	KW	JT-113-00-4	0	0	0	0	DEMO	
113-0-1	**BOOSTER STATION**							
113-0-1	DISCHARGE PRESSURE (0-150 PSIG)	PT-113-00-1	0	0	1	0	EXIST	
113-0-1	SUCTION PRESSURE (0-100 PSIG)	PT-113-00-2	0	0	1	0	EXIST	
113-0-1	FLOW (0-4,000 GPM)	FT-113-0-1	0	0	1	0	EXIST	

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WATER SCADA SYSTEM I/O LISTING - SCC-113-0-1 (BLUFF STREET BOOSTER STATION)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
113-0-1	LOW TEMPERATURE	TS-113-00-1	1	0	0	0	EXIST	
113-0-1	BUILDING FLOODING	LS-113-00-1	1	0	0	0	EXIST	
113-0-1	DOOR SWITCH	DS-113-00-1	1	0	0	0	EXIST	
113-0-1	THREE-PHASE POWER FAIL		1	0	0	0	EXIST	
113-0-1	MCC POWER FAIL		1	0	0	0	EXIST	
113-0-1	CONTROL POWER FAILURE		1	0	0	0	EXIST	
113-0-1	UPS REPLACE BATTERY		1	0	0	0	EXIST	
113-0-1	SMOKE DETECTED	SD-113-00-1	1	0	0	0	EXIST	
113-0-1	EXIT DOOR PUSHBUTTON	PB-113-0-1	0	0	0	0	DEMO	
113-0-1	ALARM HORN		0	1	0	0	EXIST	
113-0-1	CARD READERS		0	0	0	0	DEMO	
113-0-1	RADIO POWER CYCLE		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
113-0-1	**PRESSURE RELIEF VALVE OPENED**	ZS-113-0-1	1	0	0	0	2~#14	FROM PRESSURE RELIEF VALVE LIMIT SWITCH
113-0-1	**CHLORINE ANALYZER**	AIT-113-0-1						
113-0-1	CHLORINE CONCENTRATION (0-10.0 PPM)		0	0	1	0	SH.PR.	FROM CHLORINE ANALYZER
113-0-1	PH (0.00-14.00)		0	0	1	0	SH.PR.	FROM CHLORINE ANALYZER
	TOTALS		25	6	7	2		

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WATER SCADA SYSTEM I/O LISTING - SCC-114-0-1 (RICHARDS STREET BOOSTER STATION)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
114-0-1	**BOOSTER PUMP NO. 1**	BP-114-0-1						
114-0-1	RUNNING		1	0	0	0	EXIST	
114-0-1	VFD FAULT		1	0	0	0	EXIST	
114-0-1	IN AUTO		1	0	0	0	EXIST	
114-0-1	SPEED INDICATION		0	0	1	0	EXIST	
114-0-1	SPEED CONTROL		0	0	0	1	EXIST	
114-0-1	START		0	1	0	0	EXIST	
114-0-1	STOP		0	1	0	0	EXIST	
114-0-1	NO FLOW	FS-114-0-1	1	0	0	0	EXIST	
114-0-1	KW	FS-114-0-1	0	0	0	0	DEMO	
114-0-1	**BOOSTER PUMP NO. 2**	BP-114-0-2						
114-0-1	RUNNING		1	0	0	0	EXIST	
114-0-1	IN AUTO		1	0	0	0	EXIST	
114-0-1	FAIL		1	0	0	0	EXIST	
114-0-1	START		0	1	0	0	EXIST	
114-0-1	STOP		0	1	0	0	EXIST	
114-0-1	NO FLOW	FS-114-0-2	1	0	0	0	EXIST	
114-0-1	KW	JT-114-0-2	0	0	0	0	DEMO	
114-0-1	**BOOSTER STATION**							
114-0-1	DISCHARGE PRESSURE (0-150 PSIG)	PT-114-0-1	0	0	1	0	EXIST	
114-0-1	SUCTION PRESSURE (0-100 PSIG)	PT-114-0-2	0	0	1	0	EXIST	
114-0-1	LOW SUCTION PRESSURE	PS-114-0-1	1	0	0	0	EXIST	
114-0-1	FLOW (0-4,000 GPM)	FT-114-0-1	0	0	1	0	EXIST	
114-0-1	FLOW DIRECTION	FT-114-0-1	1	0	0	0	EXIST	
114-0-1	TEMPERATURE LOW	TS-114-0-1	1	0	0	0	EXIST	
114-0-1	ROOM FLOODING	LS-114-0-1	1	0	0	0	EXIST	
114-0-1	DOOR SWITCH	DS-114-0-1	1	0	0	0	EXIST	
114-0-1	THREE-PHASE POWER FAIL		1	0	0	0	EXIST	
114-0-1	CONTROL POWER FAILURE		1	0	0	0	EXIST	
114-0-1	UPS REPLACE BATTERY		1	0	0	0	EXIST	
114-0-1	SMOKE DETECTED	SD-114-0-1	1	0	0	0	EXIST	
114-0-1	EXIT DOOR PUSHBUTTON	PB-114-0-1	0	0	0	0	DEMO	
114-0-1	ALARM HORN		0	1	0	0	EXIST	
114-0-1	CARD READERS		0	0	0	0	DEMO	
114-0-1	RADIO POWER CYCLE		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
114-0-1								

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WATER SCADA SYSTEM I/O LISTING - SCC-114-0-1 (RICHARDS STREET BOOSTER STATION)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
114-0-1	**EMERGENCY GENERATOR**	EG-114-0-1						
114-0-1	RUNNING		1	0	0	0	EXIST	
114-0-1	FAIL		1	0	0	0	EXIST	
114-0-1	**AUTOMATIC TRANSFER SWITCH**	ATS-114-0-1						
114-0-1	EMERGENCY POSITION		1	0	0	0	EXIST	
114-0-1	NORMAL POSITION		1	0	0	0	EXIST	
114-0-1	**PRV**	PRV-114-0-1						
114-0-1	IN AUTO		1	0	0	0	EXIST	
114-0-1	OPENED		1	0	0	0	EXIST	
114-0-1	OPEN		0	1	0	0	EXIST	
	TOTALS		23	7	4	1		

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WATER SCADA SYSTEM I/O LISTING - SCC-117-0-1 (PARKWOOD TANK)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
117-0-1	**TOWER**							
117-0-1	LEVEL (0-23.7 FT)	LT-117-00-1	0	0	1	0	SH. PR.	FROM LEVEL TRANSMITTER VIA SCC JUNCTION BOX
117-0-1	CATHODIC PROTECTION TROUBLE		1	0	0	0	2~#14	FROM CATHODIC PROTECTION VIA SCC JUNCTION BOX
117-0-1	FLOW (0-5,000 GPM)	FIQT-117-0-1	0	0	1	0	SH. PR.	FROM NEW FLOW TRANSMITTER
117-0-1	FLOW DIRECTION	FIQT-117-0-1	1	0	0	0	2~#14	FROM NEW FLOW TRANSMITTER
117-0-1	TOTALIZED FLOW PULSE	FIQT-117-0-1	1	0	0	0	2~#14	FROM NEW FLOW TRANSMITTER
117-0-1	**CONTROL PANEL CONTROL POWER FAILURE**		1	0	0	0	2~#14	FROM CONTROL POWER RELAY IN THIS SCC
117-0-1	**CONTROL PANEL UPS BATTERY LOW**		1	0	0	0	2~#14	FROM UPS IN THIS SCC
117-0-1	**CONTROL PANEL DOOR SWITCH**	DS-117-00-1	1	0	0	0	2~#14	FROM DOOR SWITCH IN THIS SCC
117-0-1	**CONTROL PANEL LOW TEMPERATURE**	TS-117-00-1	1	0	0	0	2~#14	FROM LOW TEMPERATURE SWITCH IN THIS SCC
117-0-1	**CONTROL PANEL EXIT PUSHBUTTON**	PB-117-00-1	0	0	0	0	DEMO	FROM CONTROL PANEL EXIT TRANSMITTER
117-0-1	**CONTROL PANEL CARD READER**		0	0	0	0	DEMO	FROM CONTROL PANEL CARD VIA SCC JUNCTION BOX
117-0-1	**HEAT TRACE SYSTEM ALARM**		0	0	0	0	DEMO	FROM HEAT TRACE SYSTEM VIA SCC JUNCTION BOX
117-0-1	**RADIO POWER CYCLE**		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
	TOTALS		7	1	2	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-211-0-1 (RIDGE ROAD STANDPIPE)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
211-0-1	**STANDPIPE**							
211-0-1	LEVEL		0	0	1	0	SH. PR.	FROM LEVEL TRANSMITTER VIA SCC JUNCTION BOX
211-0-1	CATHODIC PROTECTION TROUBLE		1	0	0	0	2~#14	FROM CATHODIC PROTECTION VIA SCC JUNCTION BOX
211-0-1	SYSTEM FLOW (0-5000 GPM)	FT-211-0-1	0	0	1	0	SH. PR.	FROM FLOW METER
211-0-1	SYSTEM FLOW DIRECTION	FT-211-0-1	1	0	0	0	2~#14	FROM FLOW METER
211-0-1	**CONTROL PANEL CONTROL POWER FAILURE**		1	0	0	0	2~#14	FROM CONTROL POWER FAIL RELAY IN THIS SCC
211-0-1	**CONTROL PANEL UPS REPLACE BATTERY**		1	0	0	0	2~#14	FROM UPS IN THIS SCC
211-0-1	**CONTROL PANEL DOOR SWITCH**	DS-211-00-1	1	0	0	0	2~#14	FROM PANEL DOOR SWITCH IN THIS SCC
211-0-1	**CONTROL PANEL LOW TEMPERATURE**	TS-211-00-1	1	0	0	0	2~#14	FROM LOW TEMPERATURE SWITCH IN THIS SCC
211-0-1	**CONTROL PANEL EXIT PUSHBUTTON**	PB-211-00-1	0	0	0	0	DEMO	
211-0-1	**CONTROL PANEL CARD READER**		0	0	0	0	DEMO	
211-0-1	**VALVE VAULT FLOODING**	LS-211-0-1	1	0	0	0	2~#14	FROM FLOAT SWITCH VIA SCC JUNCTION BOX
211-0-1	**RADIO POWER CYCLE**		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
	TOTALS		7	1	2	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-602-0-1 (ROCK RUN TANK)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
602-0-1	**TOWER**							
602-0-1	LEVEL (0-23.7 FT)	LT-602-00-1	0	0	1	0	SH. PR.	FROM LEVEL TRANSMITTER VIA SCC JUNCTION BOX
602-0-1	FLOW (0-5,000 GPM)	FIQT-602-0-1	0	0	1	0	SH. PR.	FROM NEW FLOW TRANSMITTER
602-0-1	FLOW DIRECTION	FIQT-602-0-1	1	0	0	0	2~#14	FROM NEW FLOW TRANSMITTER
602-0-1	TOTALIZED FLOW PULSE	FIQT-602-0-1	1	0	0	0	2~#14	FROM NEW FLOW TRANSMITTER
602-0-1	ENTRY DOOR SWITCH	DS-602-0-2	1	0	0	0	2~#14	FROM DOOR SWITCH VIA SCC JUNCTION BOX
602-0-1	**CONTROL BUILDING**							
602-0-1	DOOR SWITCH	DS-602-0-1	1	0	0	0	2~#14	FROM DOOR SWITCH VIA SCC JUNCTION BOX
602-0-1	LOW TEMPERATURE	TS-602-0-1	1	0	0	0	2~#14	FROM LOW TEMPERATURE SWITCH VIA SCC JUNCTION BOX
602-0-1	CATHODIC PROTECTION TROUBLE		1	0	0	0	2~#14	FROM CATHODIC PROTECTION VIA SCC JUNCTION BOX
602-0-1	CONTROL POWER FAILURE		1	0	0	0	2~#14	FROM CONTROL POWER FAIL RELAY IN THIS SCC
602-0-1	UPS REPLACE BATTERY LOW		1	0	0	0	2~#14	FROM UPS IN THIS SCC
602-0-1	SMOKE DETECTED	SD-602-00-1	1	0	0	0	2~#14	FROM SMOKE DETECTOR VIA SCC JUNCTION BOX
602-0-1	ROOM FLOODING	LS-602-00-1	1	0	0	0	2~#14	FROM FLOODING FLOAT SWITCH VIA SCC JUNCTION BOX
602-0-1	ALARM HORN		0	0	0	0	DEMO	
602-0-1	CARD READER		0	0	0	0	DEMO	
602-0-1	RADIO POWER CYCLE		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
	TOTALS		10	1	2	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-651-1-2 (WASHINGTON STREET WTP)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
651-1-2	**CONTROL POWER FAILURE**		1	0	0	0	2~#14	FROM CONTROL POWER FAIL RELAY IN THIS SCC
651-1-2	**COMMON UPS ALARM**		1	0	0	0	2~#14	FROM UPS IN THIS SCC
651-1-2	**UPS DC BUS OK**		1	0	0	0	2~#14	FROM UPS IN THIS SCC
651-1-2	**UPS BATTERY FAIL**		1	0	0	0	2~#14	FROM UPS IN THIS SCC
651-1-2	**UPS BATTERY DISCHARGED**		1	0	0	0	2~#14	FROM UPS IN THIS SCC
651-1-2	**COMMUNICATION FAIL PILOT LIGHT**		0	1	0	0	2~#14	TO PILOT LIGHT ON FRONT OF THIS SCC
651-1-2	**NETWORK SWITCH ALARM**		1	0	0	0	2~#14	FROM NETWORK SWITCH IN THIS SCC
651-1-2	**RADIO POWER CYCLE**		0	1	0	0	2~#14	TO RADIO POWER CYCLE RELAY IN THIS SCC
651-1-2	**REMOTE I/O TO/FROM SCC-651-1-1**		X	X	X	X	ENET	ALL SIGNALS TO/FROM SCC-651-1-1
	TOTALS		6	2	0	0		

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WATER SCADA SYSTEM I/O LISTING - RIO-652-0-1 (WASHINGTON STREET BOOSTER STATION/WELL 5D)

RIO	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
652-0-1	**BOOSTER PUMP NO. 1**	BP-652-0-1						
652-0-1	RUNNING		1	0	0	0	EXIST	
652-0-1	IN AUTO		1	0	0	0	EXIST	
652-0-1	FAIL		1	0	0	0	EXIST	
652-0-1	START		0	1	0	0	EXIST	
652-0-1	STOP		0	1	0	0	EXIST	
652-0-1	NO FLOW	FS-652-0-1	1	0	0	0	EXIST	
652-0-1	KW	JT-652-0-1	0	0	1	0	EXIST	
652-0-1	**BOOSTER PUMP NO. 2**	BP-652-0-2	4	2	1	0		
652-0-1	RUNNING		1	0	0	0	EXIST	
652-0-1	IN AUTO		1	0	0	0	EXIST	
652-0-1	FAIL		1	0	0	0	EXIST	
652-0-1	START		0	1	0	0	EXIST	
652-0-1	STOP		0	1	0	0	EXIST	
652-0-1	NO FLOW	FS-652-0-2	1	0	0	0	EXIST	
652-0-1	KW	JT-652-0-2	0	0	1	0	EXIST	
652-0-1	**BOOSTER PUMP NO. 3**	BP-652-0-3	4	2	1	0		
652-0-1	RUNNING		1	0	0	0	EXIST	
652-0-1	IN AUTO		1	0	0	0	EXIST	
652-0-1	FAIL		1	0	0	0	EXIST	
652-0-1	START		0	1	0	0	EXIST	
652-0-1	STOP		0	1	0	0	EXIST	
652-0-1	NO FLOW	FS-652-0-3	1	0	0	0	EXIST	
652-0-1	KW	JT-652-0-3	0	0	1	0	EXIST	
652-0-1	**INGALLS PARK ZONE PRESSURE (0-150 PSIG)**	PT-652-0-2	0	0	1	0	EXIST	
652-0-1	**SUCTION PRESSURE (0-150 PSIG)**	PT-652-0-1	0	0	1	0	EXIST	
652-0-1	**SOUTHEAST ZONE PRESSURE (0-150 PSIG)**	PT-652-0-3	0	0	1	0	EXIST	
652-0-1	**INGALLS PARK ZONE FLOW**	FIQT-652-0-2						
652-0-1	INSTANTANEOUS FLOW (0-5000 GPM)		0	0	1	0	SH. PR.	FROM NEW FLOW TRANSMITTER
652-0-1	TOTALIZED FLOW PULSE		1	0	0	0	2~#14	FROM NEW FLOW TRANSMITTER
652-0-1	FLOW DIRECTION		1	0	0	0	2~#14	FROM NEW FLOW TRANSMITTER
652-0-1	**SOUTHEAST ZONE FLOW**	FIT-652-0-1						
652-0-1	INSTANTANEOUS FLOW (0-5000 GPM)		0	0	1	0	EXIST	
652-0-1	**BOOSTER STATION TEMPERATURE LOW**	TS-652-0-1	1	0	0	0	EXIST	
652-0-1	**BOOSTER STATION DOOR SWITCH**	DS-652-0-1	1	0	0	0	EXIST	
652-0-1	**BOOSTER STATION ROOM FLOODING**	LS-652-0-1	1	0	0	0	EXIST	

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WATER SCADA SYSTEM I/O LISTING - RIO-652-0-1 (WASHINGTON STREET BOOSTER STATION/WELL 5D)

RIO	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
652-0-1	**THREE-PHASE POWER FAIL**		1	0	0	0	EXIST	
652-0-1	**CONTROL POWER FAILURE**		1	0	0	0	EXIST	
652-0-1	**UPS REPLACE BATTERY**		1	0	0	0	EXIST	
652-0-1	**SMOKE DETECTED**	SD-652-0-1	1	0	0	0	EXIST	
652-0-1	**EXIT DOOR PUSHBUTTON**	PB-652-0-1	0	0	0	0	DEMO	
652-0-1	**CARD READER**		0	0	0	0	DEMO	
652-0-1	**WELL 5D**	WP-652-0-1						
652-0-1	RUNNING		1	0	0	0	EXIST	
652-0-1	IN AUTO		1	0	0	0	EXIST	
652-0-1	FAIL		1	0	0	0	EXIST	
652-0-1	BEARING HIGH TEMPERATURE		1	0	0	0	EXIST	
652-0-1	START		0	1	0	0	EXIST	
652-0-1	STOP		0	1	0	0	EXIST	
652-0-1	NO FLOW	FS-005-0-1	1	0	0	0	EXIST	
652-0-1	SYSTEM PRESSURE (0-150 PSIG)	PT-005-0-1	0	0	1	0	EXIST	
652-0-1	WELL FLOW	FIT-005-0-1						
652-0-1	INSTANTANEOUS FLOW (0-5,000 GPM)		0	0	1	0	EXIST	
652-0-1	WELL 5D WELL HOUSE							
652-0-1	LOW TEMPERATURE	TS-005-0-1	1	0	0	0	EXIST	
652-0-1	SMOKE DETECTED	SD-005-0-1	1	0	0	0	EXIST	
652-0-1	ROOM FLOODING	LS-005-0-1	1	0	0	0	EXIST	
652-0-1	DOOR SWITCH	DS-005-0-1	1	0	0	0	EXIST	
652-0-1	EXIT PUSHBUTTON		1	0	0	0	EXIST	
652-0-1	**PRESSURE RELIEF VALVE OPENED**	ZS-652-0-1	1	0	0	0	2~#14	FROM PRESSURE RELIEF VALVE LIMIT SWITCH
	TOTALS		40	12	12	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-653-0-1 (RACE TRACK TANK)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
653-0-1	**TOWER**							
653-0-1	LEVEL (0-23.7)	LT-653-00-1	0	0	1	0	EXIST	
653-0-1	ENTRY DOOR SWITCH	DS-653-0-2	1	0	0	0	EXIST	
653-0-1	FLOW (0-5,000 GPM)	FIQT-653-0-1	0	0	1	0	SH. PR.	FROM NEW FLOW TRANSMITTER
653-0-1	TOTALIZED FLOW PULSE	FIQT-653-0-1	1	0	0	0	2~#14	FROM NEW FLOW TRANSMITTER
653-0-1	FLOW DIRECTION	FIQT-653-0-1	1	0	0	0	2~#14	FROM NEW FLOW TRANSMITTER
653-0-1	**CONTROL BUILDING**							
653-0-1	DOOR SWITCH	DS-653-0-1	1	0	0	0	EXIST	
653-0-1	TEMPERATURE LOW	TS-653-0-1	1	0	0	0	EXIST	
653-0-1	CONTROL POWER FAILURE		1	0	0	0	EXIST	
653-0-1	UPS REPLACE BATTERY		1	0	0	0	EXIST	
653-0-1	SMOKE DETECTED	DS-653-00-1	1	0	0	0	EXIST	
653-0-1	ROOM FLOODING	LS-653-00-1	1	0	0	0	EXIST	
653-0-1	EXIT PUSHBUTTON	PB-653-00-1	0	0	0	0	DEMO	
653-0-1	ALARM HORN		0	1	0	0	EXIST	
653-0-1	CARD READER		0	0	0	0	DEMO	
653-0-1	RADIO POWER CYCLE		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
	TOTALS		9	2	2	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-701-0-1 (PRAIRIE AND CAMPBELL BOOSTER STATION)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
701-0-1	**BOOSTER PUMP NO. 1**	BP-701-0-1						
701-0-1	RUNNING		1	0	0	0	EXIST	
701-0-1	IN AUTO		1	0	0	0	EXIST	
701-0-1	FAIL		1	0	0	0	EXIST	
701-0-1	START		0	1	0	0	EXIST	
701-0-1	STOP		0	1	0	0	EXIST	
701-0-1	FLOW (0-5,000 GPM)	FT-701-0-1	0	0	1	0	EXIST	
701-0-1	**BOOSTER PUMP NO. 2**	BP-701-00-2						
701-0-1	RUNNING		1	0	0	0	EXIST	
701-0-1	IN AUTO		1	0	0	0	EXIST	
701-0-1	FAIL		1	0	0	0	EXIST	
701-0-1	START		0	1	0	0	EXIST	
701-0-1	STOP		0	1	0	0	EXIST	
701-0-1	FLOW (0-5,000 GPM)	FT-701-0-2	0	0	1	0	EXIST	
701-0-1	**RESERVOIR**							
701-0-1	RESERVOIR LEVEL (0-34.6 FT)	LT-701-0-1	0	0	1	0	EXIST	
701-0-1	**BOOSTER STATION**							
701-0-1	DISCHARGE PRESSURE (0-150 PSIG)	PT-701-00-1	0	0	1	0	EXIST	
701-0-1	DOOR SWITCH	DS-701-00-1	1	0	0	0	EXIST	
701-0-1	CONTROL POWER FAILURE		1	0	0	0	EXIST	
701-0-1	UPS REPLACE BATTERY		1	0	0	0	EXIST	
701-0-1	EXIT DOOR PUSHBUTTON	PB-701-0-1	0	0	0	0	DEMO	
701-0-1	ALARM HORN		0	1	0	0	EXIST	
701-0-1	CARD READER		0	0	0	0	DEMO	
701-0-1	RADIO POWER CYCLE		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
701-0-1	RESERVOIR FILL VALVE	FV-701-0-1						
701-0-1	OPENED		1	0	0	0	EXIST	
701-0-1	CLOSED		1	0	0	0	EXIST	
701-0-1	OPEN		0	1	0	0	EXIST	
701-0-1	CLOSE		0	1	0	0	EXIST	
701-0-1	**PRESSURE RELIEF VALVE OPENED**	ZS-701-0-1	1	0	0	0	2~#14	FROM PRESSURE RELIEF VALVE LIMIT SWITCH
	TOTALS		12	8	4	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-801-1-1 DEMO (WELL 29D WTP/WELL 29D)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
801-1-1	**WELL 29D**	WP-029-1						
801-1-1	RUNNING		1	0	0	0	2~#14	
801-1-1	IN AUTO		1	0	0	0	2~#14	
801-1-1	FAIL		1	0	0	0	2~#14	
801-1-1	START		0	1	0	0	2~#14	
801-1-1	STOP		0	1	0	0	2~#14	
801-1-1	NO FLOW	FS-029-1-1	1	0	0	0	2~#14	
801-1-1	FLOW (0-5,000 GPM)	FM-029-0-1	0	0	1	0	SH. PR.	
801-1-1	**WASTE VALVE**	WV-029-1-1						
801-1-1	OPENED		1	0	0	0	2~#14	
801-1-1	CLOSED		1	0	0	0	2~#14	
801-1-1	IN REMOTE		1	0	0	0	2~#14	
801-1-1	OPEN		0	1	0	0	2~#14	
801-1-1	CLOSE		0	1	0	0	2~#14	
801-1-1	**SYSTEM PRESSURE**	PT-029-0-1	0	0	1	0	SH. PR.	
801-1-1	**TREATMENT ROOM DOOR SWITCH**	DS-801-1-1	1	0	0	0	2~#14	
801-1-1	**TREATMENT ROOM SMOKE DETECTED**	SD-801-1-1	1	0	0	0	2~#14	
801-1-1	**TREATMENT ROOM LOW TEMPERATURE**	TS-801-1-1	1	0	0	0	2~#14	
801-1-1	**ELECTRICAL ROOM DOOR SWTICH**	DS-801-1-2	1	0	0	0	2~#14	
801-1-1	**ELECTRICAL ROOM SMOKE DETECTED**	SD-801-1-2	1	0	0	0	2~#14	
801-1-1	**ELECTRICAL ROOM LOW TEMPERATURE**	TS-801-1-2	1	0	0	0	2~#14	
801-1-1	**2400V THREE PHASE POWER FAIL**		1	0	0	0	2~#14	
801-0-1	**RADIO POWER CYCLE**		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
	ALL I/O SHOWN ON THIS I/O LIST SHALL BE REMOVED FROM THIS SCC							
	TOTALS		14	5	2	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-801-1-2 (WELL 29 D)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
801-1-1	**WELL 29D**	WP-029-1						
801-1-1	RUNNING		1	0	0	0	2~#14	FROM EXISTING MV STARTER
801-1-1	IN AUTO		1	0	0	0	2~#14	FROM EXISTING MV STARTER
801-1-1	FAIL		1	0	0	0	2~#14	FROM EXISTING MV STARTER
801-1-1	START		0	1	0	0	2~#14	TO EXISTING MV STARTER
801-1-1	STOP		0	1	0	0	2~#14	TO EXISTING MV STARTER
801-1-1	NO FLOW	FS-029-1-1	1	0	0	0	2~#14	FROM EXISTING MV STARTER
801-1-1	FLOW (0-5,000 GPM)	FM-029-0-1	0	0	1	0	SH. PR.	FROM EXISTING FLOW METER
028-0-1	**WASTE VALVE**	WV-029-1-1						
028-0-1	OPENED		1	0	0	0	FUTURE	
028-0-1	CLOSED		1	0	0	0	FUTURE	
028-0-1	IN REMOTE		1	0	0	0	FUTURE	
028-0-1	OPEN		0	1	0	0	FUTURE	
028-0-1	CLOSE		0	1	0	0	FUTURE	
801-1-1	**SYSTEM PRESSURE**	PT-029-0-1	0	0	1	0	SH. PR.	FROM EXISTING PRESSURE TRANSMITTER
801-1-1	**TREATMENT ROOM DOOR SWITCH**	DS-801-1-1	1	0	0	0	2~#14	FROM EXISTING DOOR SWITCH
801-1-1	**TREATMENT ROOM SMOKE DETECTED**	SD-801-1-1	1	0	0	0	2~#14	FROM EXISTING SMOKE DETECTOR
801-1-1	**TREATMENT ROOM LOW TEMPERATURE**	TS-801-1-1	1	0	0	0	2~#14	FROM EXISTING TEMPERATURE SWITCH
801-1-1	**ELECTRICAL ROOM DOOR SWTICH**	DS-801-1-2	1	0	0	0	2~#14	FROM EXISTING DOOR SWITCH
801-1-1	**ELECTRICAL ROOM SMOKE DETECTED**	SD-801-1-2	1	0	0	0	2~#14	FROM EXISTING SMOKE DETECTOR
801-1-1	**ELECTRICAL ROOM LOW TEMPERATURE**	TS-801-1-2	1	0	0	0	2~#14	FROM EXISTING TEMPERATURE SWITCH
801-1-1	**CHEMICAL ROOM DOOR SWTICH**	DS-801-1-3	1	0	0	0	2~#14	FROM EXISTING DOOR SWITCH
801-1-1	**2400V THREE PHASE POWER FAIL**		1	0	0	0	2~#14	FROM EXISTING 2400V GEAR
801-1-1	**CONTROL POWER FAIL**		1	0	0	0	2~#14	FROM RELAY WITHIN THIS SCC
801-1-1	**UPS REPLACE BATTERY**		1	0	0	0	2~#14	FROM UPS WITHIN THIS SCC
801-1-1	**CHLORINE CONCENTRATION**	AIT-801-1-1	0	0	1	0	SH. PR.	FROM EXISTING CHLORINE ANALYZER
801-1-1	**RADIO POWER CYCLE**		0	1	0	0	2~#14	TO NEW RADIO POWER CYCLE RELAY IN THIS SCC
	TOTALS		17	5	3	0		

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WATER SCADA SYSTEM I/O LISTING - SCC-XXX-X-X (TYPICAL I/O ASSOCIATED WITH EACH FILTER TRAIN)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
	CONTROL POWER FAIL		1	0	0	0	EXIST.	
	UPS LOW BATTERY		1	0	0	0	EXIST.	
	THREE-PHASE POWER FAIL		1	0	0	0	EXIST.	
	BUILDING LOW TEMPERATURE		1	0	0	0	EXIST.	
	BUILDING FLOODING		1	0	0	0	EXIST.	
	FILTER VESSEL							
	DIFFERENTIAL PRESSURE (0-150 PSIG)		0	0	1	0	EXIST.	
	BACKWASH FAIL		1	0	0	0	EXIST.	
	OUT OF SERVICE		1	0	0	0	EXIST.	
	CELL A IN BACKWASH		1	0	0	0	EXIST.	
	CELL B IN BACKWASH		1	0	0	0	EXIST.	
	CELL C IN BACKWASH		1	0	0	0	EXIST.	
	CELL D IN BACKWASH		1	0	0	0	EXIST.	
	AIR COMPRESSOR NO. 1 FAIL		1	0	0	0	EXIST.	
	AIR COMPRESSOR NO. 2 FAIL		1	0	0	0	EXIST.	
	FILTER BLOWER FAIL		1	0	0	0	EXIST.	
	LOW AIR PRESSURE		1	0	0	0	EXIST.	
	VOLUME SINCE LAST BACKWASH (KGAL)		0	0	1	0	EXIST.	
	BACKWASH STEP TIME REMAINING		0	0	1	0	EXIST.	
	UNTREATED FLOW							
	INSTANTANEOUS FLOW (0-1,500 GPM)		0	0	1	0	EXIST.	
	TOTALIZED FLOW PULSE		1	0	0	0	2~#14	FROM EXISTING FLOW METER
	TREATED FLOW							
	INSTANTANEOUS FLOW (0-1,500 GPM)		0	0	1	0	EXIST.	
	TOTALIZED FLOW PULSE		1	0	0	0	2~#14	FROM EXISTING FLOW METER
	CHLORINE RESIDUAL (0-5 MG/L)		0	0	1	0	EXIST.	
	PRE-CHLORINATION TANK WEIGHT (0-4500 LBS)		0	0	1	0	EXIST.	
	POST-CHLORINATION TANK WEIGHT (0-4500 LBS)		0	0	1	0	EXIST.	
	PRE-CHLORINATION TANK LOW		1	0	0	0	EXIST.	
	CORROSION TANK WEIGHT (0-5000 LBS)		0	0	1	0	EXIST.	
	CORROSION TANK LOW		1	0	0	0	EXIST.	
	HMO BULK TANK LEVEL (0-100 IN)		0	0	1	0	EXIST.	
	HMO BULK TANK HIGH		1	0	0	0	EXIST.	
	HMO BULK TANK LOW		1	0	0	0	EXIST.	

STRAND ASSOCIATES INC.
ALTERNATIVE WATER SOURCE PROGRAM JOL0801-SCADA SYSTEM UPGRADES
CONTRACT 2722-0923
CITY OF JOLIET, ILLINOIS

WATER SCADA SYSTEM I/O LISTING - SCC-XXX-X-X (TYPICAL I/O ASSOCIATED WITH EACH FILTER TRAIN)

SCC	EQUIPMENT NAME	NUMBER	DI	DO	AI	AO	WIRE	COMMENTS
	HMO TANK LEVEL (0-100 IN)		0	0	1	0	EXIST.	
	HMO TANK WEIGHT (0-7000 LBS)		0	0	1	0	EXIST.	
	HMO TANK LOW		1	0	0	0	EXIST.	
	HMO FEED PUMP LEAK		1	0	0	0	EXIST.	
	MNSO4 TANK WEIGHT (0-6000 LBS)		0	0	1	0	EXIST.	
	MNSO4 TANK LOW		1	0	0	0	EXIST.	
	NAMNO4 TANK WEIGHT (0-6000 LBS)		0	0	1	0	EXIST.	
	NAMNO4 TANK LOW		1	0	0	0	EXIST.	
	TOTALS		25	0	14	0		

SECTION 26 95 10

SPARE PARTS

PART 1–GENERAL

1.01 SUMMARY

A. Work Included: Spare parts for applicable sections of Division 26 as noted below.

B. Related Sections and Divisions: Applicable provisions of Division 01 shall govern work in this section.

1.02 QUALITY ASSURANCE

A. UL Labels: All electrical equipment and material shall be listed and labeled by Underwriters Laboratories, except where UL does not include the equipment in their listing procedures.

B. NEMA/ANSI Compliance: Comply with National Electrical Manufacturer's Association, American National Standards Institute, and other standards pertaining to material, construction, and testing where applicable.

1.03 PRODUCT DELIVERY, STORAGE AND HANDLING

A. All electrical equipment and material shall be received and stored with the factory winter-proof wrapping intact. Provide factory-wrapped waterproof flexible barrier metal for factory packaging of equipment and material to protect against physical damage in transit. When applicable, equipment stored shall be in factory coverings in a clean, dry, indoor space which provides protection against the weather.

B. All spare parts shall be suitably boxed or wrapped to prevent deterioration and shall be completely identified on the outside.

PART 2–PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Spare parts specified herein shall be provided by the same manufacturer as the equipment provided on the project.

2.02 CONTROLS AND INSTRUMENTATION

A. The following shall be furnished:
   1. One radio and antenna for each type provided.
   2. One PAC processor for each type provided.
   3. One PAC power supply of each voltage and watt rating provided.
   4. One PAC UPS. Provide UPS to match the largest size provided for the project.
   5. 10% of PLC input/output cards for each type provided (analog, discrete and network). The number of each type of cards required shall not exceed the maximum quantity of

that type contained in any single SCC. Minimum two each. If only one card of a type is provided, only one spare card shall be provided.

6. 10% of PLC I/O chassis for each type provided, minimum one each.
7. 10% of transient/spike suppressors, minimum of two each.
8. One network switch. Spare shall match the largest switch provided for the project.
9. Two spare fuses for each type of fuse provided in each panel modified or provided.

PART 3–EXECUTION

NOT APPLICABLE

END OF SECTION

SECTION 32 92 00

RESTORATION

PART 1–GENERAL

1.01 SUMMARY

A. Work Included:
   1. Placement of topsoil.
   2. Fertilizing.
   3. Seeding.
   4. Mulching.
   5. Maintenance.

B. All areas disturbed by conduit removal, conduit installation, or related Work shall be restored.

C. Related Sections and Divisions: Applicable provisions of Division 01 shall govern work in this section.

D. Payment: Payment for restoration shall be at the Lump Sum Price Bid. Costs for topsoiling, seeding, fertilizer, mulching, and maintenance of restored areas shall be included in the lump sum price bid. One percent of the total Contract price shall be retained following project completion until a uniform 2-inch growth of vegetation is established over all restored areas.

1.02 REFERENCES

A. Standard Specifications: Unless otherwise indicated, Standard Specifications shall refer to the State of Illinois Department of Transportation, Standard Specifications for Road and Bridge Construction, current edition, including all issued supplemental specifications.

1.03 QUALITY ASSURANCE

A. All work shall be in accordance with Standard Specifications, unless noted otherwise.

PART 2–PRODUCTS

2.01 TOPSOIL

A. Topsoil: Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; free of subsoil, stones greater than 3/4 inch in size, clay or impurities, plants, weeds and roots; pH value of minimum 5.4 and maximum 7.0.

B. Topsoil from the site may be used if it meets the above requirements.

2.02 SEED

A. Seed mixture shall be Class 2 per Article 250.07.

2.03 FERTILIZER

A. Fertilizer shall be as specified in Article 250.

PART 3–EXECUTION

3.01 TOPSOIL

A. Placing topsoil shall be in accordance with Article 211 of the Standard Specifications. Topsoil shall be placed to a uniform depth of 6 inches in place. Topsoil placement shall be incidental to sodding or seed, fertilizer, and mulching.

3.02 SEEDING

A. Seeding shall be performed in accordance with Article 250 of the Standard Specifications.

B. Seed shall be applied at the rates specified in Article 250 of the Standard Specifications.

3.03 FERTILIZER

A. Fertilizer shall be applied per Article 250 of the Standard Specifications.

3.04 MULCHING

A. All areas receiving seed shall be mulched.

B. Mulching shall be performed in accordance with Method 2, Procedure 1 of Article 251 of the Standard Specifications.

3.05 MAINTENANCE

A. Seeding shall proceed concurrently with construction. Seeding shall be maintained by CONTRACTOR until grass is well established. Grass is well established when it covers the entire seeded areas to a height of 2 inches.

B. Mow sod at regular intervals to maintain at a maximum height of 2 1/2 inches. Do not cut more than 1/3 of grass blade at any one mowing.

C. Immediately remove clippings after mowing.

D. Water to prevent seed/sod and soil from drying out.

E. Roll surface to remove minor depressions or irregularities.

F. Control growth of weeds. Apply herbicides in accordance with manufacturer’s instructions. Remedy damage resulting from improper use of herbicides.

G. Immediately reseed areas which fail to show adequate catch. Bare spots shall not exceed 5 square feet in area and not exceed 3% of the total seeded areas.

H. Immediately replace sod in areas which show bare spots or deterioration.

I. Protect seeded areas with warning signs during maintenance period.

J. Correct damage resulting from erosion, gullies, rills, or other causes by filling with topsoil, tamping, refertilizing, and reseeding or resodding if damage occurs prior to acceptance of work.

END OF SECTION

SAMPLE DRAWINGS

CONDUCTORS

- CONDUCTOR
- CONDUCTORS NOT CONNECTED
- CONDUCTORS CONNECTED
- CONDUCTOR SHIELD
- FIELD CONDUCTOR
- EARTH GROUND
- CHASSIS GROUND
- SHIELD GROUND (ISOLATED IF REQUIRED BY SPEC.)

TERMINALS

- #### — TERMINAL BLOCK FOR FIELD TERMINATION
- #### — TERMINAL BLOCK FOR INTERNAL USE ONLY TERMINATION
- #### — DEVICE TERMINATION POINT
- XA #### — FUSED TERMINAL BLOCK FOR DEVICES LOCATED INTERNALLY

RELAY COILS

- CR1 — DEVICE ID, CONTROL RELAY; NO, NC
- M1 — MOTOR STARTER; NO, NC
- TD1 — ELECTRIC TIMER WITH ADJUSTABLE TIMING RANGE; SET @ XXSEC.; NO, NC
- SOL1 — SOLENOID
- OL1 — THERMAL OVERLOAD

SWITCHES

- DESC1 / DESC2 / PB1 — DESCRIPTION TEXT (EXAMPLE: LAMP TEST); NORMALLY OPEN PUSHBUTTON
- DESC1 / DESC2 / PB2 — NORMALLY CLOSED PUSHBUTTON
- DESC1 / DESC2 / PB3 — NORMALLY CLOSED MUSHROOM HEAD E-STOP
- MECHANICAL CONNECTION
- DESC1 / DESC2 / SS1 — POS1, POS2 — TWO POSITION SELECTOR SWITCH SHOWN IN 'POS1'; CONTACT MADE IN 'POS2'
- DESC1 / DESC2 / SS2 — POS1, POS2, POS3 — THREE POSITION SELECTOR SWITCH SHOWN IN 'POS1' POSITION; ARROW INDICATES SPRING RETURN FROM 'POS3'; CONTACT MADE IN 'POS3'
- DESC1 / DESC2 / SS3 — POS1, POS2, POS3, POS4 — FOUR POSITION SELECTOR SWITCH SHOWN IN 'POS1' POSITION; CONTACT MADE IN 'POS3'

LIMIT SWITCHES

- DESC1 / DESC2 / ZS1 — NORMALLY OPEN
- DESC1 / DESC2 / ZS2 — NORMALLY CLOSED
- DESC1 / DESC2 / ZS3 — NORMALLY OPEN HELD CLOSED
- DESC1 / DESC2 / ZS4 — NORMALLY CLOSED HELD OPEN

PROCESS SWITCHES

- DESC1 / DESC2 / WS1 — TORQUE SWITCH, NORMALLY OPEN, CLOSE ON INCREASE TORQUE
- DESC1 / DESC2 / WS2 — TORQUE SWITCH, NORMALLY CLOSED, OPEN ON INCREASE TORQUE
- DESC1 / DESC2 / LS1 — LIQUID LEVEL SWITCH, NORMALLY OPEN, CLOSE ON RISE
- DESC1 / DESC2 / LS2 — LIQUID LEVEL SWITCH, NORMALLY CLOSED, OPEN ON RISE
- DESC1 / DESC2 / FS1 — FLOW SWITCH, NORMALLY OPEN, CLOSE ON INCREASE FLOW
- DESC1 / DESC2 / FS2 — FLOW SWITCH, NORMALLY CLOSED, OPEN ON INCREASE FLOW
- DESC1 / DESC2 / PS1 — PRESSURE SWITCH, NORMALLY OPEN, CLOSE ON RISE
- DESC1 / DESC2 / PS2 — PRESSURE SWITCH, NORMALLY CLOSED, OPEN ON RISE
- DESC1 / DESC2 / TS1 — TEMPERATURE SWITCH, NORMALLY OPEN, CLOSE ON RISE
- DESC1 / DESC2 / TS2 — TEMPERATURE SWITCH, NORMALLY CLOSED, OPEN ON RISE

PILOT LIGHTS

- PL1 (A) — PILOT LIGHT, COLOR: AMBER
- COLOR CODES: A-AMBER, W-WHITE, R-RED, B-BLUE, G-GREEN
- PL2 (R) — PUSH TO TEST PILOT LIGHT

INPUT/OUTPUT DEVICES

- 0/0/0 — DIGITAL INPUT ADDRESS, RACK/SLOT/POINT
- 0/0/0 — DIGITAL OUTPUT ADDRESS, RACK/SLOT/POINT
- AI 0/0/0 — ANALOG INPUT ADDRESS, RACK/SLOT/POINT
- AO 0/0/0 — ANALOG OUTPUT ADDRESS, RACK/SLOT/POINT

COIL CONTACTS

- CR1 — NORMALLY OPEN CONTACT
- CR2 — NORMALLY CLOSED CONTACT
- TD1 — NORMALLY OPEN CONTACT ON DELAY
- TD2 — NORMALLY CLOSED CONTACT ON DELAY
- TD3 — NORMALLY OPEN CONTACT OFF DELAY
- TD4 — NORMALLY CLOSED CONTACT OFF DELAY

WIRE COLOR STANDARDS

BLK	BLACK, INCOMING POWER AC
WHT	WHITE, NEUTRAL AC
GRN	GREEN, GROUND
RED	RED, CONTROL POWER AC
BLU	BLUE, CONTROL POWER DC
BLU/S	BLUE WITH STRIP, CONTROL POWER COMMON DC
SHLD	SHIELDED 2 CONDUCTOR BLACK(+) WHITE(-), LOW SIGNAL CIRCUITS
YEL	YELLOW, SEPARATE EXTERNAL CONTROL POWER SOURCE

MISCELLANEOUS

- CB1 ##AMP — CIRCUIT BREAKER WITH AMPERAGE
- FU1 ##AMP — FUSE WITH AMPERAGE
- AH1 — AUDIBLE DEVICE
- EIM1 — ELAPSED TIME METER
- R1 250 OHMS — RESISTOR 250 OHM
- D1 — RECTIFIER, DIODE
- C1 — CAPACITOR, ELECT.
- XF1 H1 H3 H2 H4 / X1 X2 ##VAC — TRANSFORMER SECONDARY VOLTAGE AND RATING INDICATED AS APPLICABLE

INSTRUMENTATION DEVICES

- FQ # — SUBPANEL MOUNTED DEVICE WITH LOOP OR SEQUENCE NUMBER
- LI # — PANEL MOUNTED DEVICE WITH LOOP OR SEQUENCE NUMBER
- FT # — FEILD MOUNTED DEVICE WITH LOOP OR SEQUENCE NUMBER

ISA CODES
FI - FLOW RATE INDICATOR
LI - LEVEL INDICATOR
FT - FLOW TRANSMITTER
FY - FLOW INTEGRATOR
FQ - FLOW QUANTITY

RESERVED WIRE NUMBERS

10	GROUND FAULT CIRCUIT HOT	5	12V DC POSITIVE
N2	GROUND FAULT CIRCUIT NEUTRAL	6	12V DC COMMON
3	24V DC POSITIVE	7	LOW VOLTAGE AC HOT
4	24V DC COMMON	8	LOW VOLTAGE AC NEUTRAL

DEVICE ID / DRAWING CROSS REFERENCE

XX##### — SEQUENCE 00-99; DRAWING CROSS REFERENCE 1-99; FAMILY CODE ABREVIATION
EXAMPLE: CR2101

#####X-### — DRAWING NUMBER 000-999; SEPARATOR; PANEL DESIGNATION A-X; PROJECT NUMBER

DATE LAST EDITED: 12/6/2007

REVISION	
DATE	DESCRIPTION

DATE	11/12/2007	PROJECT	
DWN	JA	STANDARD SYMBOL SHEET	PROJ. NO.
CKD.	GK		
ENGR.	J.J		DWG. NO. SYM
ASSEM.			
SHEET	1 OF 1		

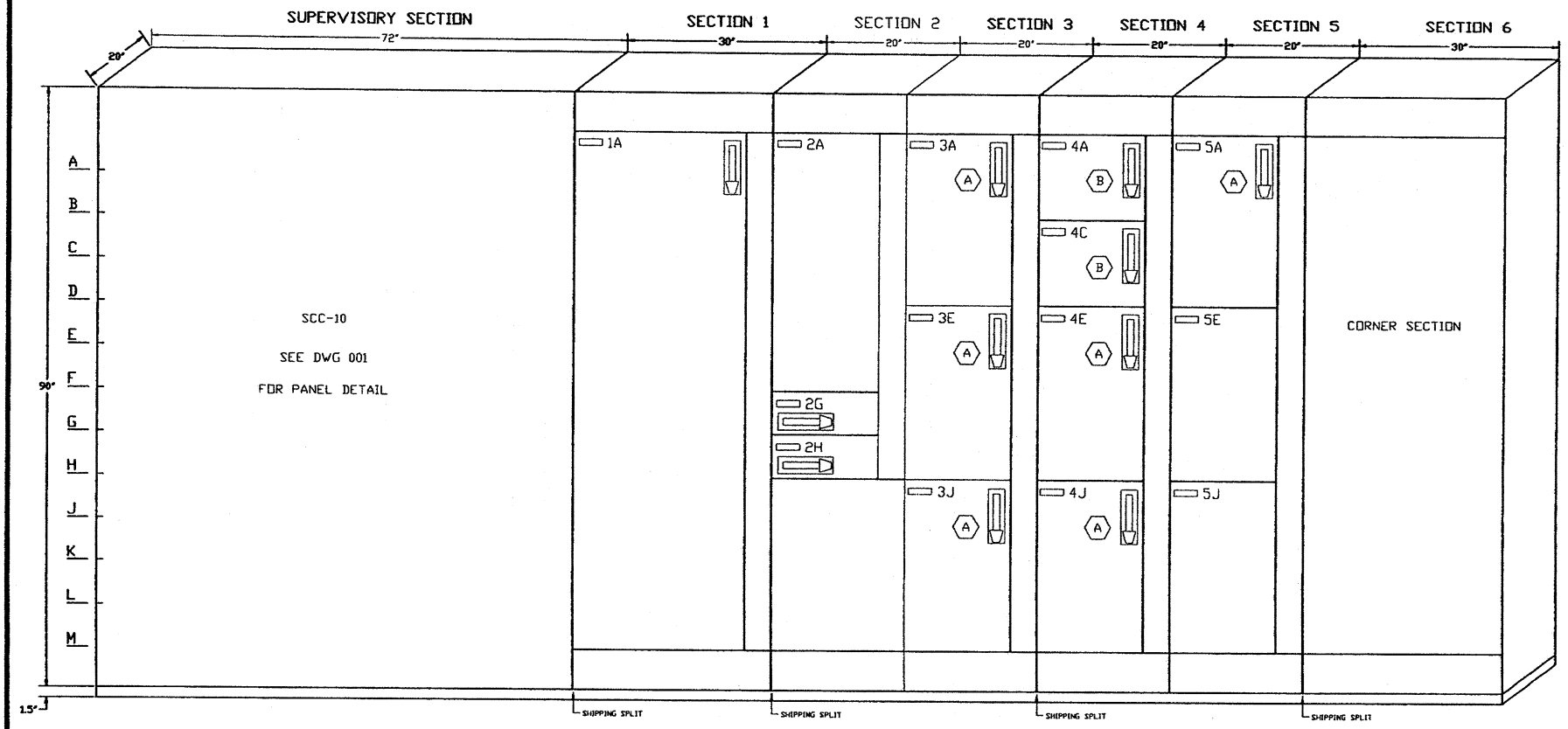
Sample Symbol sheet

Standard Abbreviations

Abbreviation	Description
A	Air Compressed
AC	Air Condition
AD	Auto Dialer
AH	Alarm Horn
AL	Alarm Light
AM	Amp Meter/Ammeter
ANN	Annunciator
AR	Alternating Relay
AWG	American Wire Gauge
BA	Battery
BLU	Blue
BRN	Brown
CA	Cable
CB	Circuit Breaker
CR	Control Relay
CT	Current Transformer
DB	Distribution Block
DI	Diode
DS	Disconnect Switch
EC	Electronic Control Device
ETM	Elapsed Time Meter
EN	Enclosure
FO	Fiber Optic
FS	Flow Switch
FU	Fuse
GFI	Ground Fault Interrupter
GND	Ground
GRN	Green
HTR	Heater
LA	Lightning Arrestor
LP	Lighting Panel
LR	Latching Relay
LS	Level Switch
MS	Motor Starter Contactor
M	Motor
NP	Nameplate
OIT	Operator Interface Terminal
OL or O/L	Overload
ORG	Orange

Abbreviation	Description
OV	Overvoltage
PB	Pushbutton
PC	Pull Cord
PC	Personal Computer
PFC	Power Factor Capacitor
PL	Pilot Light
PLC	Programmable Logic Controller
PM	Power or Phase Monitor
PN	Pneumatic
PR	Pressure Regulator
PS	Pressure Switch
PS	Power Supply
PSH	Pressure Switch High
PSL	Pressure Switch Low
REC	Receptacle
SP	Surge Protector
SS	Selector Switch
STP	Shielded Twisted Pair
SV	Solenoid Valve
TD	Time Delay Relay
TG	Toggle Switch
TS	Temperature Switch
TSP	Twisted Shielded Pair
TT	Temperature Transmitter
UPS	Uninterruptible Power Supply
UTP	Unshielded Twisted Pair
VA	Voltampere
VFD	Variable
VM	Voltmeter
WHT	White
WS	Weight Switch
WT	Weight Transmitter
XFMR	Transformer
SI	Signal Isolator
SS	Speed Switch
ZS	Position Switch

Sample List of Abbreviations



NOTE: SEE DETAILS ON DRAWINGS 004 AND 005.

SCALE

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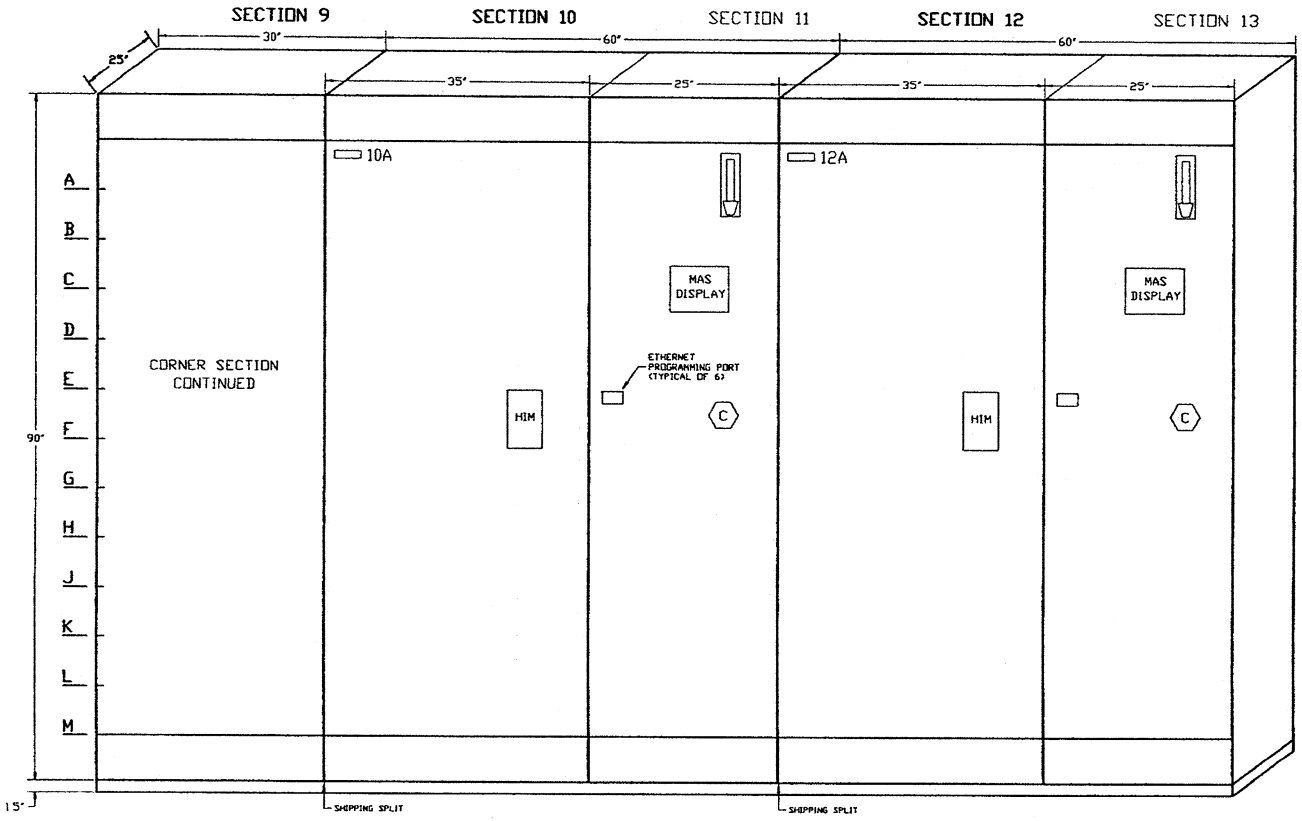
REVISION	
DATE	DESCRIPTION
6/13/05	RELEASE FOR CONSTRUCTION
9/6/06	AS BUILT
2/15/07	AS INSTALLED

DATE LAST EDITED 2/15/2007

DATE	3/16/06	PROJECT
DWN	JA	
CKD.	GK	MCC-10 ELEVATION DETAIL
ENGR.	BA	
ASSEM.		
SHEET	4 OF 149	

PROJ. NO. ...-4
DWG. NO. 003B

Sample Exterior Layout Drawing



NOTE: SEE DETAILS ON DRAWINGS 004 AND 005.
SECTIONS 10 THROUGH 13 ARE MOUNTED BACK-TO-BACK WITH SECTIONS 14 THROUGH 17.

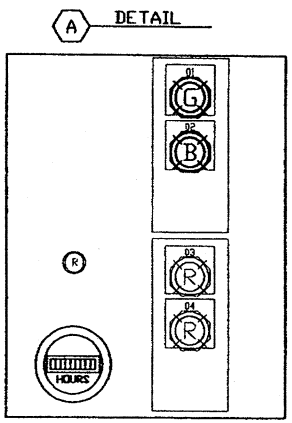
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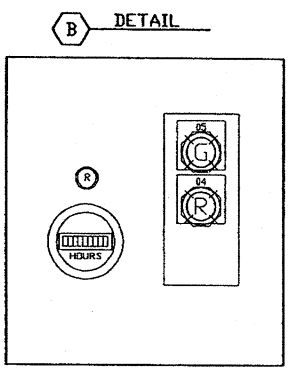
REVISION	
DATE	DESCRIPTION
6/13/05	RELEASE FOR CONSTRUCTION
9/6/06	AS BUILT
2/15/07	AS INSTALLED

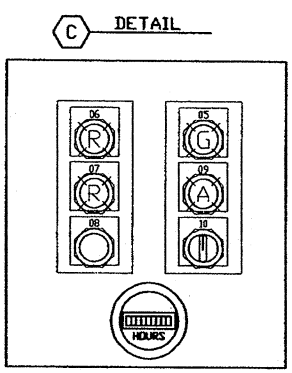
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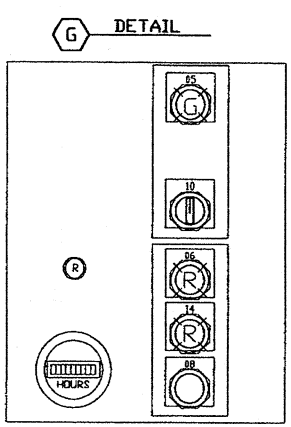
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DWN	JA	
CKD.	GK	MCC-10 ELEVATION DETAIL
ENGR.	BA	PROJ. NO. -
ASSEM.		DWG. NO. 003D
SHEET	6 OF 149	

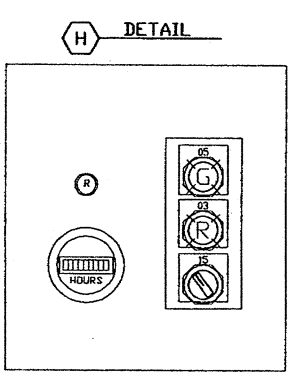
Sample Exterior Layout Drawing

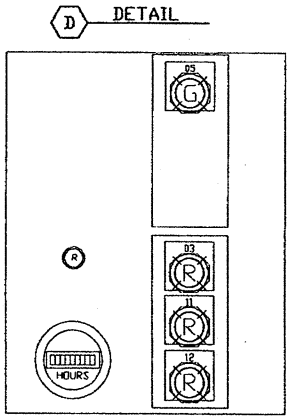


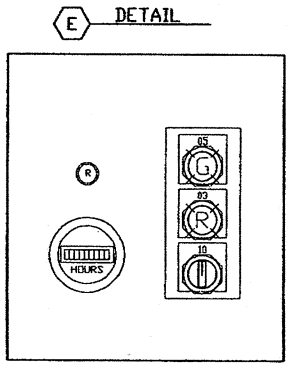


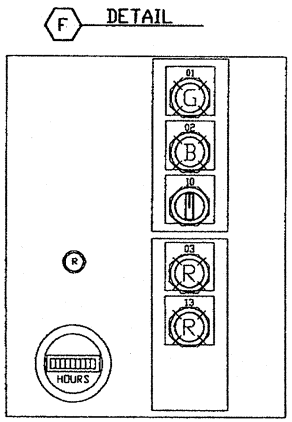












LEGEND PLATE SCHEDULE					
TAG	DESC1	DESC2	DESC3	SIZE	REMARKS
01	FORWARD			1-13/16" SQ	
02	REVERSE			1-13/16" SQ	
03	OVERLOAD			1-13/16" SQ	
04	OVERCURRENT			1-13/16" SQ	
05	RUN			1-13/16" SQ	
06	VFD FAULT			1-13/16" SQ	
07	MOTOR/BEARING	HIGH TEMP		1-13/16" SQ	
08	RESET			1-13/16" SQ	
09	JBOX/MOTOR	MOISTURE		1-13/16" SQ	
10	HAND AUTO	OFF		1-13/16" SQ	
11	ZERO SPEED	ALARM		1-13/16" SQ	
12	ESTOP	ACTIVATED		1-13/16" SQ	
13	INSPECTION	DOOR OPEN		1-13/16" SQ	
14	MOTOR	OVERTEMP		1-13/16" SQ	
15	OFF ON			1-13/16" SQ	

SCALE

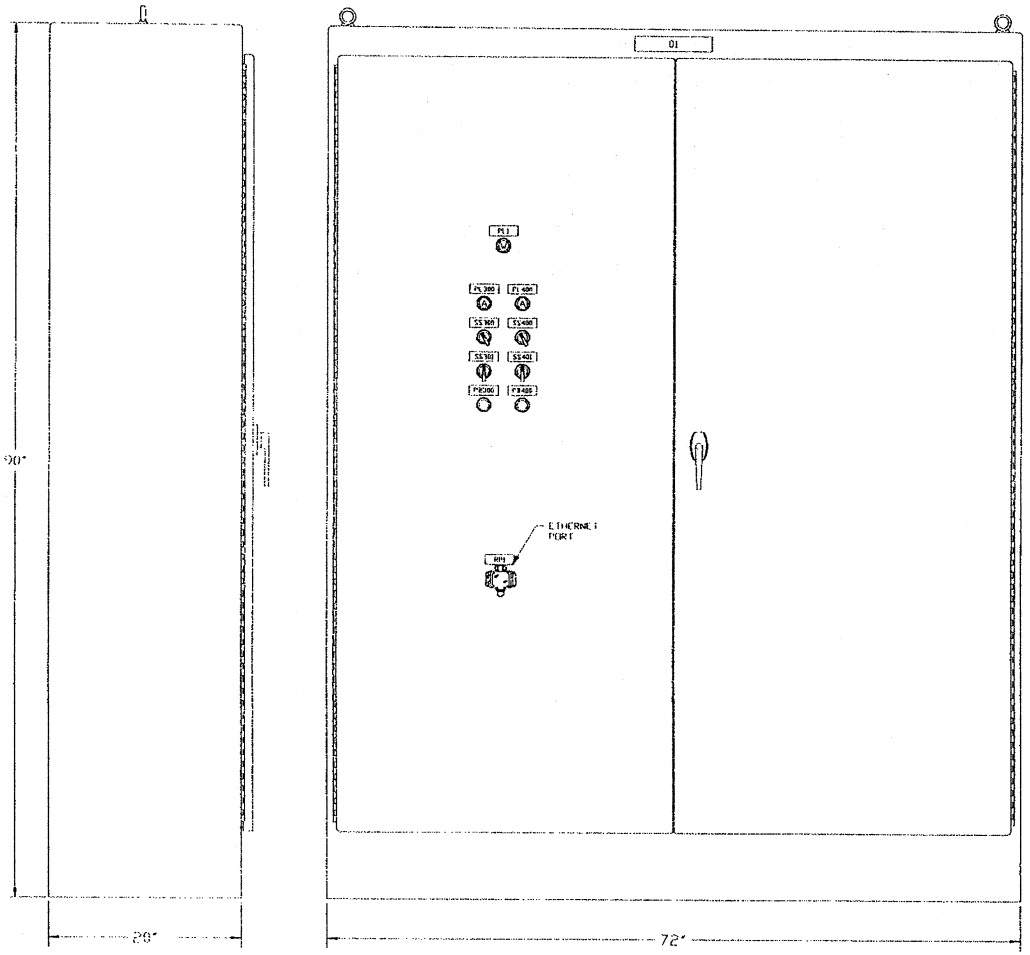
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DATE LAST EDITED 2/15/2007

REVISION	
DATE	DESCRIPTION
6/13/05	RELEASE FOR CONSTRUCTION
9/6/06	AS BUILT
2/15/07	AS INSTALLED

DATE	3/16/06	PROJECT	
DWN.	JA		
CKD.	GK	MCC-10 BUCKET DETAILS	PROJ. NO.
ENGR.	BA		
ASSEM.			DWG. NO. 004
SHEET	11 OF 149		

Sample Exterior Layout Drawing



SIDE VIEW

FRONT VIEW

NAMEPLATE SCHEDULE					
TAG	DESC1	DESC2	DESC3	SIZE	REMARKS
01	SCC-10			15x8	
PB300	RESET			1X3	
PB400	RESET			1X3	
PL1	POWER ON UPS			1X3	
PL300	INFLUENT	WET WELL NO1	BACKUP FLOATS ACTIVE	1X3	
PL400	INFLUENT	WET WELL NO2	BACKUP FLOATS ACTIVE	1X3	
SS300	BACKUP FLOATS	ON - AUTO		1X3	
SS301	LEAD PUMP	03 - AUTO - 05		1X3	
SS400	BACKUP FLOATS	ON - AUTO		1X3	
SS401	LEAD PUMP	04 - AUTO - 06		1X3	
RP1	ETHERNET	PROGRAMMING PORT		1X3	

NAMEPLATES ARE BLACK WITH WHITE LETTERS

NOTES

1. ENCLOSURE IS A NEMA TYPE 12 FREESTANDING HOFFMAN A-907220FSD WITH INNER PANEL HOFFMAN A-90P72F1
2. FINISH IS ANSI 61 GRAY
3. UL# BF-3171536

SCALE

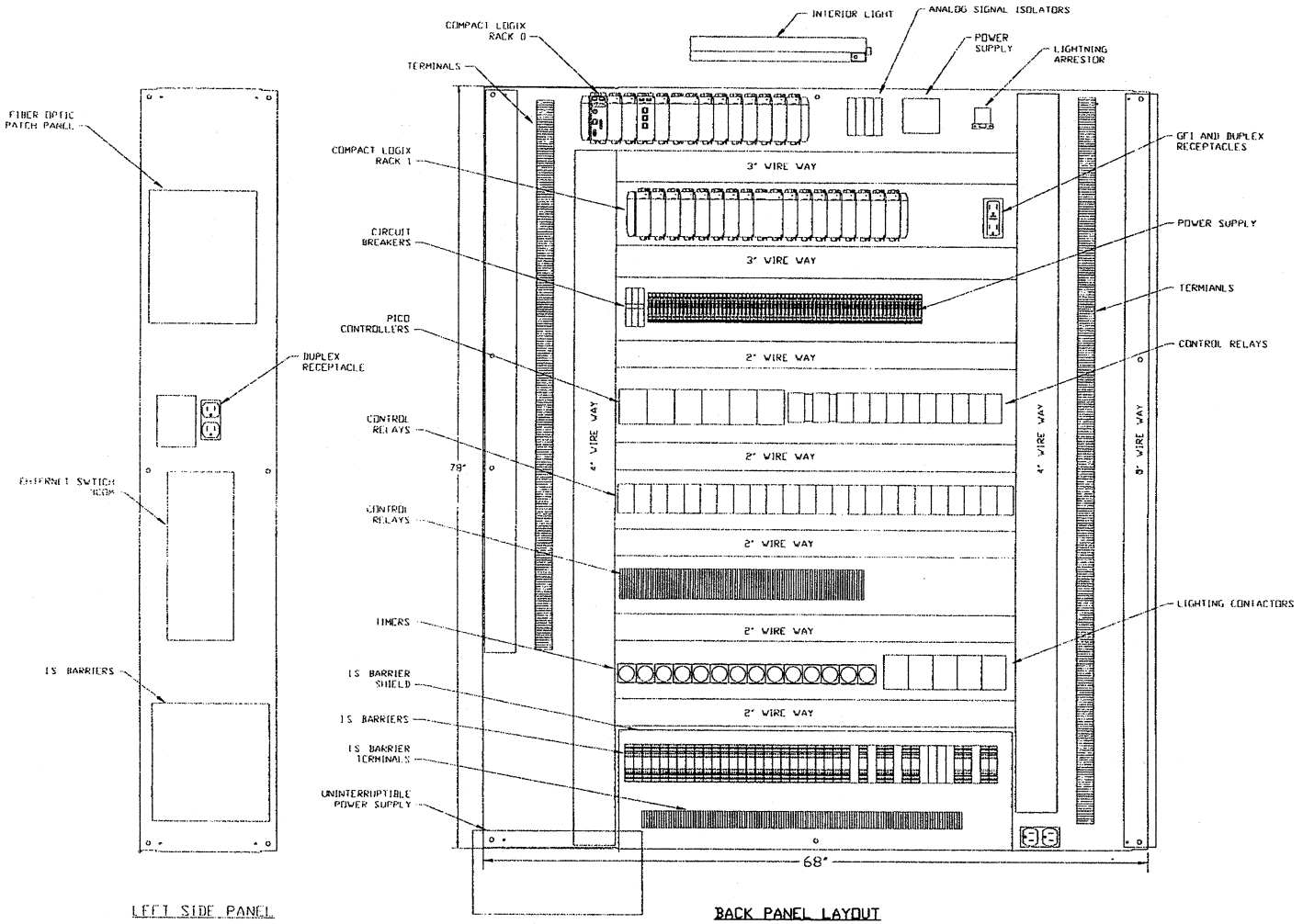
0 6" 12" 24"

REVISION	
DATE	DESCRIPTION
6/13/05	RELEASE FOR CONSTRUCTION
9/6/06	AS BUILT
2/15/07	AS INSTALLED

DATE LAST EDITED 2/15/2007

DATE	3/16/06	PROJECT
DWN.	JA	
CKD.	GK	SCC-10 ENCLOSURE DETAIL
ENGR.	BA	PROJ. NO. -
ASSEM.		DWG. NO. 001
SHEET	1 OF 149	

Sample Exterior Layout Drawing



SCALE

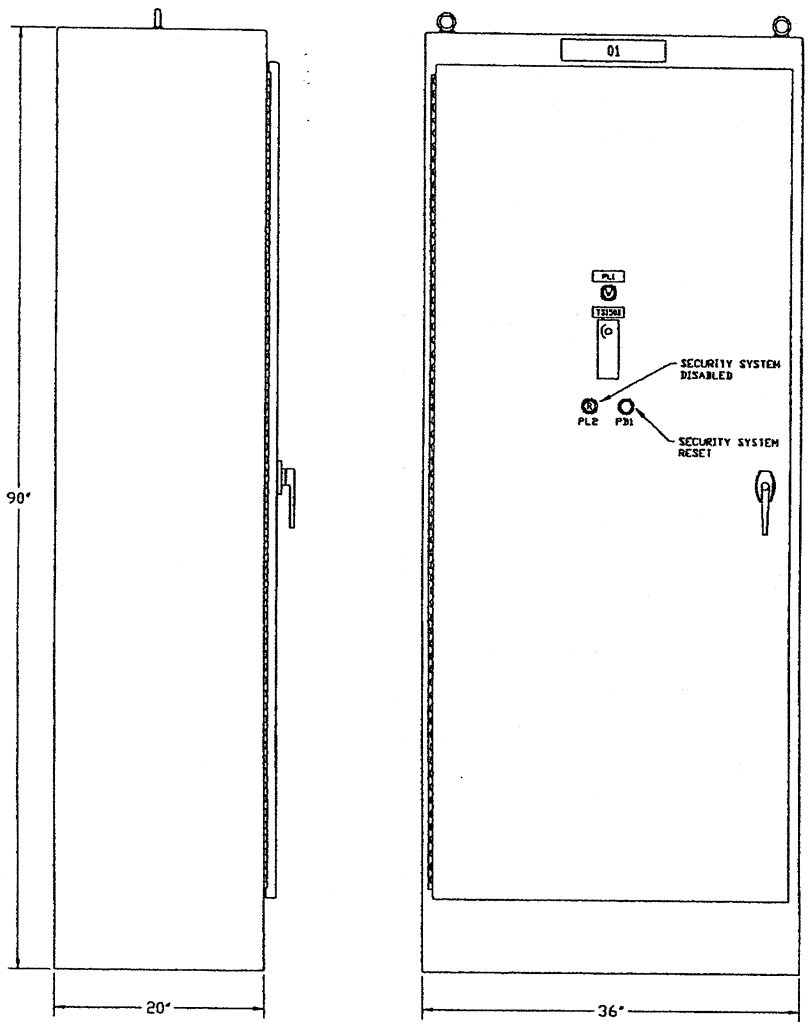
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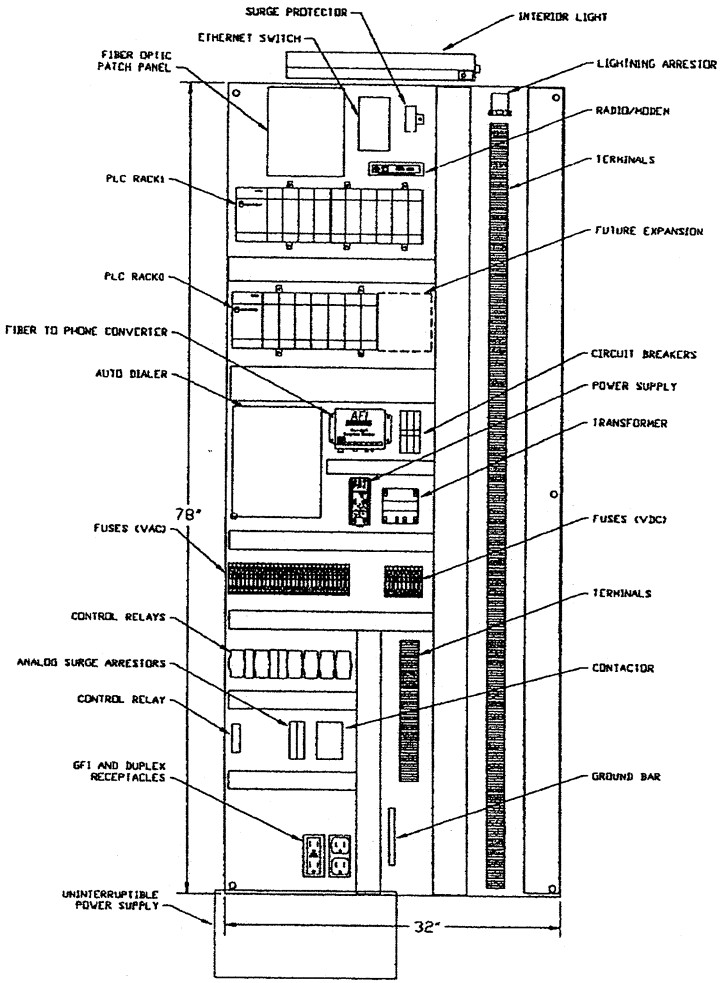
REVISION	
DATE	DESCRIPTION
6/13/05	RELEASE FOR CONSTRUCTION
9/6/06	AS BUILT
2/15/07	AS INSTALLED

DATE LAST EDITED 2/15/2007

DATE	3/16/06	PROJECT
DWN	JA	SCC-10 BACK PANEL LAYOUT
CKD.	GK	PROJ. NO.
ENGR.	BA	DWG. NO. 002
ASSEM.		
SHEET	2 OF 149	

Sample Interior Layout Drawing





PANEL LAYOUT

NOTES:

1. ENCLOSURE IS A NEMA TYPE 12 FREESTANDING HOFFMAN A90360FS. WITH INNER PANEL HOFFMAN A90P36FL.
2. FINISH IS ANSI 61 GRAY.
3. UL 508A

NAMEPLATE SCHEDULE					
TAG	LINE 1	LINE 2	LINE 3	SIZE	REMARKS
01	SCC-MAIN			2x10	
PL1	POWER ON UPS			1X3	
TS1560	LOW BUILDING TEMPERATURE			1X3	

NAMEPLATES ARE BLACK WITH WHITE LETTERS

SCALE

0 6" 12" 24"

SUBMITTAL USE ONLY
NOT FOR CONSTRUCTION
DATE LAST EDITED: 12/6/2007

REVISION	
DATE	DESCRIPTION

DATE	11/12/2007
DWN	JA
CKD.	GK
ENGR.	JJ
ASSEM.	
SHEET	1 OF 34

PROJECT

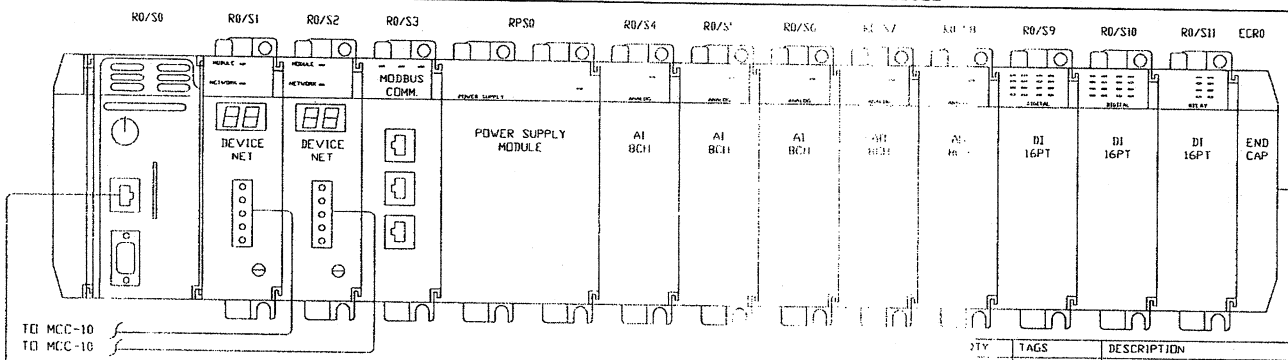
SCC-MAIN
ENCLOSURE DETAIL

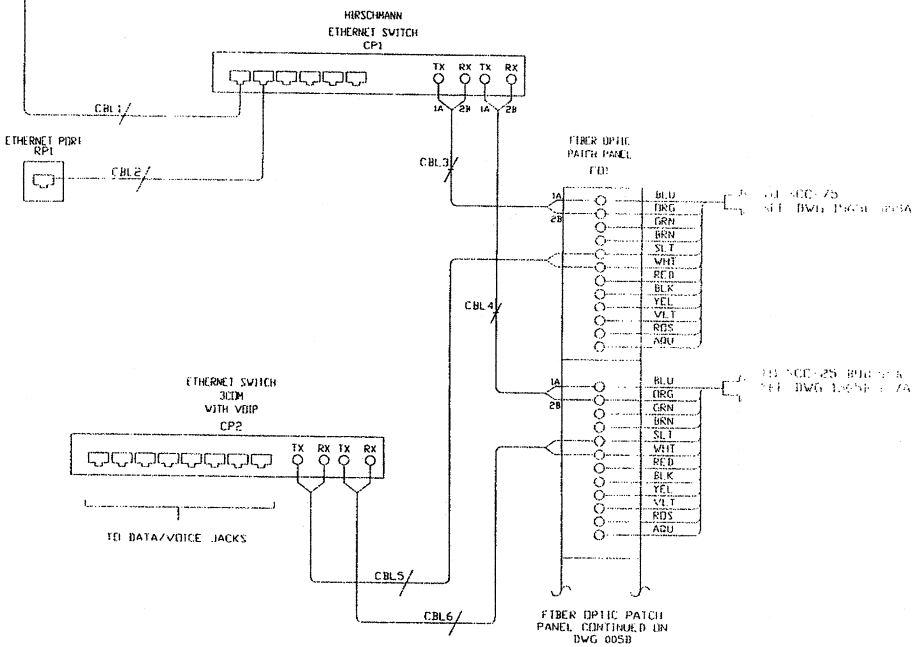
PROJ. NO.

DWG. NO. 001

Sample Exterior and Interior Layout Drawing

COMPACT LOGIX I/O SCHEDULE





QTY	TAGS	DESCRIPTION	MFG	CATALOG
	R0/S0	PLC PROCESSOR CPU, COMPACT LOGIX, 1.5MB MEMORY 120V AC	ALLEN BRADLEY	1769-L35E
	RPS0	COMPACT LOGIX POWER SUPPLY 120V AC	ALLEN BRADLEY	1769-PA4
	R0/S1 R0/S2	PLC COMM MODULE DEVICENET SCANNER	ALLEN BRADLEY	1769-SDN
	R0/S2	PLC ADDRESS RESERVE MODULE 1769 COMPACTLOGIX 5VDC 60mA	ALLEN BRADLEY	1769-ARM
	R0/S3	MODBUS INTERFACE MODULE MODBUS MASTER/SLAVE COMM. MODULE	PROSOFT	MVI69-MCM
	R0/S4 R0/S5 R0/S6	PLC ANALOG I/O MODULE 8 ANALOG INPUTS (+/-10VDC, +/-20mA) 14 BIT RESOLUTION	ALLEN BRADLEY	1769-IF8
	R0/S7 R0/S8	PLC ANALOG I/O MODULE 1769-OF8C 16 BIT RESOLUTION (8) 4-20MA	ALLEN BRADLEY	1769-OF8C
	R0/S10 R0/S11 R0/S9	PLC DIGITAL I/O MODULE 16 POINT INPUT - GENERAL PURPOSE 85-132V AC (INPUTS)	ALLEN BRADLEY	1769-IA16
	ECR0	EXPANDABLE RACK RIGHT SIDE END CAPS	ALLEN BRADLEY	1769-CRR1
	RP1	ETHERNET PORT CAT 5 RJ45 F/F BULKHEAD GRACEPORT CAT 5 LOW VOLTAGE (DATA)	GRACE ENG PRODUCTS	P-R2-B3
	CP1	MANAGED ETHERNET SWITCH / MEDIA CONVERTER RS20-0800M2M2SDAEH01.0 (2) 100BASE-FX SC FIBER OPTIC (6) 10/100 BASE-TX COPPER	HIRSCHMANN	943 434-003
	CP2	ETHERNET SWITCH 2226-PWR PLUS 10/100 AUTOSENSING WITH 3CSFP91 FIBER OPTIC TRANSCEIVER (24) 10/100 PORTS	3COM	3C16490-US
	CP2	1000BASE-SX SFP TRANSCEIVER 2226-PWR PLUS 1000BASE-SX FIBER OPTIC ETHERNET	3COM	3CSFP91
	FO1	FIBER OPTIC PATCH PANEL FTU4SP (4) ADAPTER PANELS	HUBBELL	FTU4SP
	FO1	ADAPTER MODULES BLUE 6 SC DUPLEX BULKHEADS	HUBBELL	FSPSCD6
	CBL1 CBL2	UTP PATCH CABLE PCXSE803 CAT 5E RJ45	HUBBELL	PCXSE803
	CBL3 CBL4	FIBER OPTIC PATCH CABLE 1 METER (1 PAIR) (2) FIBERS SC MM 62.5	HUBBELL	DFPCSCSCC1MM
	CBL5 CBL6	FIBER OPTIC PATCH CABLE 2 METER (1 PAIR) (2) FIBERS SC-LC MM 62.5	HUBBELL	DFPCLCSCC2MM

REVISION	
DATE	DESCRIPTION
2/21/06	RELEASE FOR CONSTRUCTION
12/7/06	A
2/15/07	ADDED

DATE LAST EDITED 01/12/2007

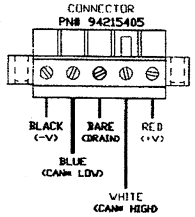
DATE	3/7/06	PROJECT
DWN	A	
CKD	K	SCC-10 PLC I/O SCHEDULE
ENGR	EA	PROJ. NO.
ASSEM.		DWG. NO. 008A
SHEET	17 OF 149	

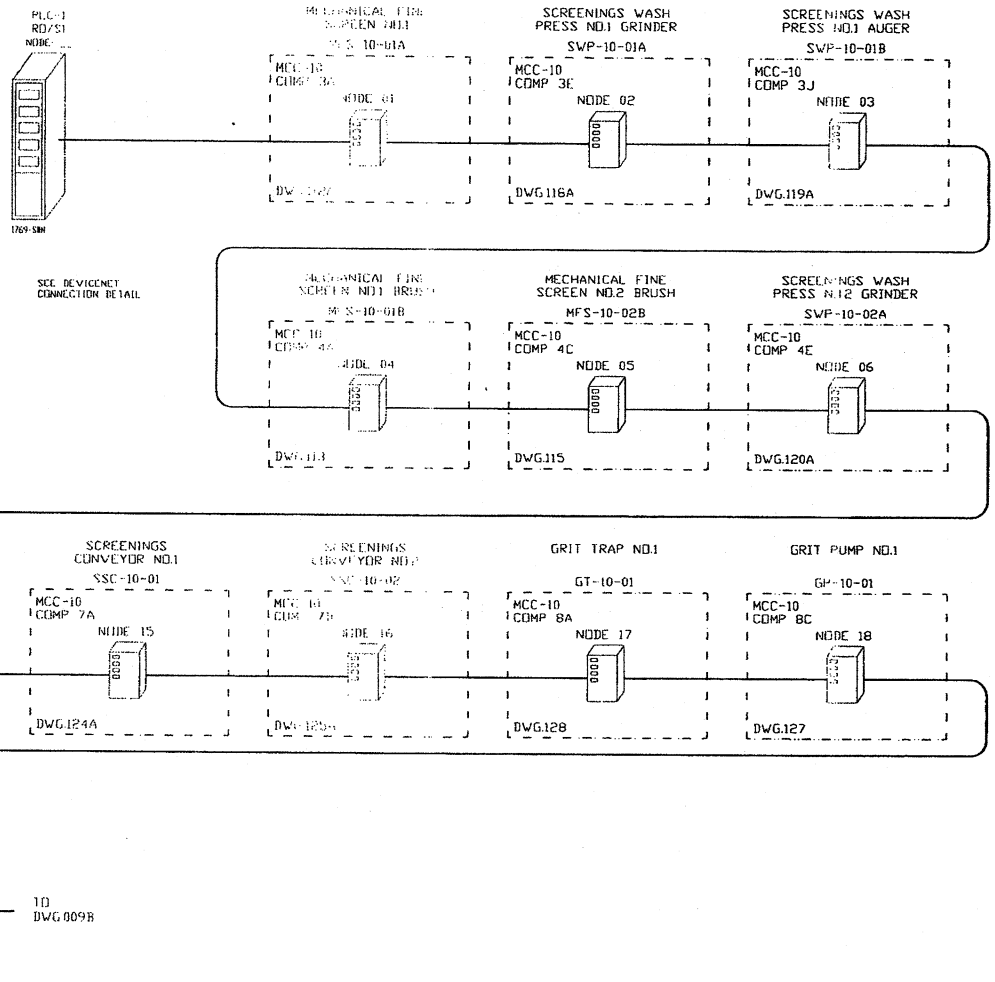
Sample Interconnection Diagram

DEVICENET CONNECTOR DETAIL

NOTE(S):

1. CAN = CONTROLLER AREA NETWORK





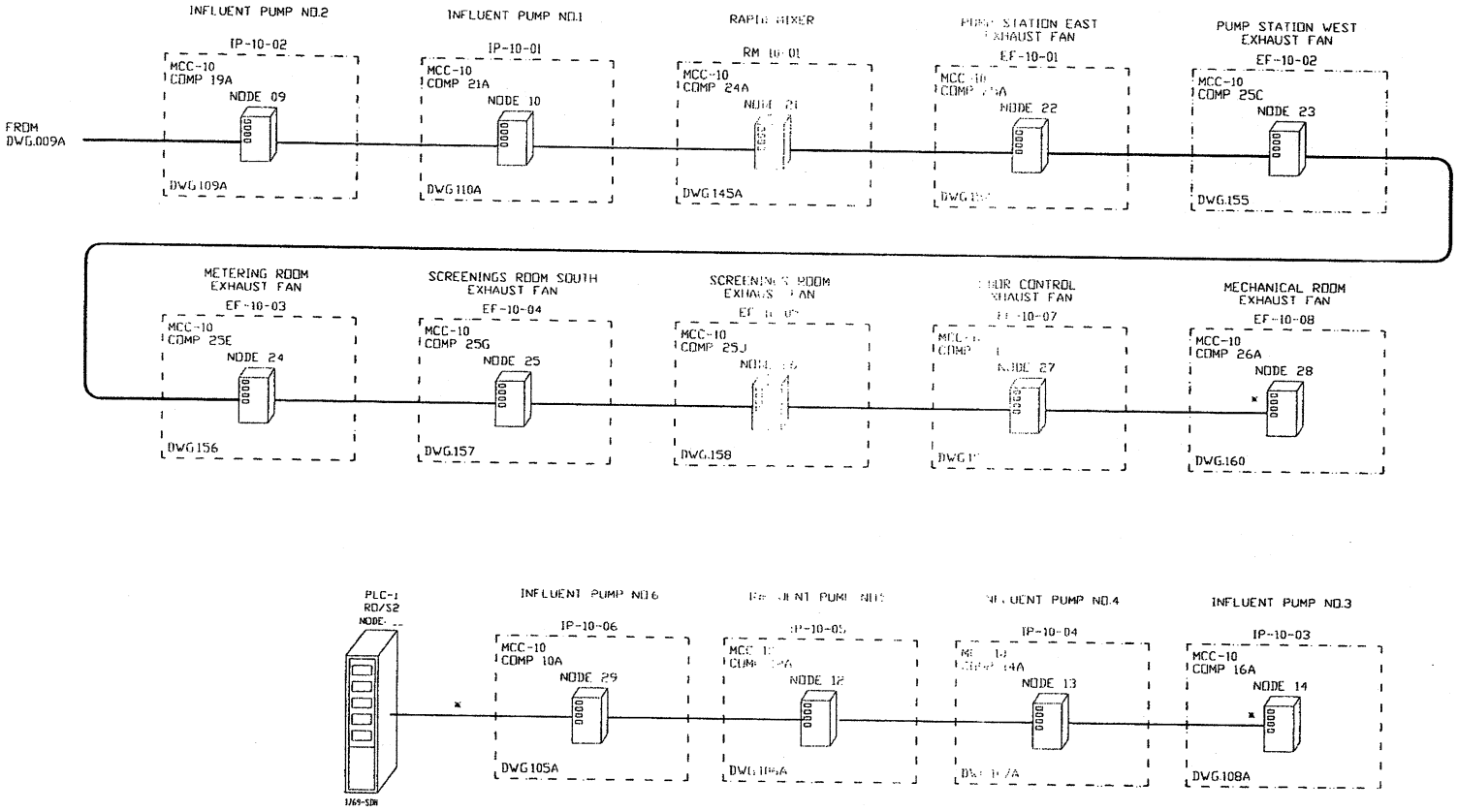
* 120 OHM TERMINATING RESISTOR REQUIRED

REVISION	
DATE	DESCRIPTION
7/15/05	RELEASE FOR CONSTRUCTION
7/5/06	AS BUILT
8/15/07	AS INSTALLED

DATE LAST EDITED 7/16/2008

DATE	3/16/06	PROJECT
DWN.	JA	
CKD.	GK	MCC-10 DEVICENET NODE ADDRESSING
ENGR.	BA	PROJ. NO.
ASSEM.		DWG. NO. 009A
SHEET	19 OF 149	

Sample Network Diagram



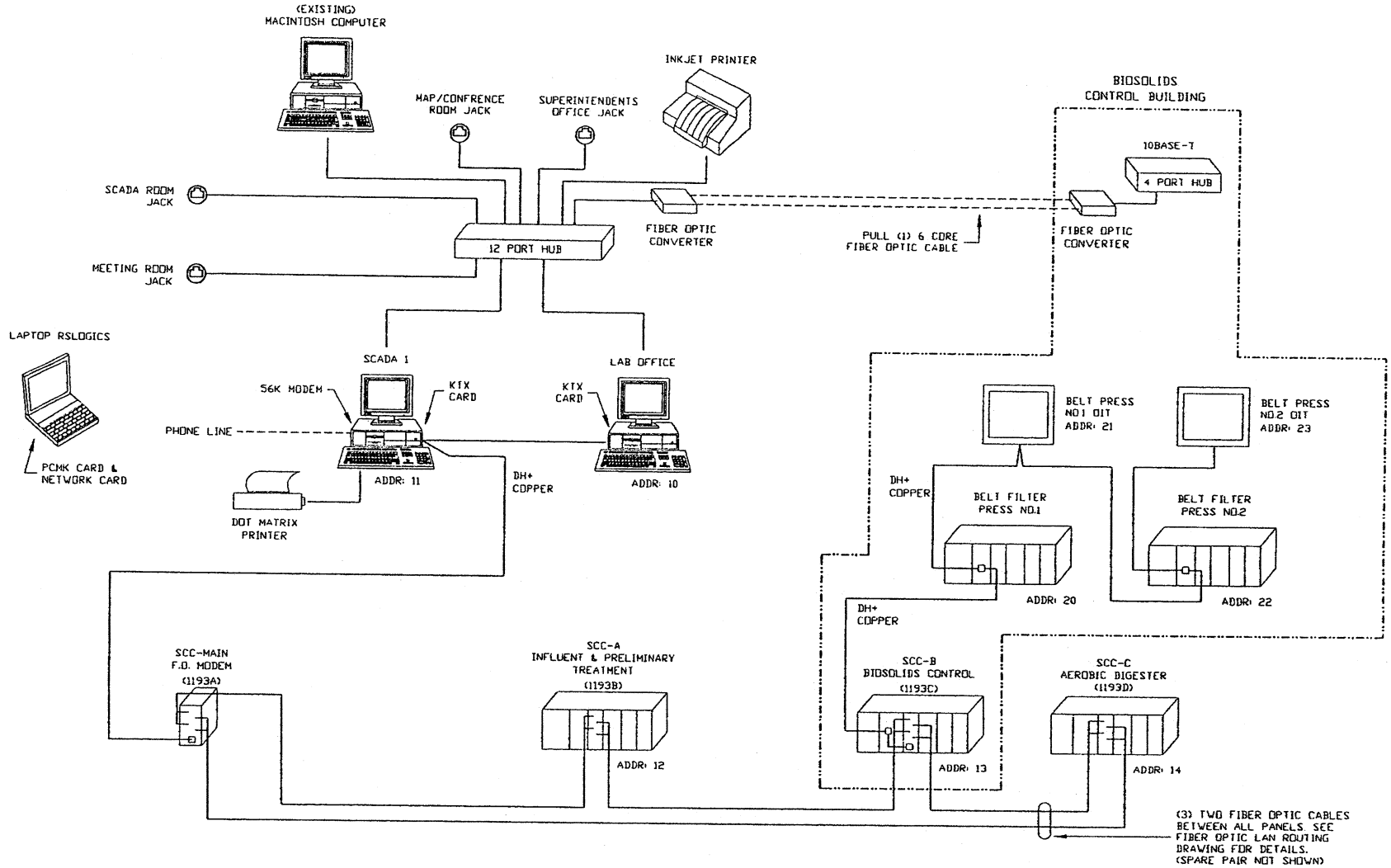
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REVISION	
DATE	DESCRIPTION
2/21/05	RELEASE FOR CONSTRUCTION
7/1/06	AS BUILT
2/15/07	AS INSTALLED

DATE LAST EDITED: 7/16/2008

DATE	3/10/06	PROJECT
DWN	JA	
CKD	GR	MCC-10 DEVICENET NODE ADDRESSING
ENGR.	BA	PROJ. NO.
ASSEM.		DWG. NO. 009B
SHEET	20 OF 149	

Sample Network Diagram



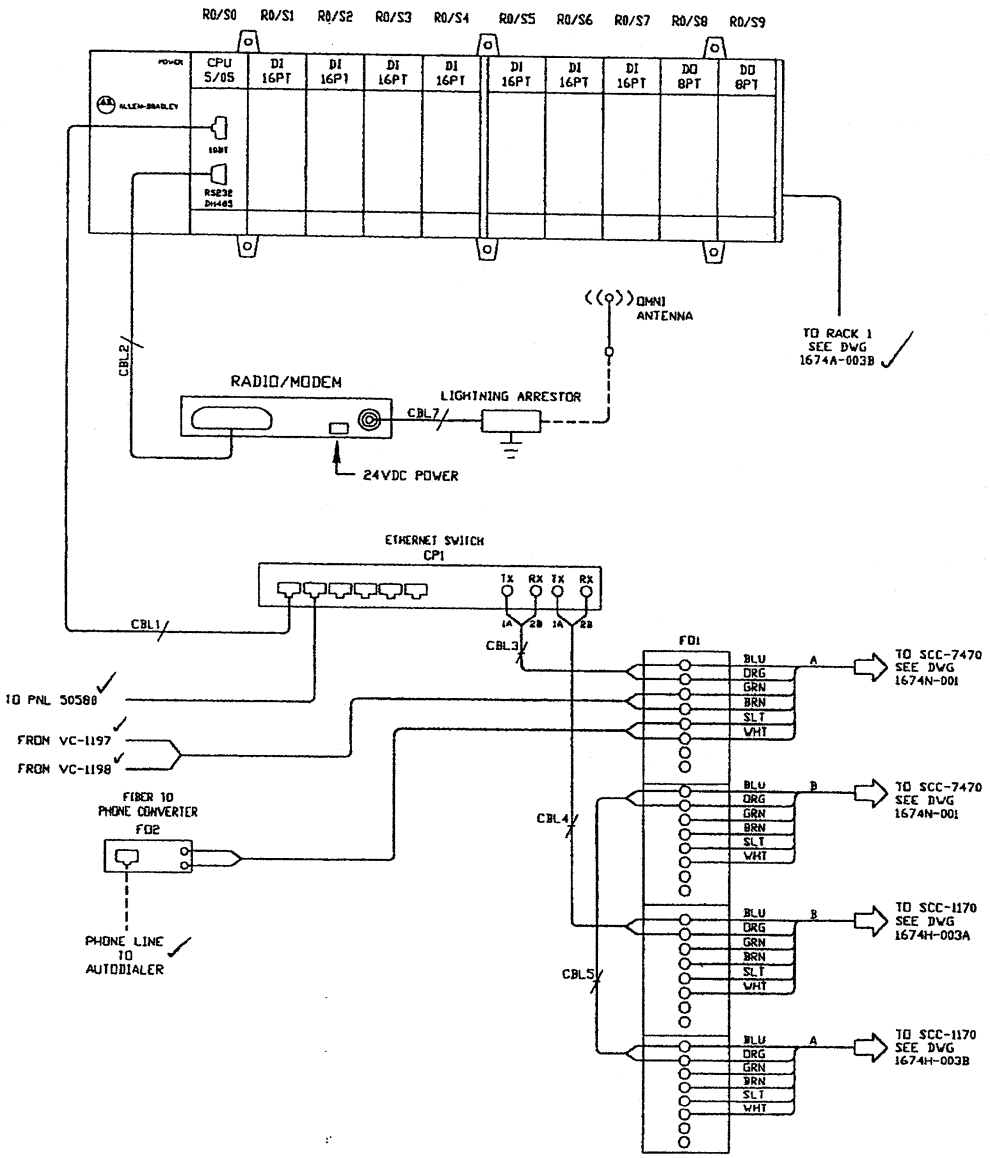
REVISION	
DATE	DESCRIPTION

DATE	3/12/01	PROJECT
DWN	JA	
CKD.	GK	SCADA SYSTEM LAYOUT
ENGR.	PS	PROJ. NO.
ASSEM.		DWG. NO. 001
SHEET	OF	

DATE LAST EDITED: 02/09/01

Sample Network Diagram

SLC500 I/O SCHEDULE



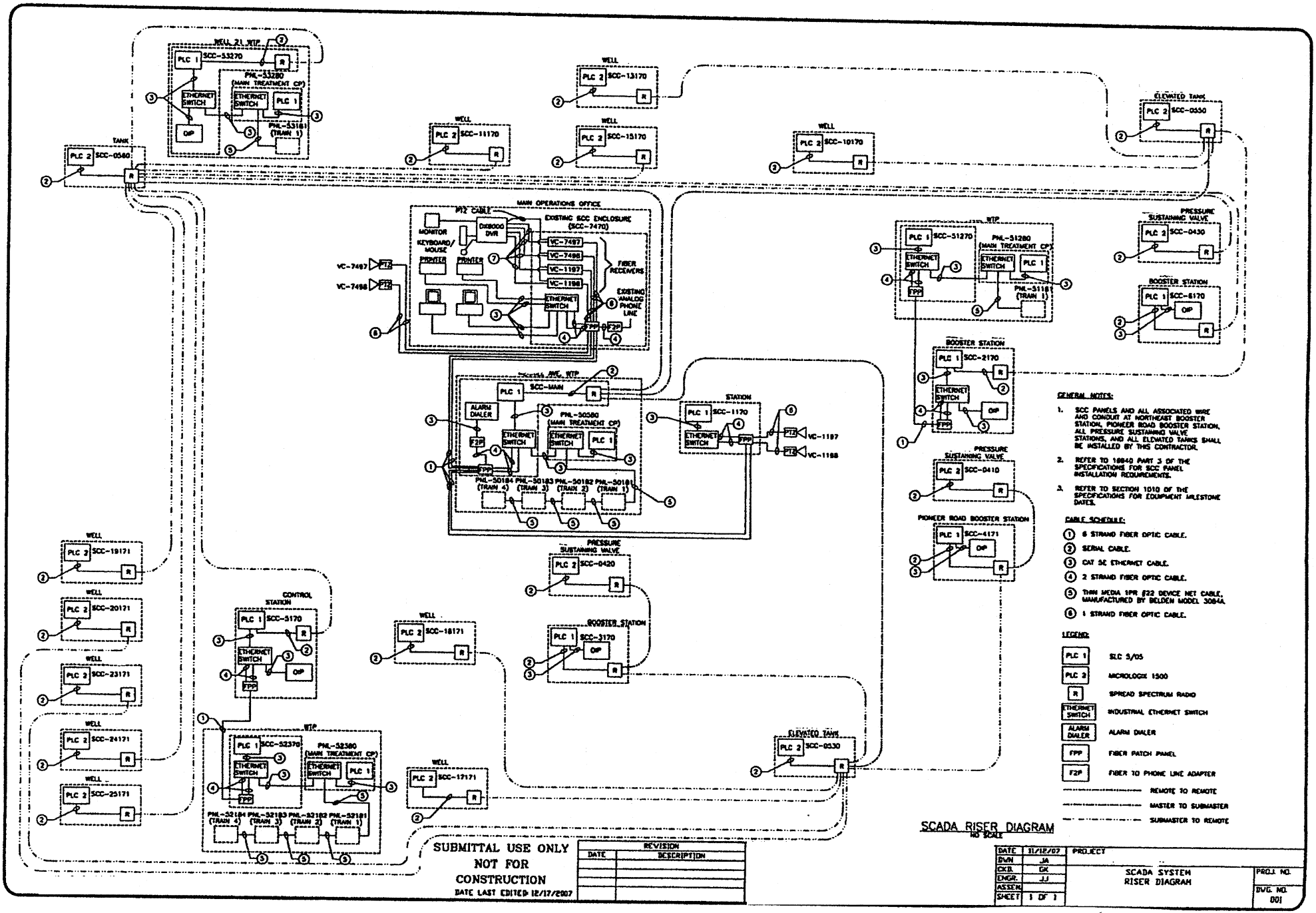
QTY	TAGS	DESCRIPTION	MFG	CATALOG
1	R0	PLC RACK 10 SLOT BASE RACK	ALLEN BRADLEY	1746-A10
1	RPS0	PLC POWER SUPPLY RACK POWER SUPPLY (5A @ 5VDC) 120/240V AC	ALLEN BRADLEY	1746-P2
1	R0/S0	PLC CPU WITH ETHERNET CPU 5/05 WITH 32K MEMORY	ALLEN BRADLEY	1747-L552
7	R0/S1 R0/S2 R0/S3 R0/S4 R0/S5 R0/S6 R0/S7	PLC DIGITAL I/O MODULE 16 POINT INPUT - GENERAL PURPOSE 85-132V AC	ALLEN BRADLEY	1746-IA16
2	R0/S8 R0/S9	PLC DIGITAL I/O MODULE 8 POINT RELAY CONTACT OUTPUT (ISOLATED) 3A @ 120V AC	ALLEN BRADLEY	1746-OX8
1	CP1	8 PORT ETHERNET HUB RS20-0800M2M2DAEHH01.0 10/100 MBIT/S AUTOSENSING (2) SC DUPLEX FIBER OPTIC (6) RJ45 PORTS	HIRSCHMANN	943 434-021
1	FD1	FIBER OPTIC PATCH PANEL, BLACK SWIC3-M	SIEMON COMPANY	SWIC3-M-01
4	FD1	ST BULKHEAD CONNECTOR MODULE RIC-F-SC8-01	SIEMON COMPANY	RIC-F-SC8-01
1	FD2	TELEPHONE LINE EXTENDER 86 SERIES 12VAC 500mA N/A N/A	AMERICAN FIBERTEK	MT-86CC
1	CBL1	UTP PATCH CABLE PCXSE CAT 5E RJ45	HUBBELL	PCX5EB03
1	CBL2	SERIAL COMMUNICATIONS CABLE 1001 3 FEET DB9F/DB9M STRAIGHT THROUGH	CABLE WHOLESALE	1001-03203
3	CBL3 CBL4 CBL5	FIBER OPTIC PATCH CABLE 1 METER (1 PAIR) (2) FIBERS SC MM 62.5 SC MM 62.5	HUBBELL	DFPCSCSCC1MM
1	CBL7	ANTENNA CABLE RG142B/U RG142 - 3FT LENGTH NMALE - TNC	TESSCO	448350

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DATE LAST EDITED: 12/6/2007

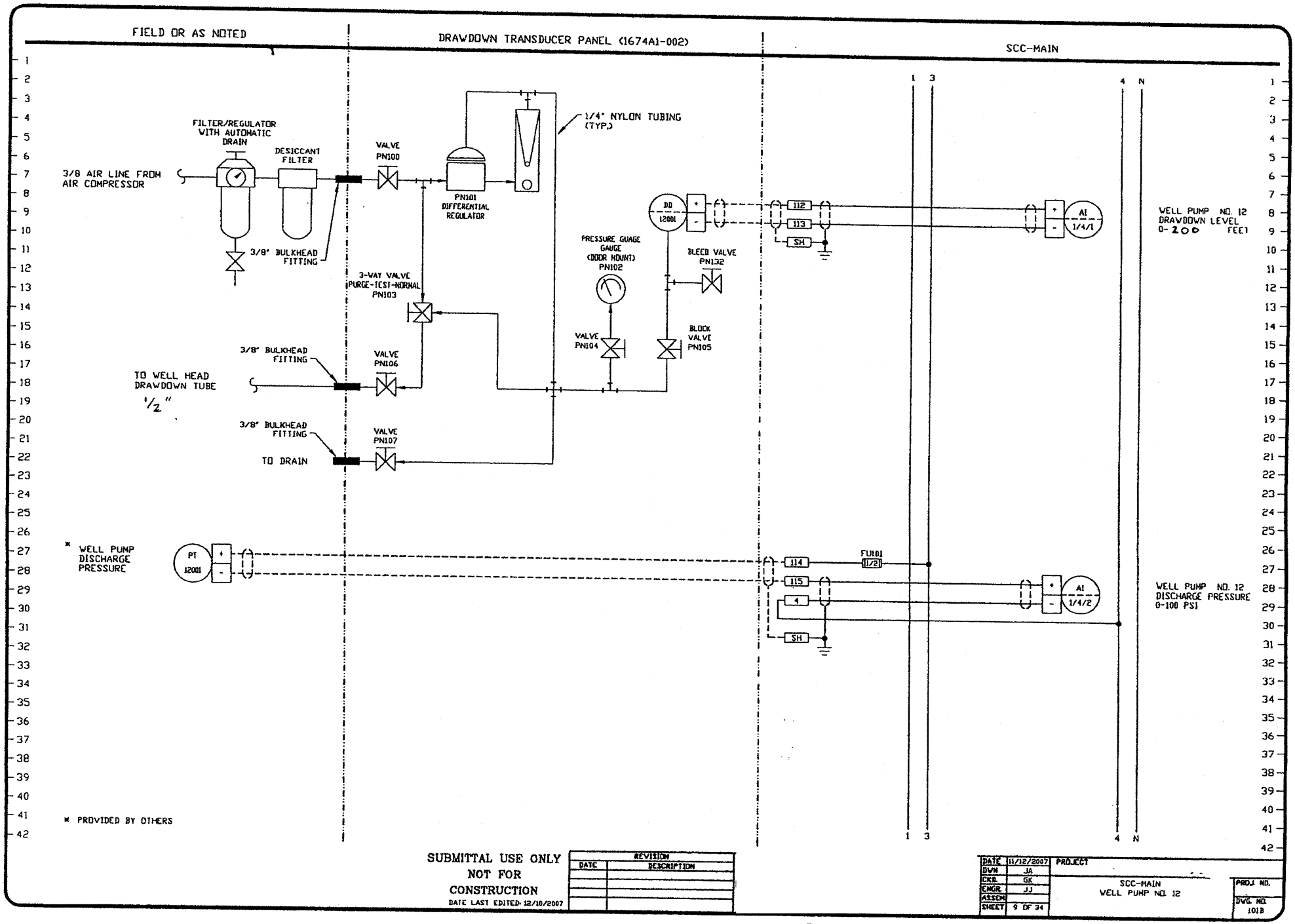
REVISION	
DATE	DESCRIPTION

DATE	01/12/2007	PROJECT
DWN	JA	
CKD.	GK	SCC-MAIN PLC I/O SCHEDULE
ENGR.	JJ	
ASSGN.		
SHEET	3 OF 34	DWG. NO. 003A

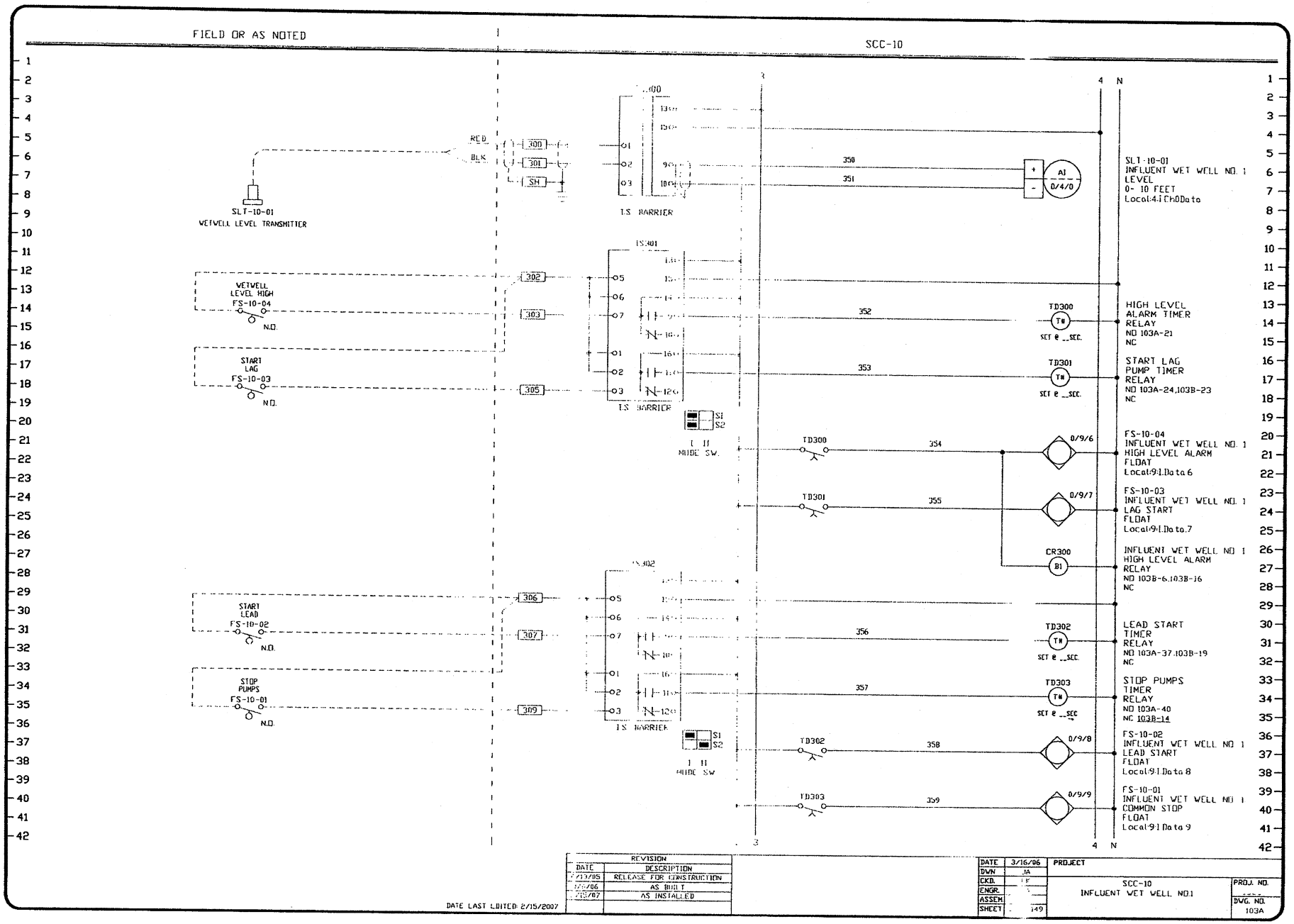
Sample Interconnection Diagram



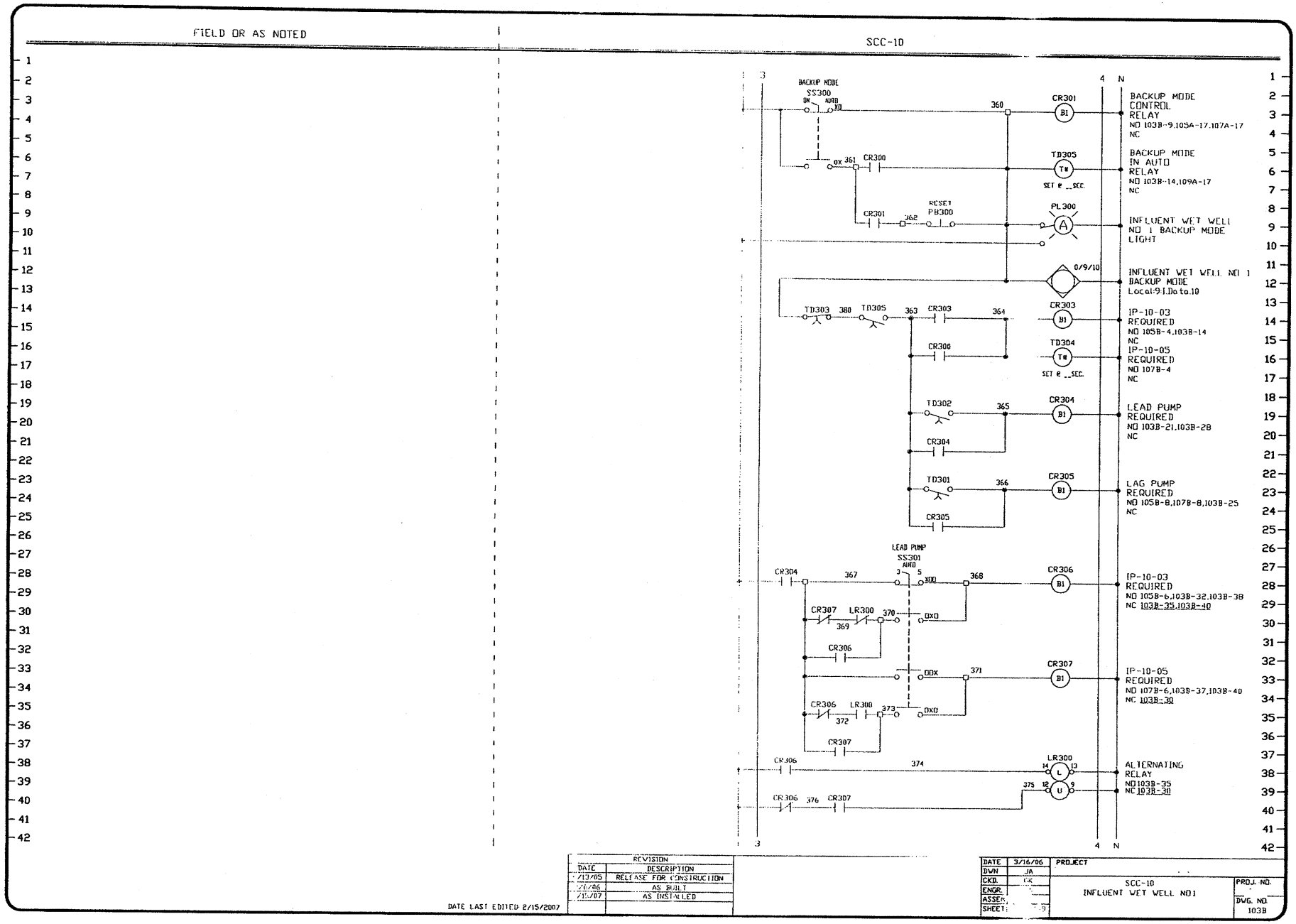
Sample Interconnection Diagram



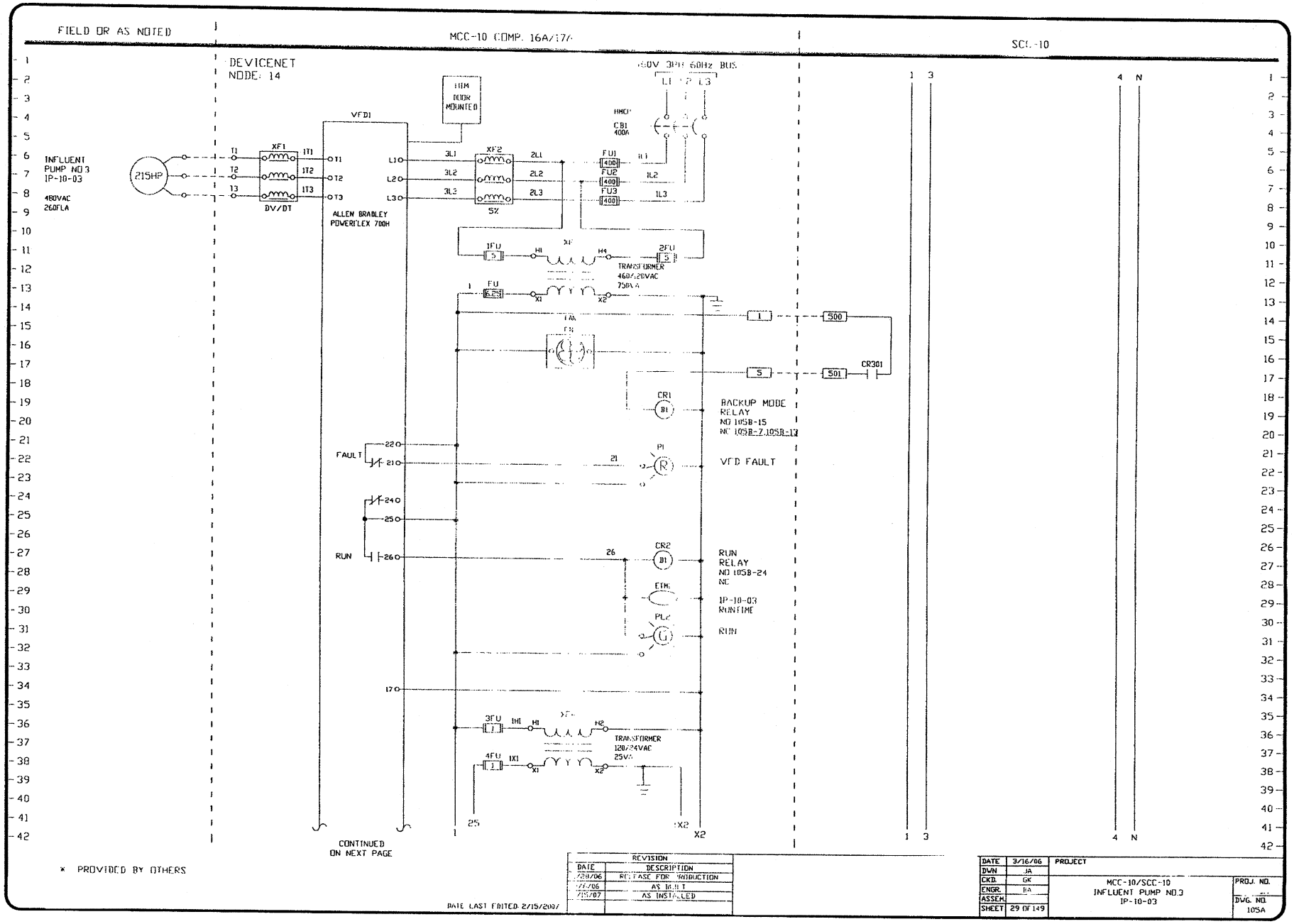
Sample Elementary schematic



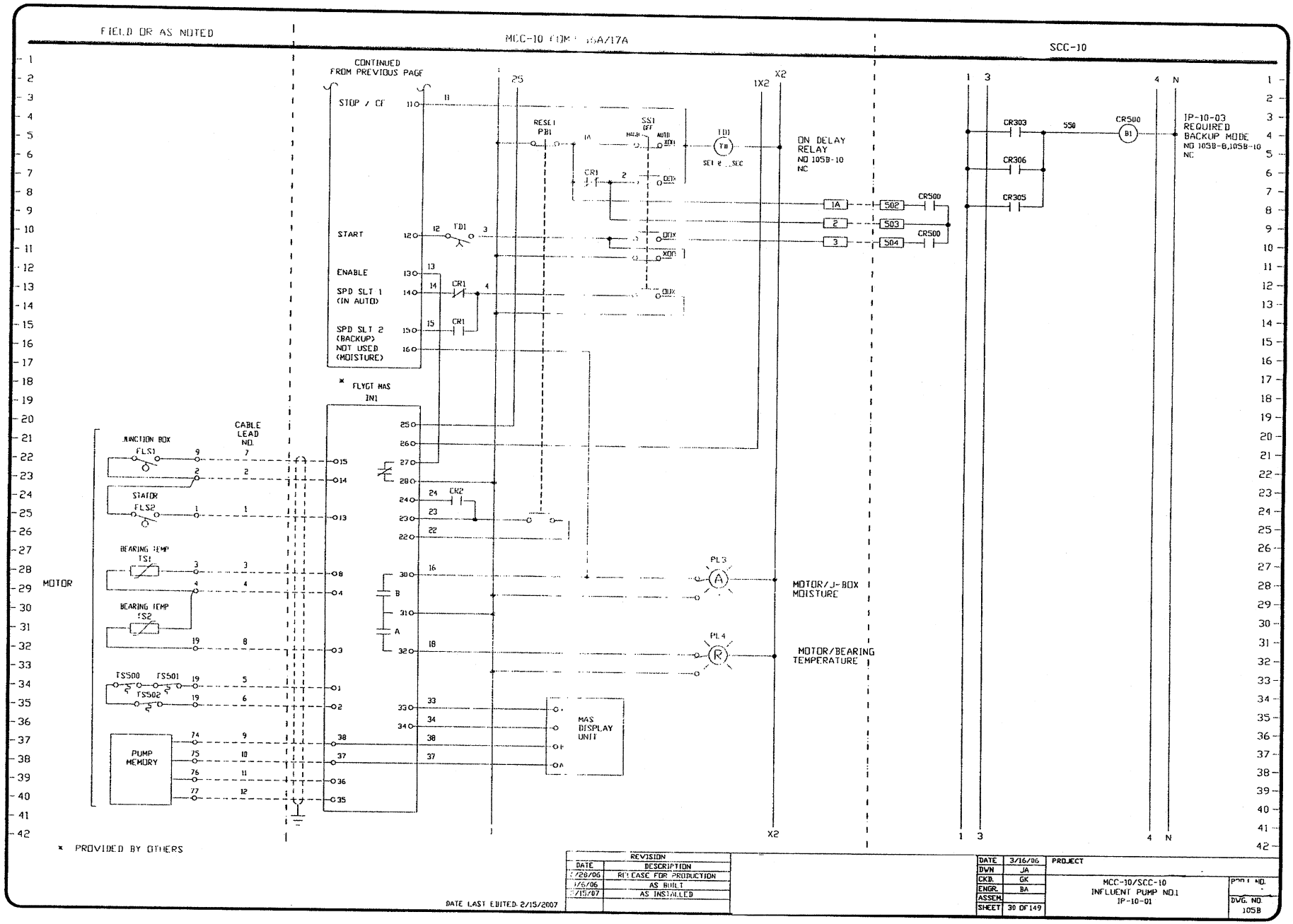
Sample Elementary schematic



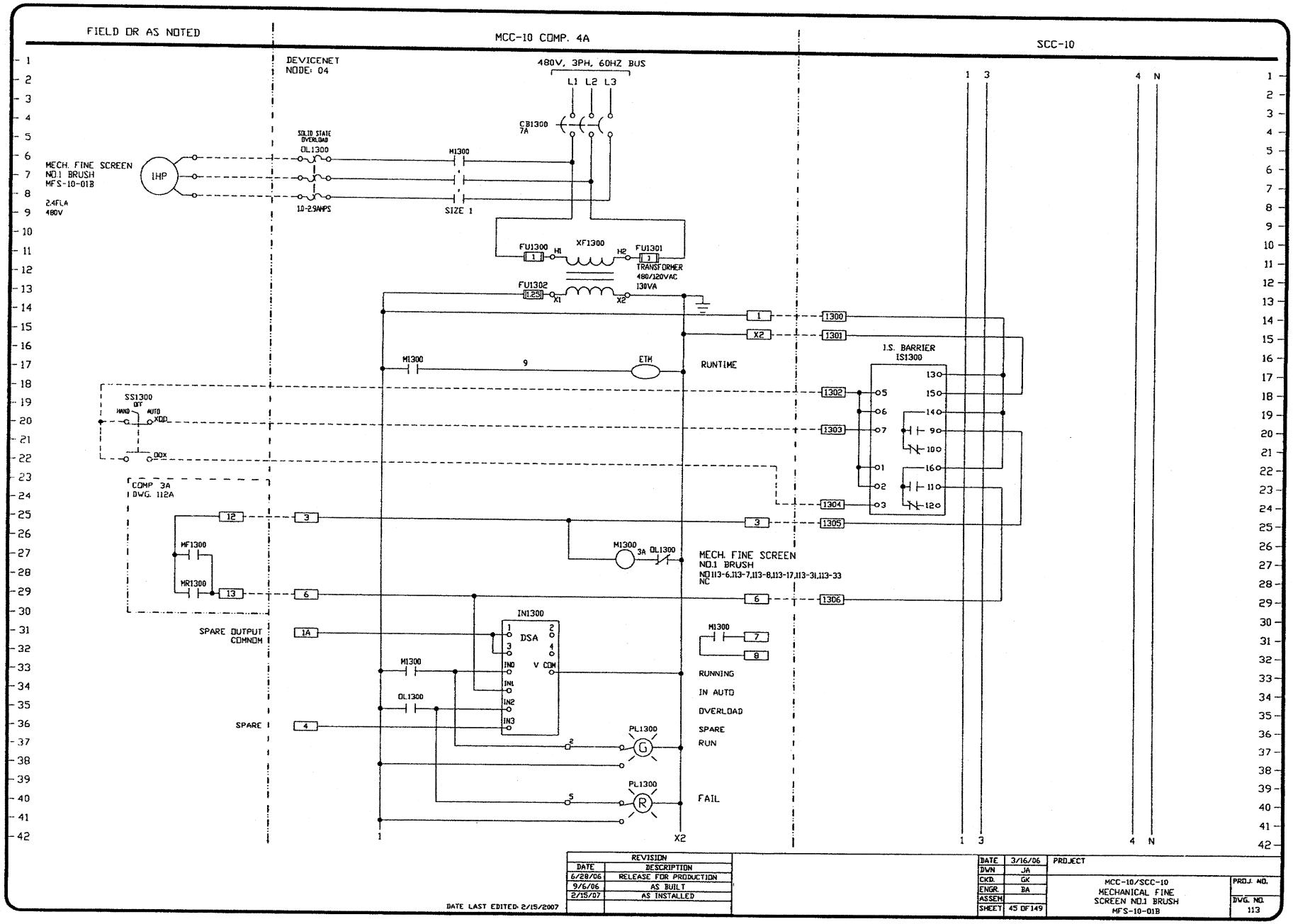
Sample Elementary Schematic



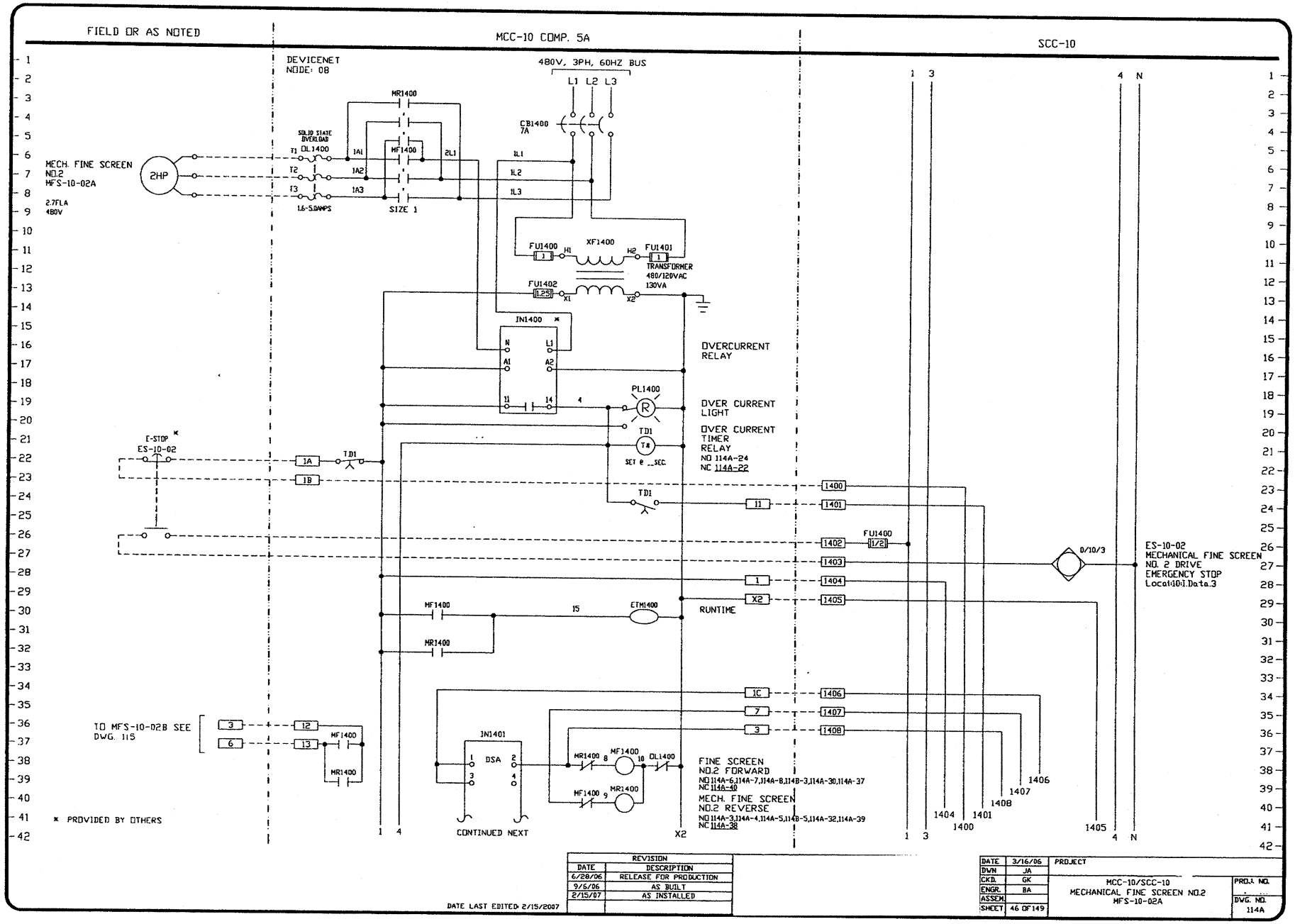
Sample Elementary schematic



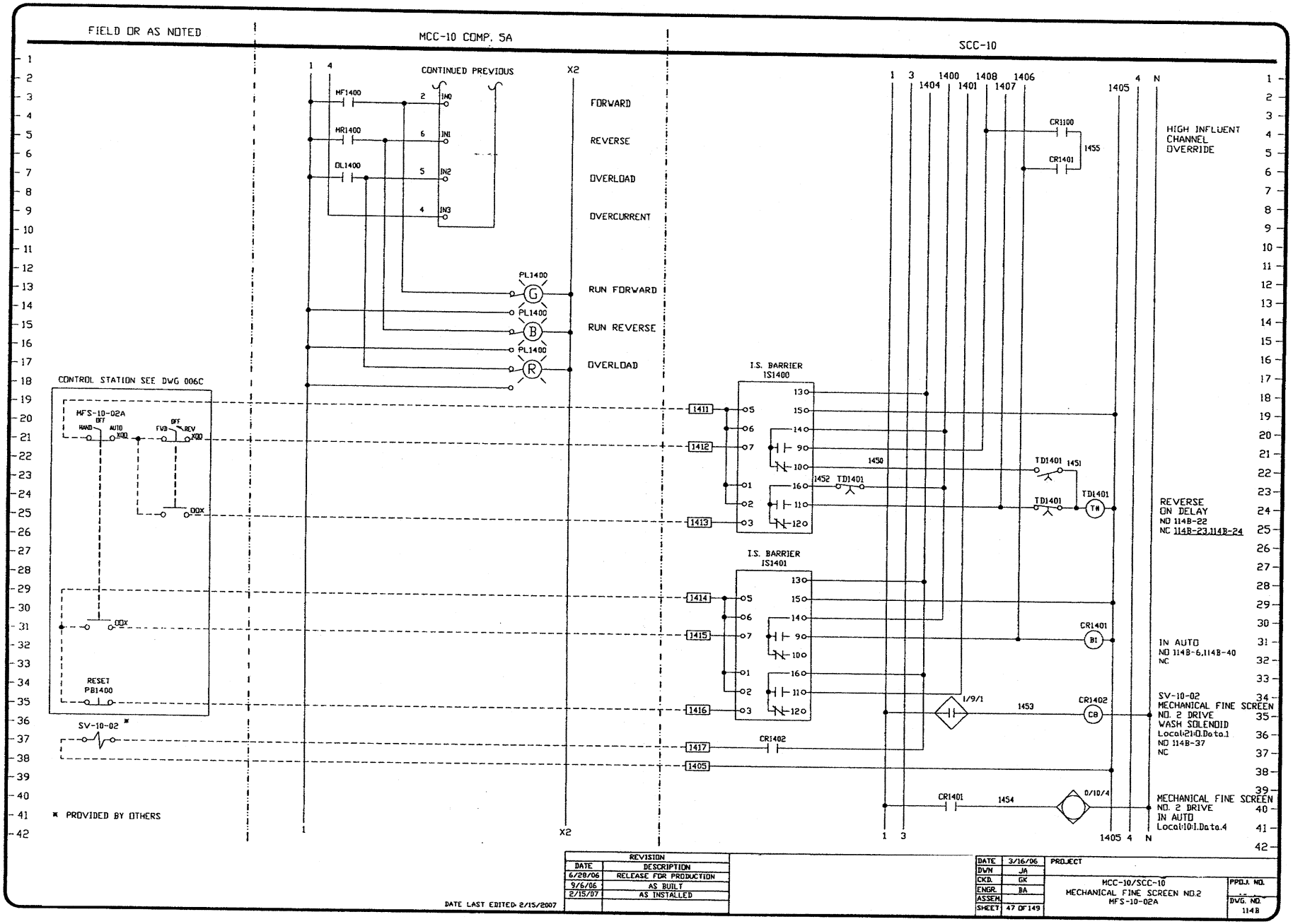
Sample Elementary Schematic



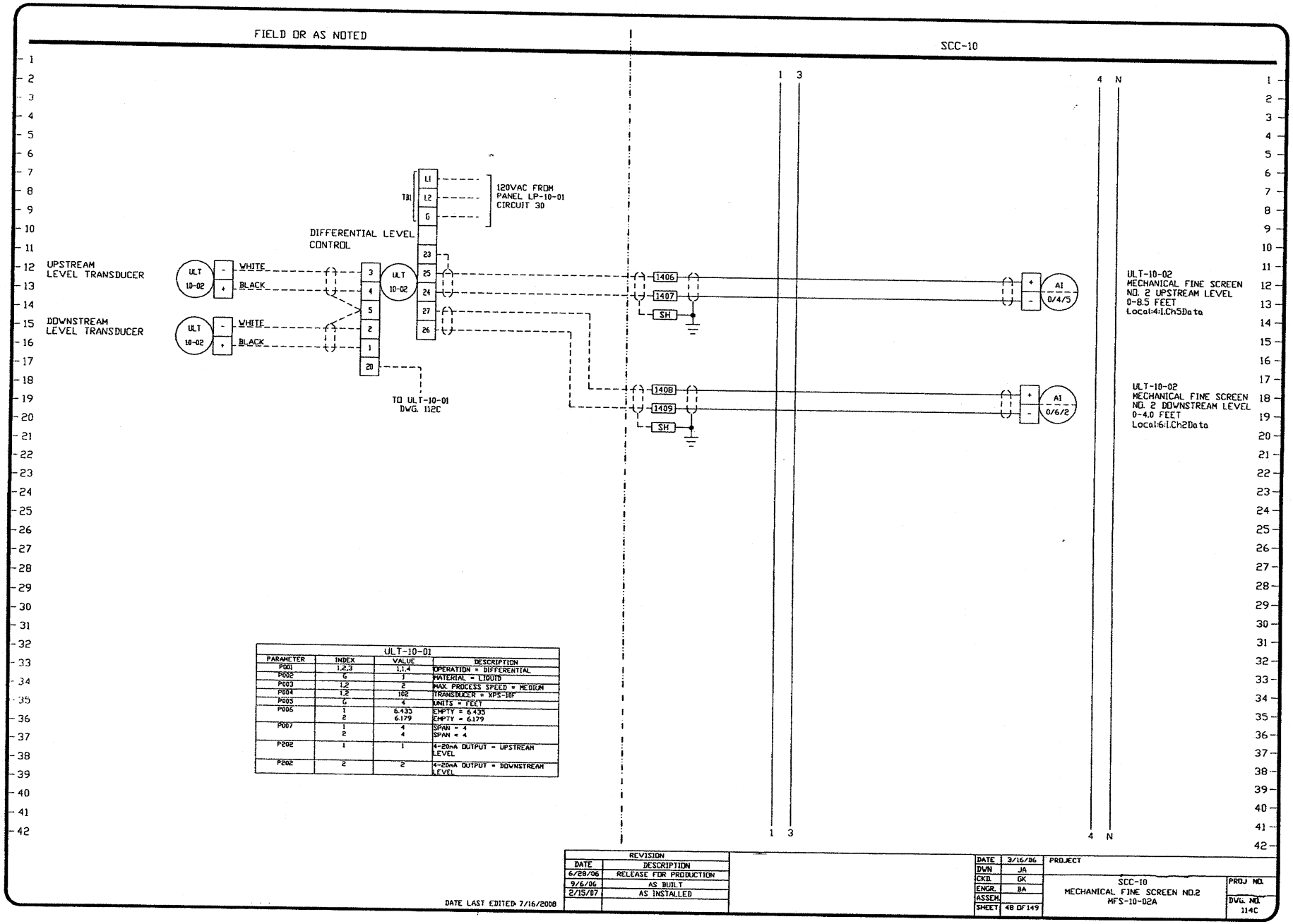
Sample Elementary schematic



Sample Elementary Schematic



Sample Elementary Schematic



ULT-10-01

PARAMETER	INDEX	VALUE	DESCRIPTION
P001	1,2,3	1,1,4	OPERATION = DIFFERENTIAL
P002	G	1	MATERIAL = LIQUID
P003	1,2	2	MAX. PROCESS SPEED = MEDIUM
P004	1,2	102	TRANSDUCER = XPS-10F
P005	G	4	UNITS = FEET
P006	1	6.435	EMPTY = 6.435
	2	6.179	EMPTY = 6.179
P007	1	4	SPAN = 4
	2	4	SPAN = 4
P202	1	1	4-20mA OUTPUT = UPSTREAM LEVEL
P202	2	2	4-20mA OUTPUT = DOWNSTREAM LEVEL

REVISION	
DATE	DESCRIPTION
6/28/06	RELEASE FOR PRODUCTION
9/6/06	AS BUILT
2/15/07	AS INSTALLED

DATE LAST EDITED: 7/16/2008

DATE	3/16/06
DWN	JA
CKD.	GK
ENGR.	BA
ASSEM.	
SHEET	48 OF 149

PROJECT

SCC-10
MECHANICAL FINE SCREEN NO.2
MFS-10-02A

PROJ NO.

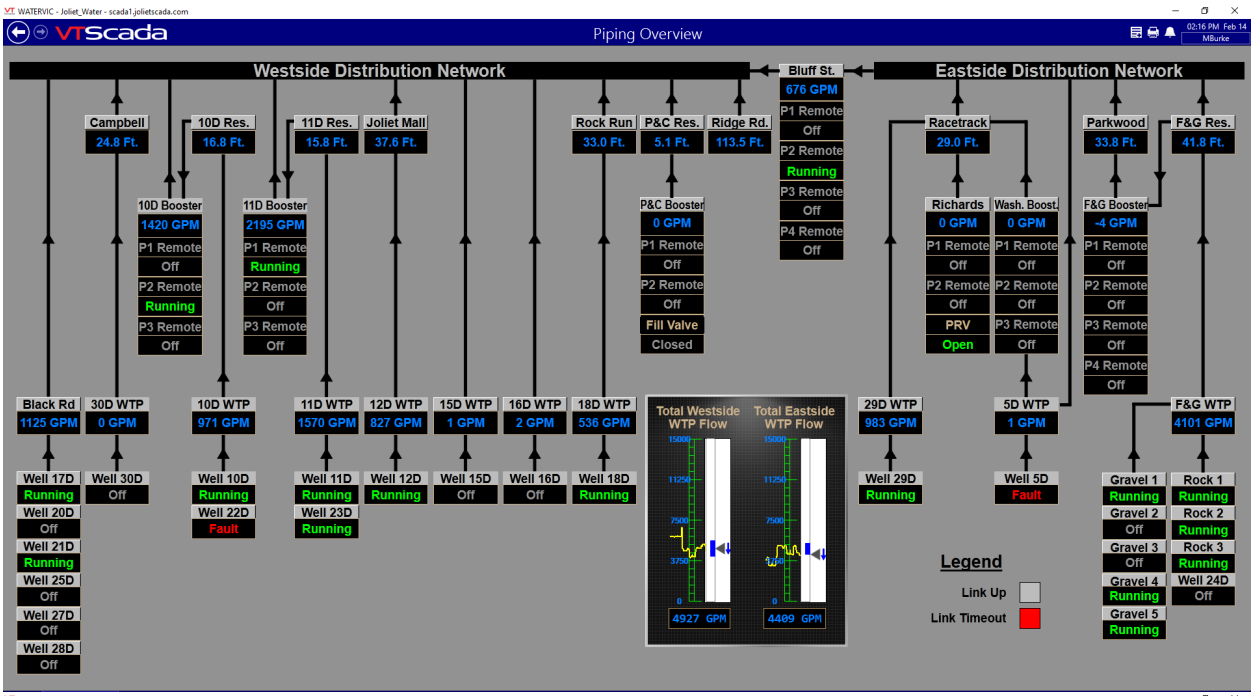
DWG. NO. 114C

Sample Elementary Schematic

APPENDIX

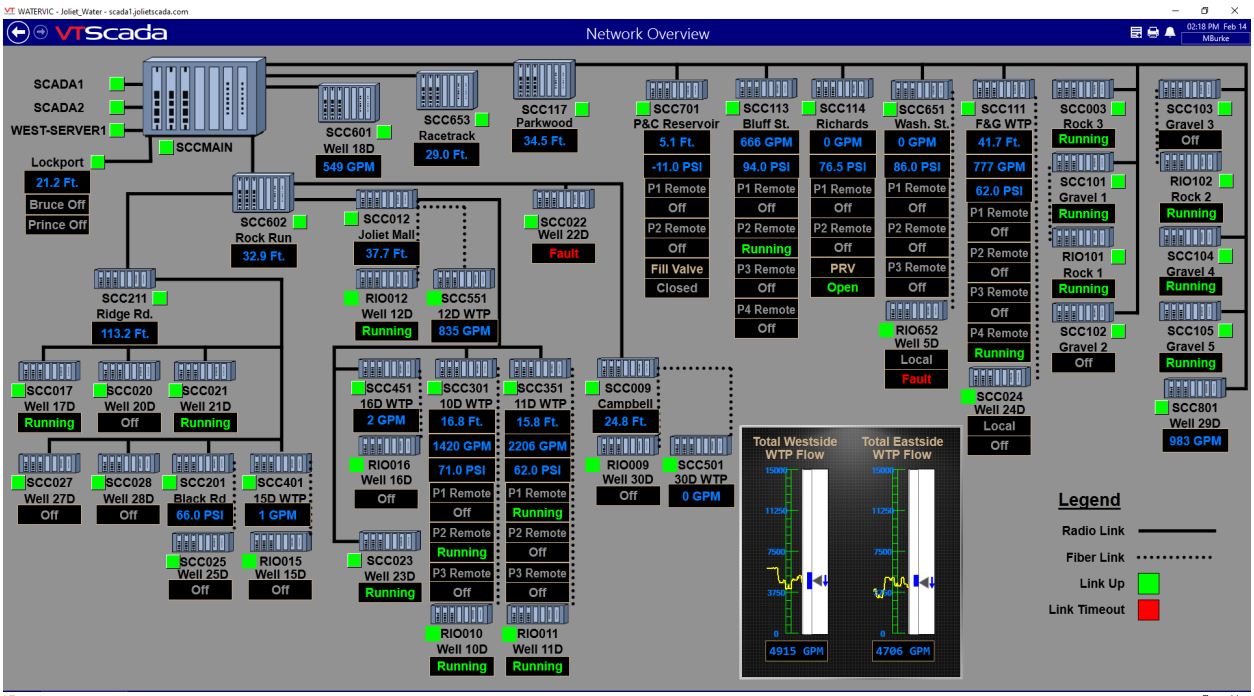
EXISTING VT SCADA GRAPHICS

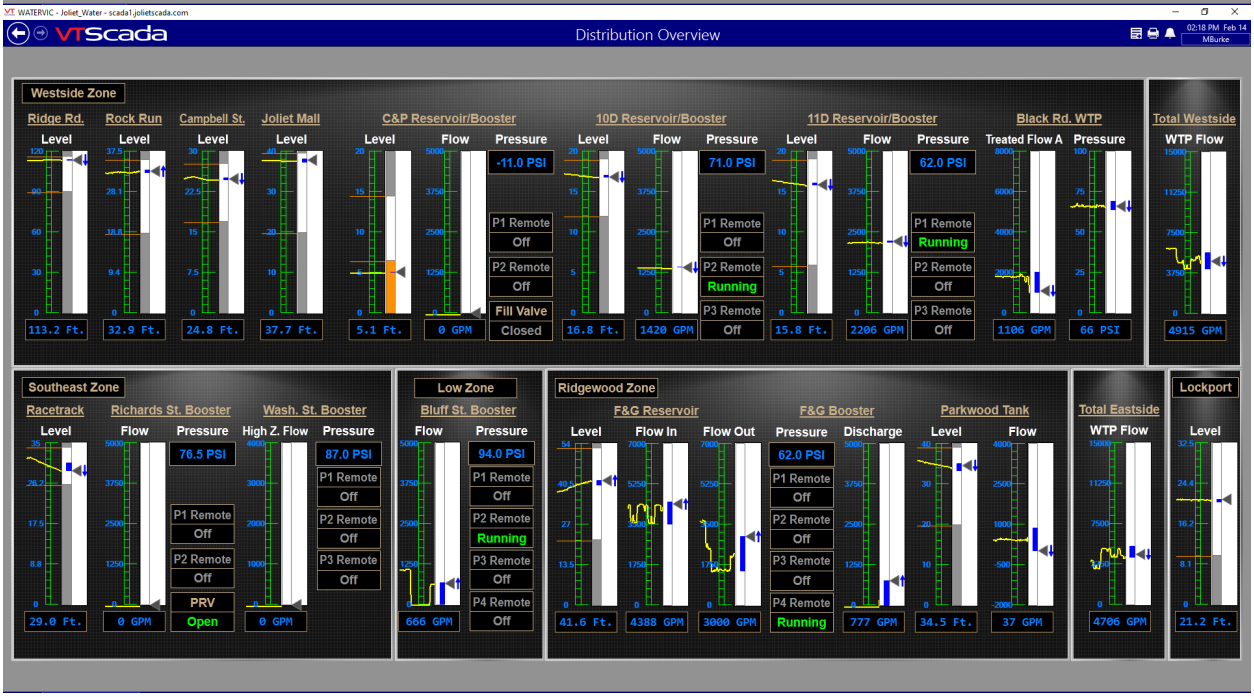
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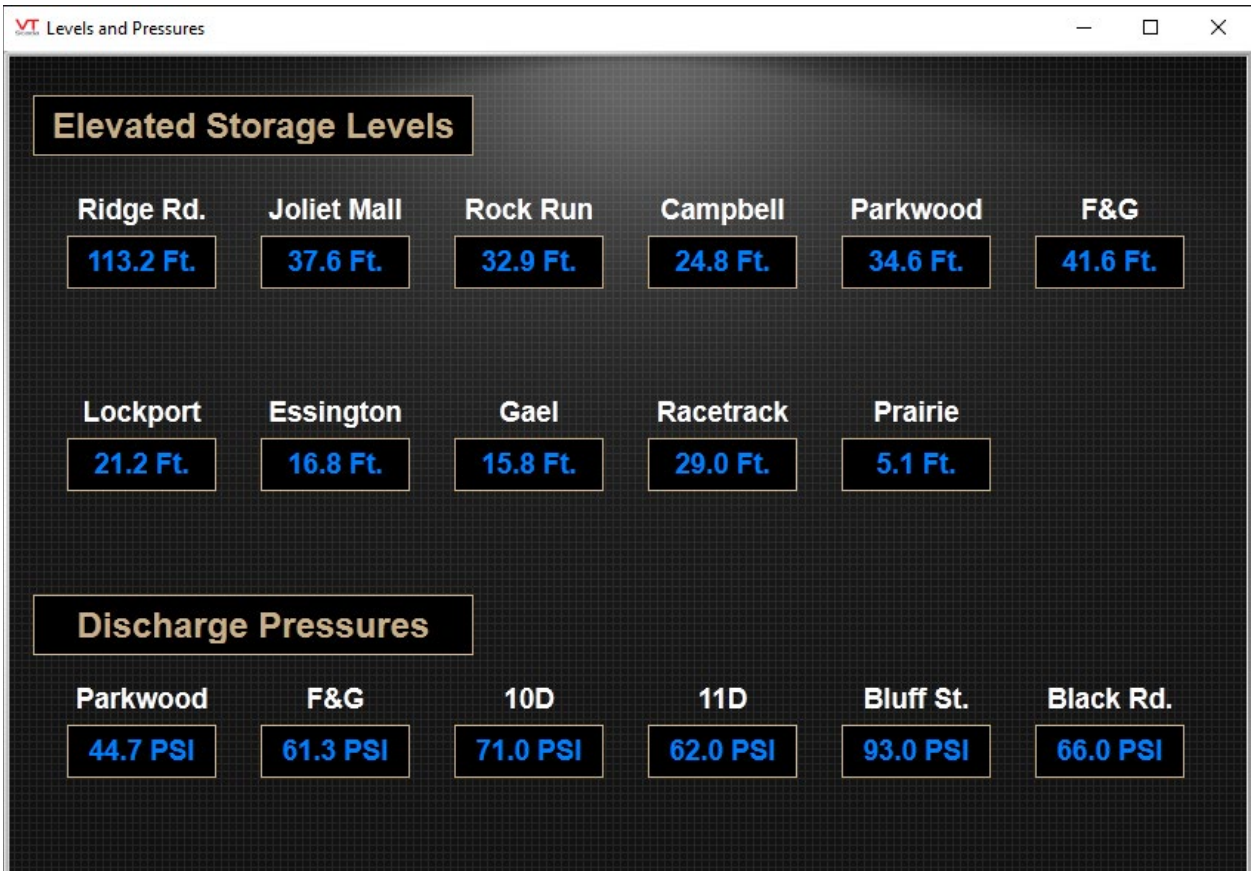


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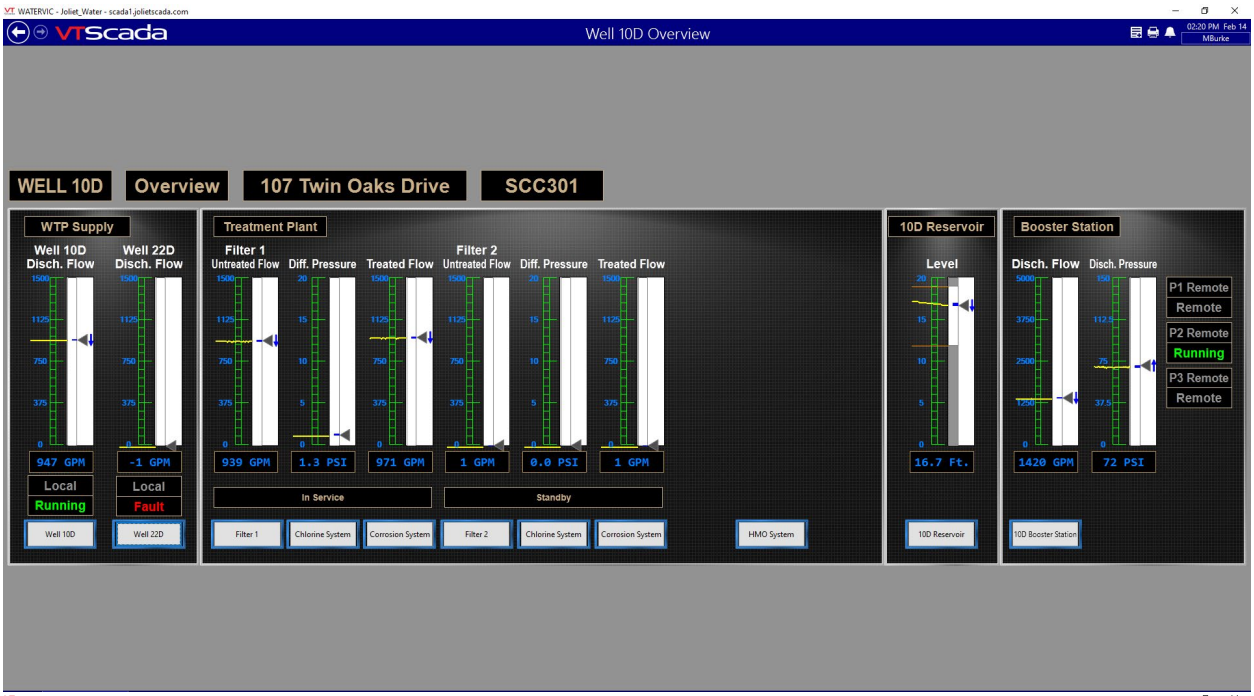
OWNER'S EXISTING VT SCADA GRAPHICS



OWNER'S EXISTING VT SCADA GRAPHICS

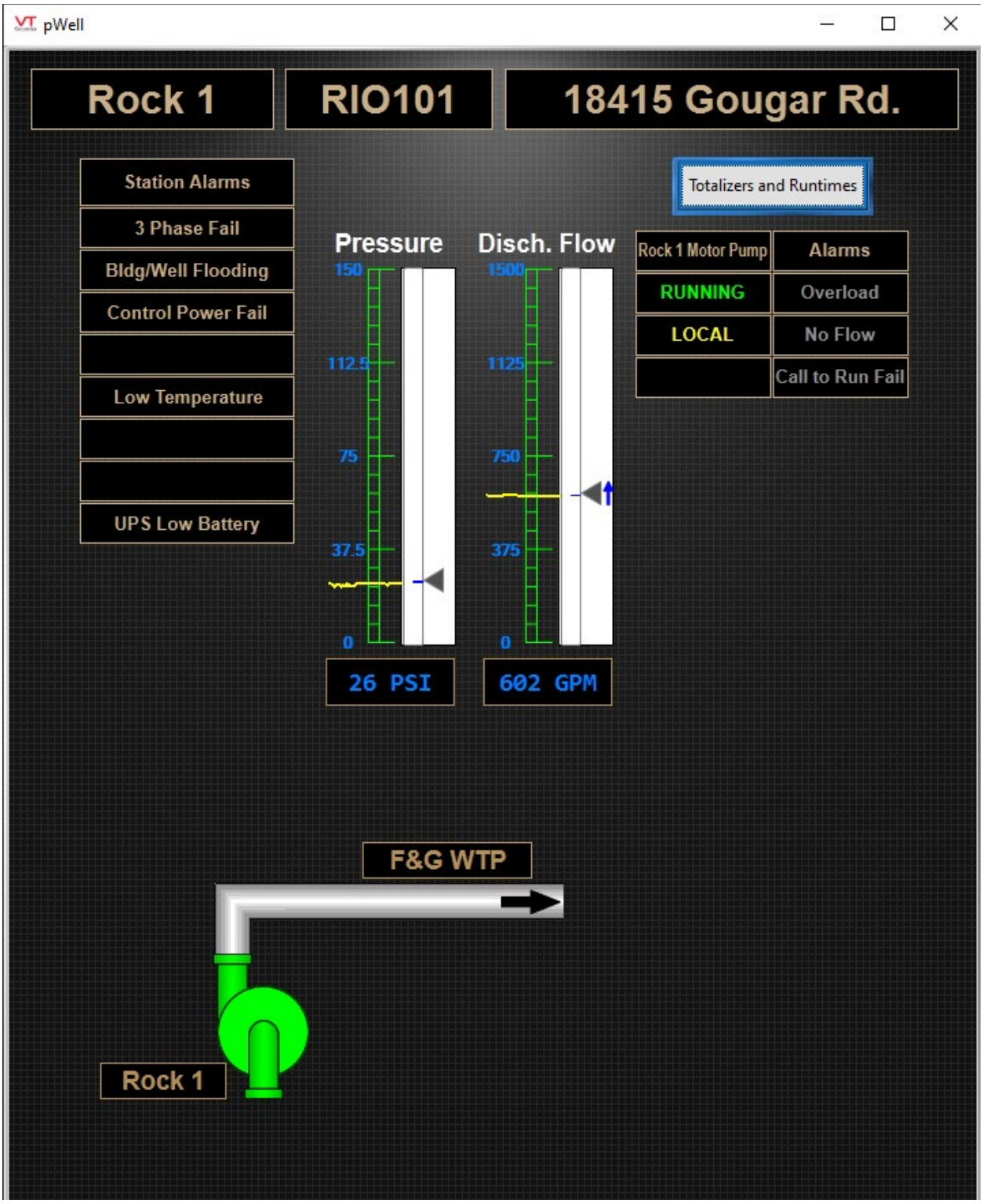


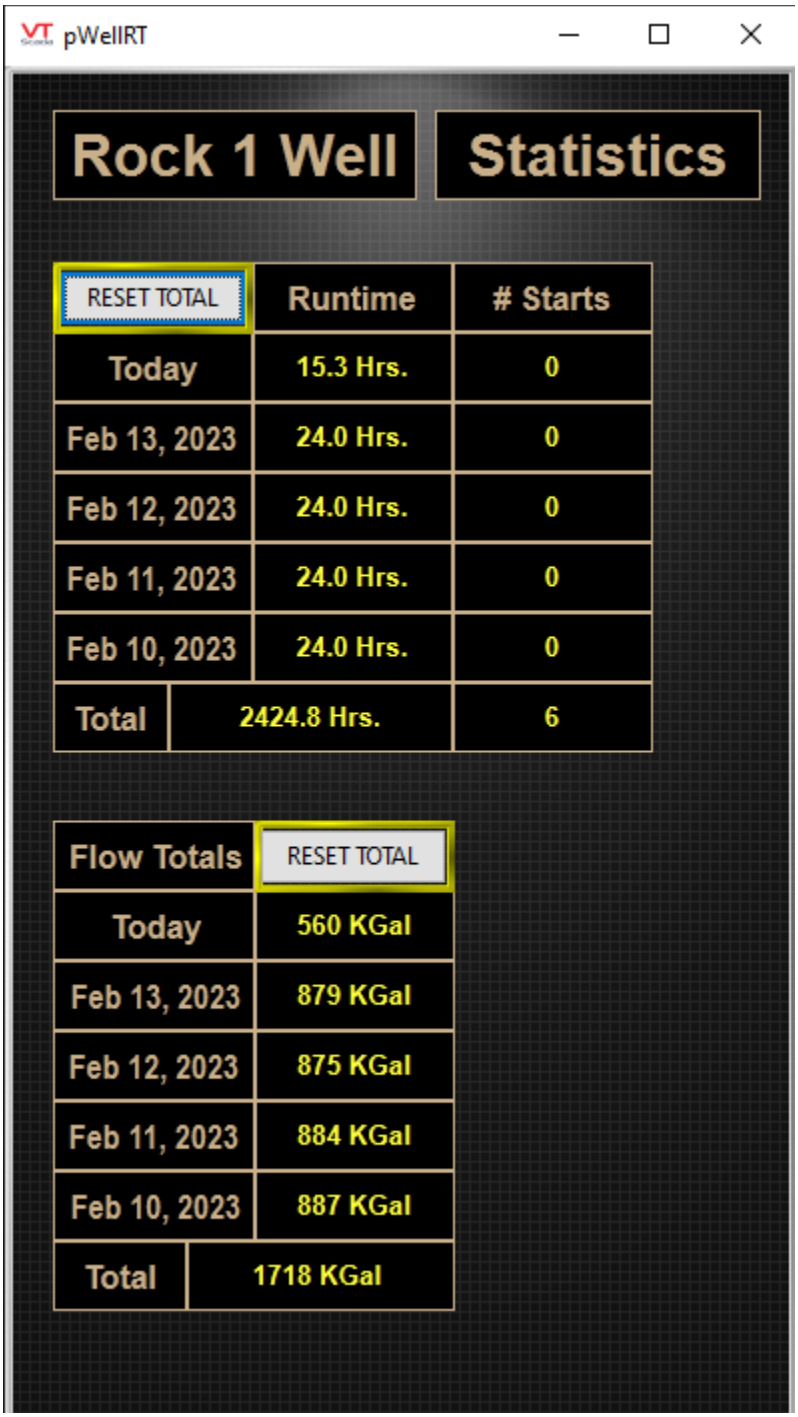
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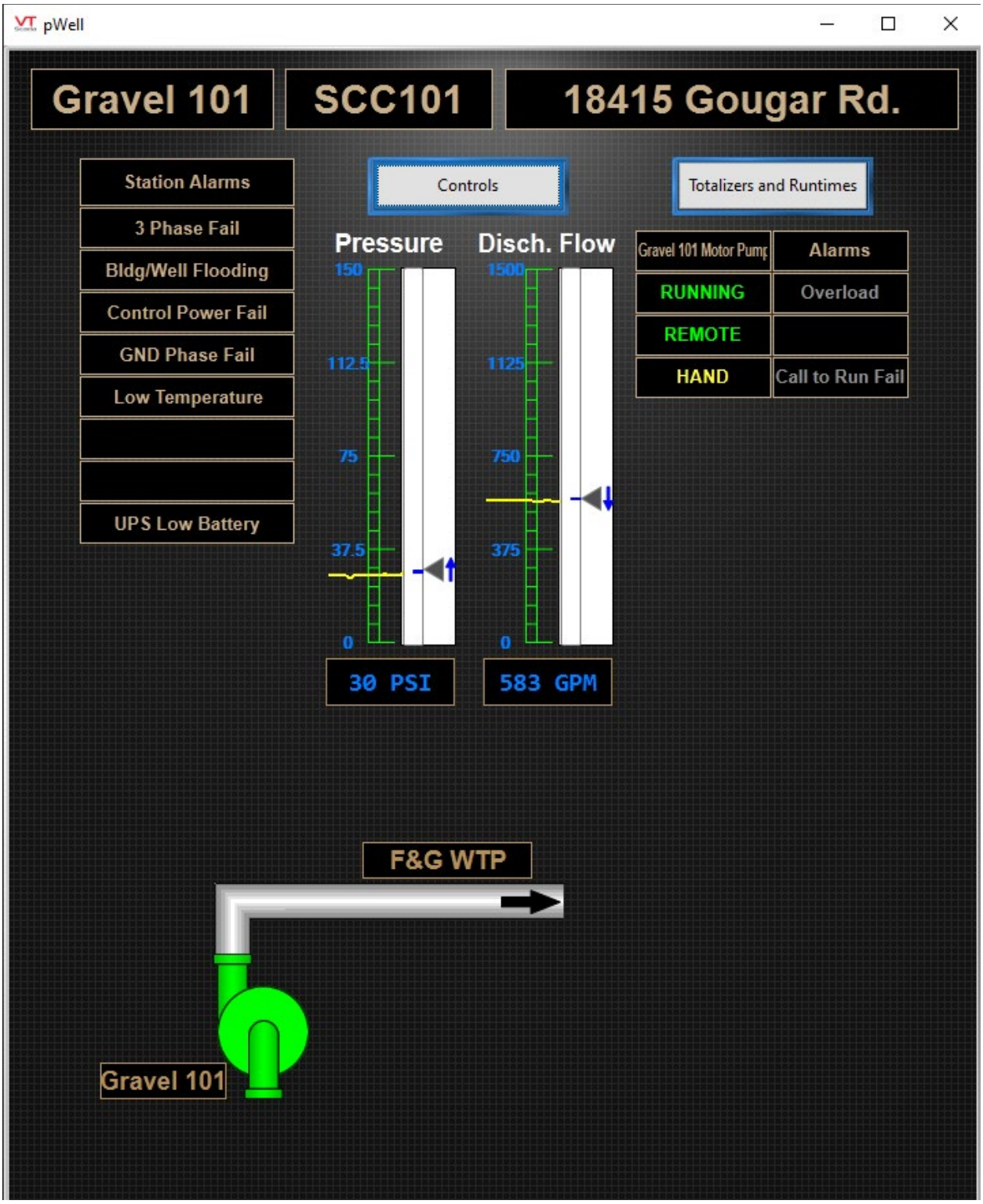


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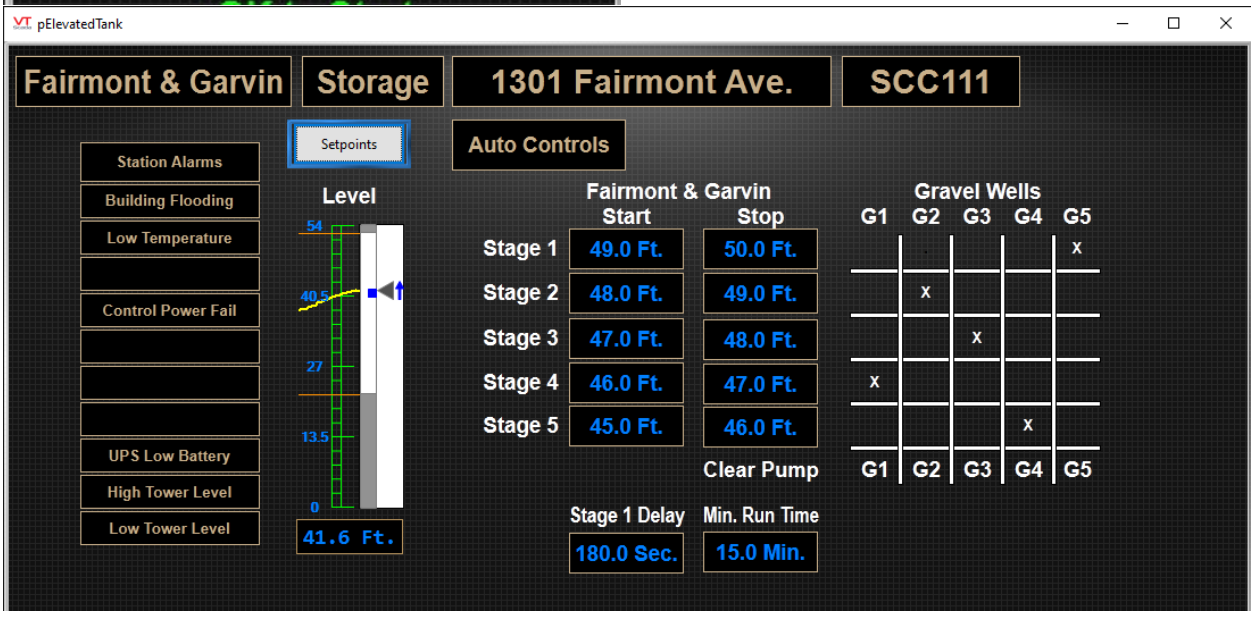

pWellRT
Rock 1 Well
Statistics
RESET TOTAL
Runtime
Starts
Today
15.3 Hrs.
0
Feb 13, 2023
24.0 Hrs.
0
Feb 12, 2023
24.0 Hrs.
0
Feb 11, 2023
24.0 Hrs.
0
Feb 10, 2023
24.0 Hrs.
0
Total
2424.8 Hrs.
6
Flow Totals
RESET TOTAL
Today
560 KGal
Feb 13, 2023
879 KGal
Feb 12, 2023
875 KGal
Feb 11, 2023
884 KGal
Feb 10, 2023
887 KGal
Total
1718 KGal

OWNER'S EXISTING VT SCADA GRAPHICS

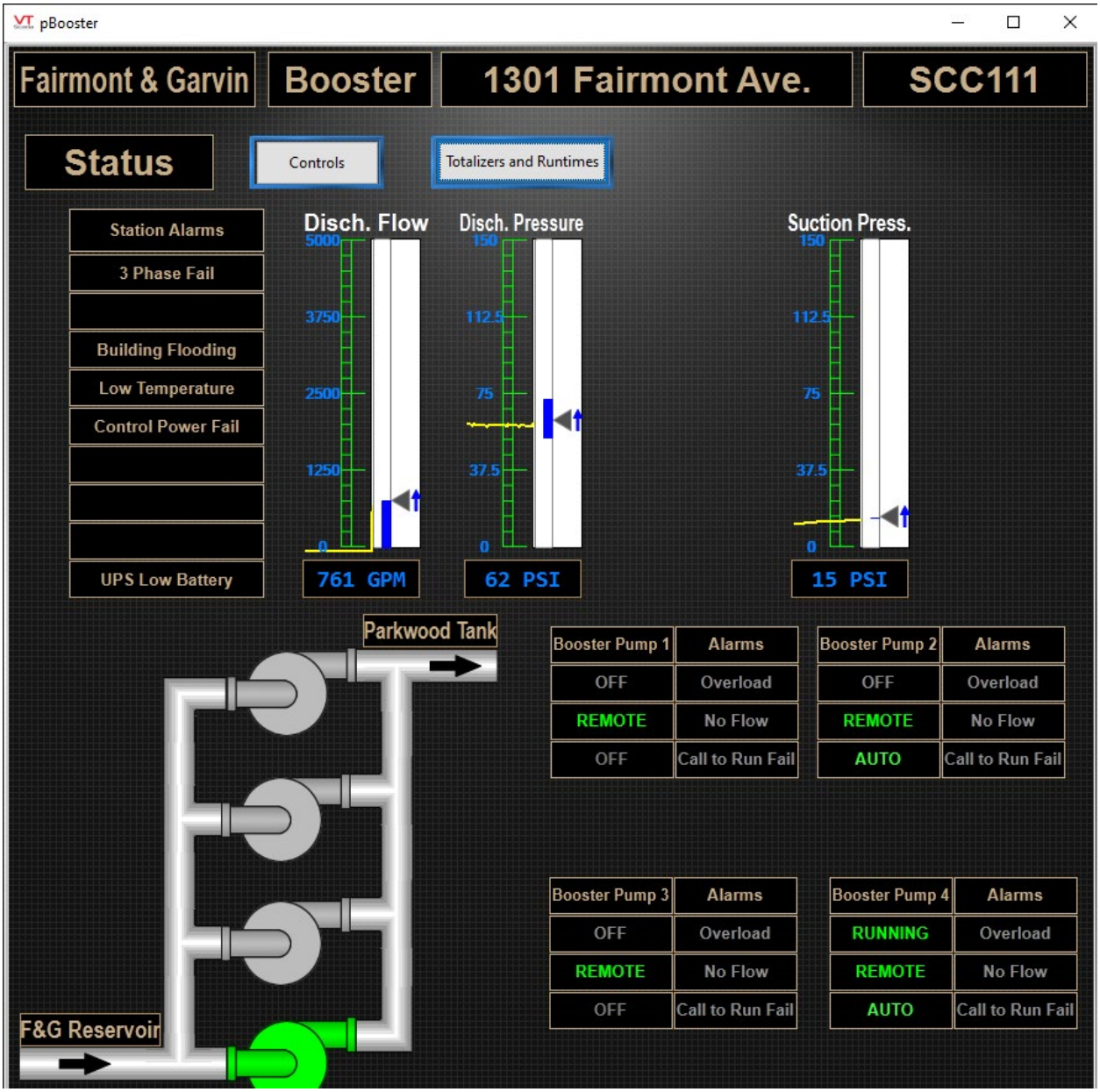


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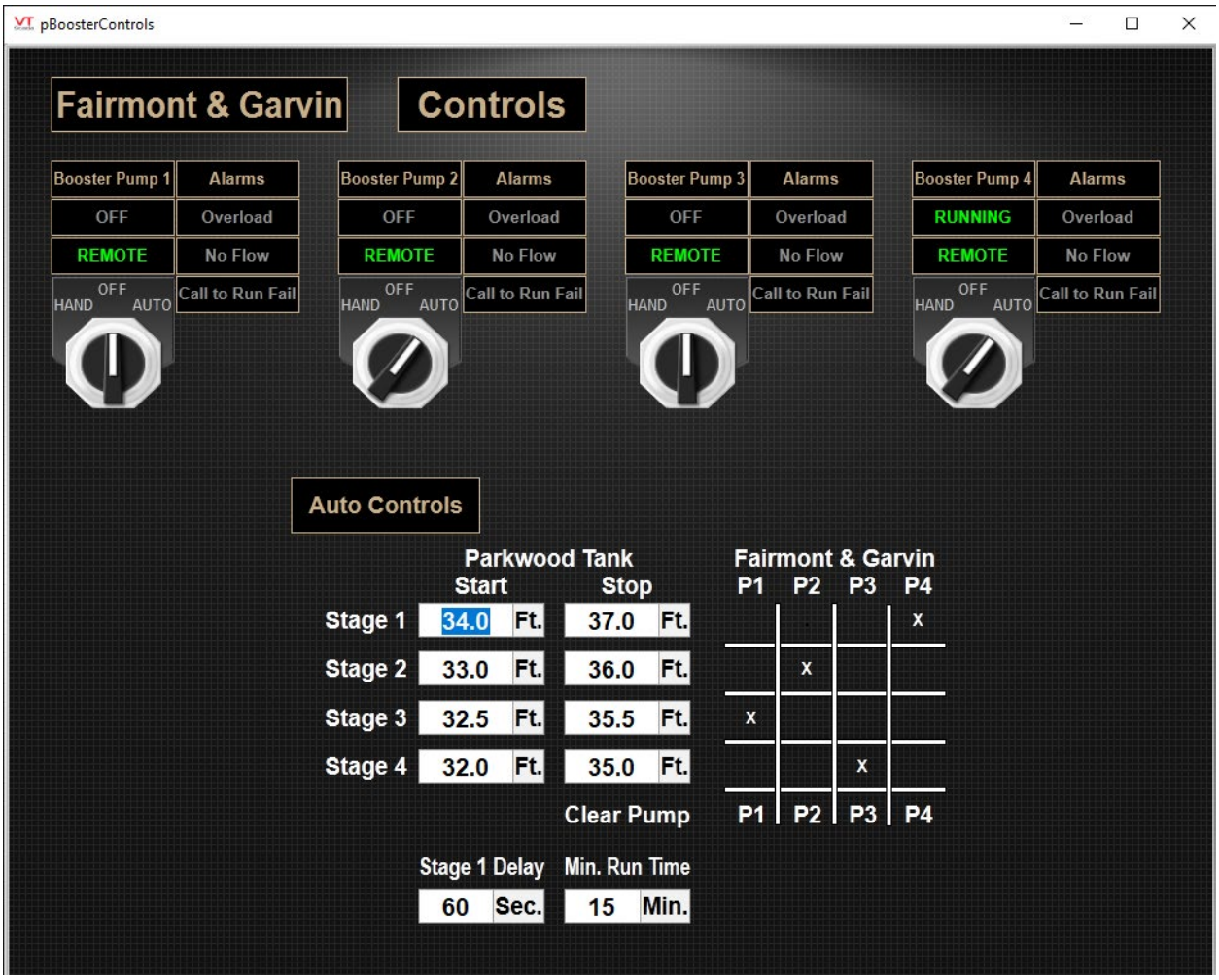




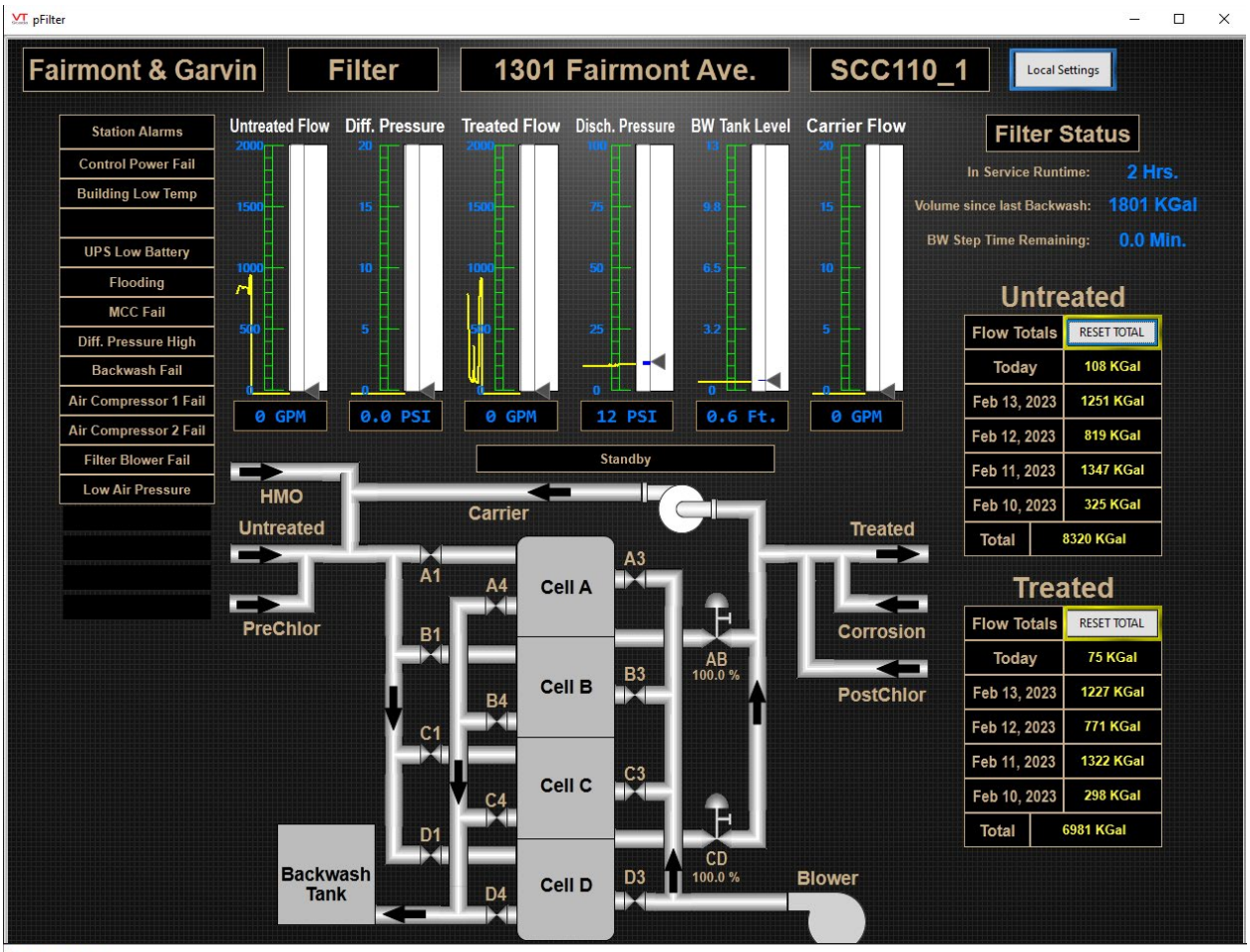
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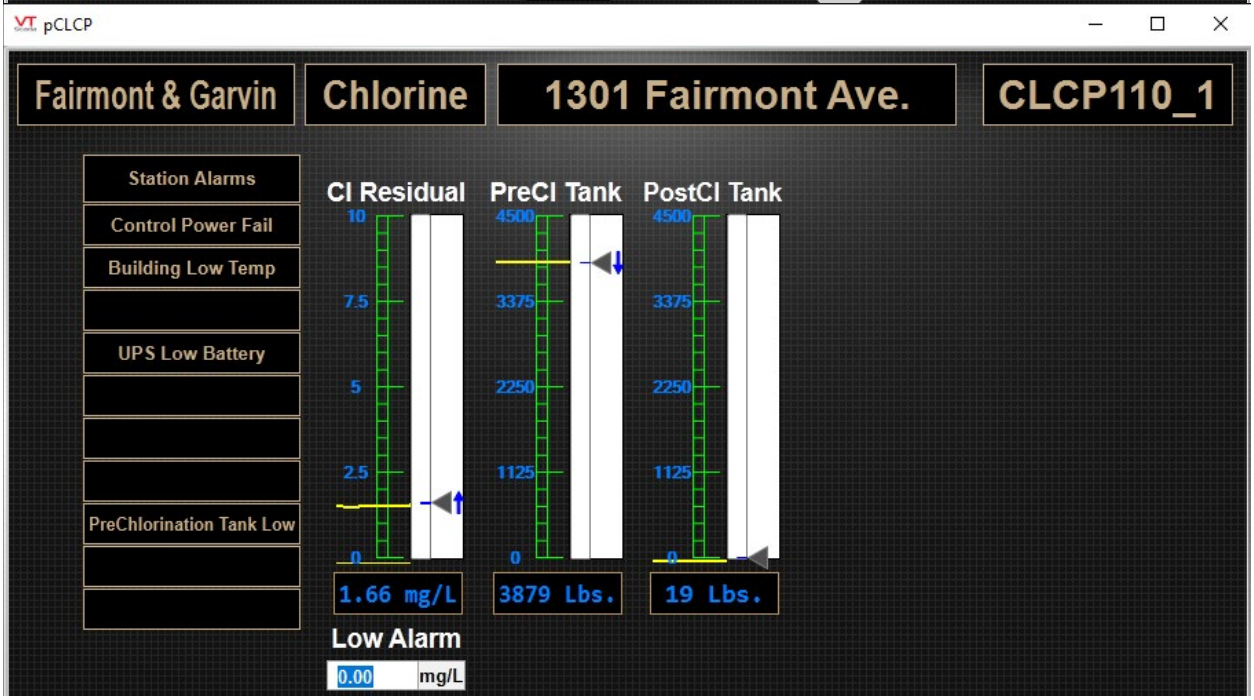


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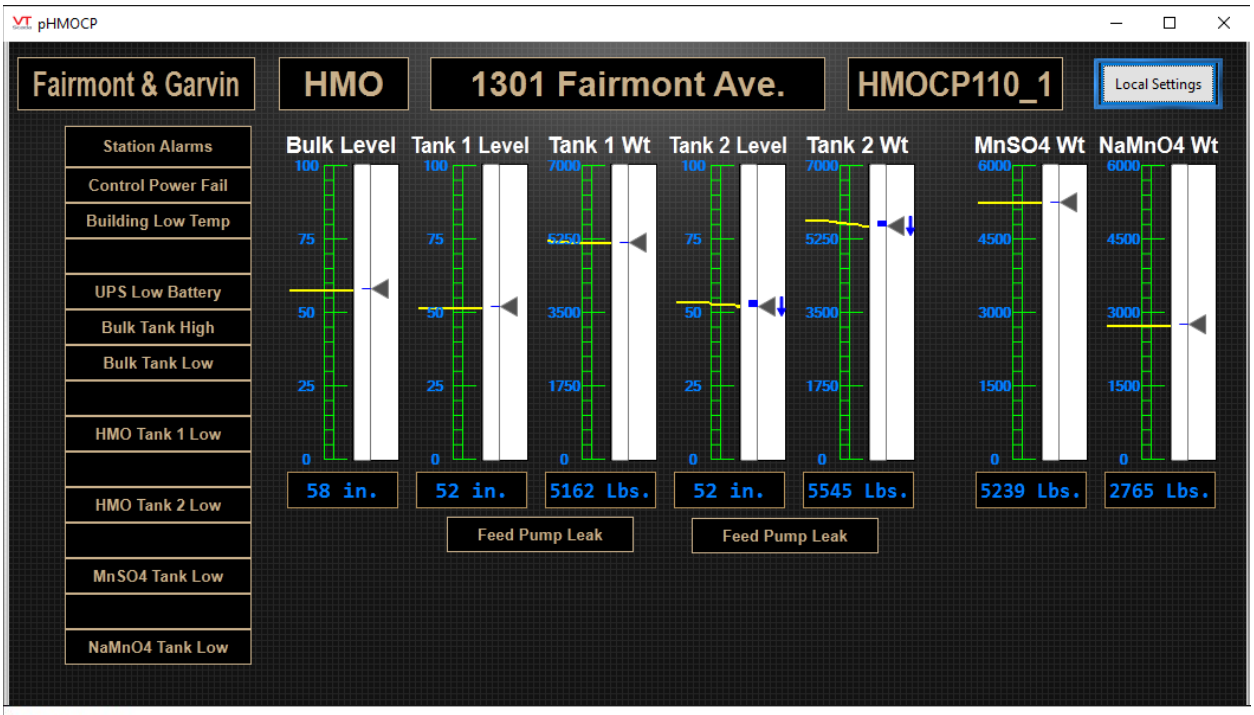


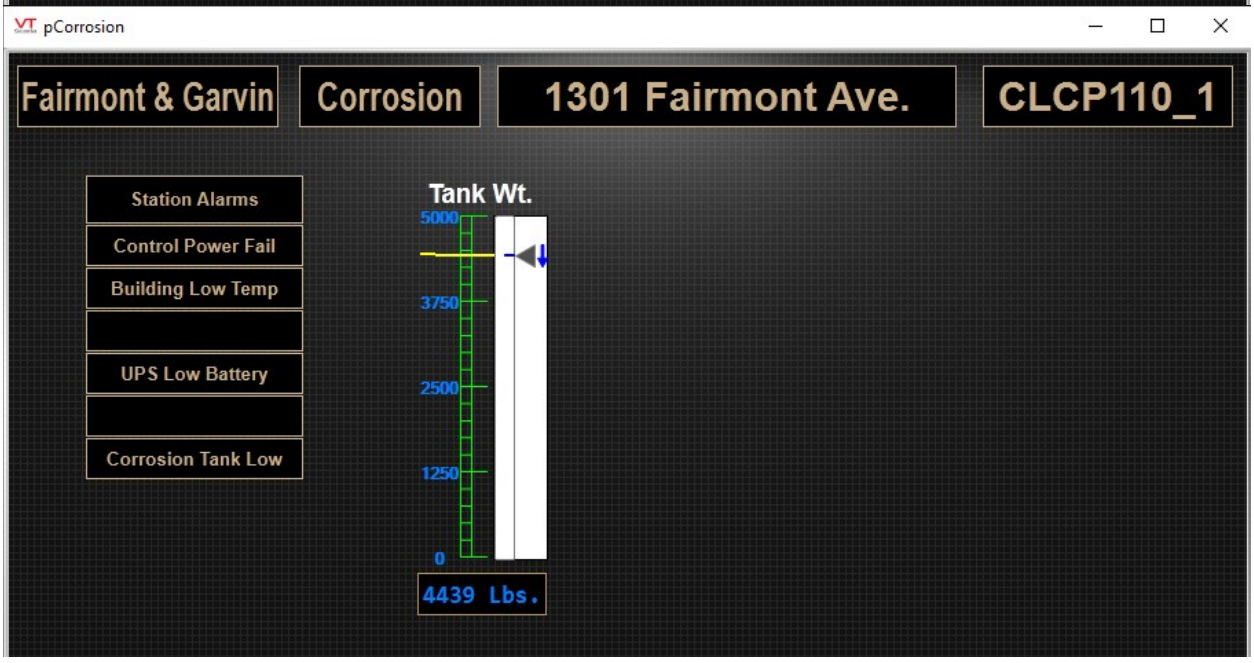
OWNER'S EXISTING VT SCADA GRAPHICS



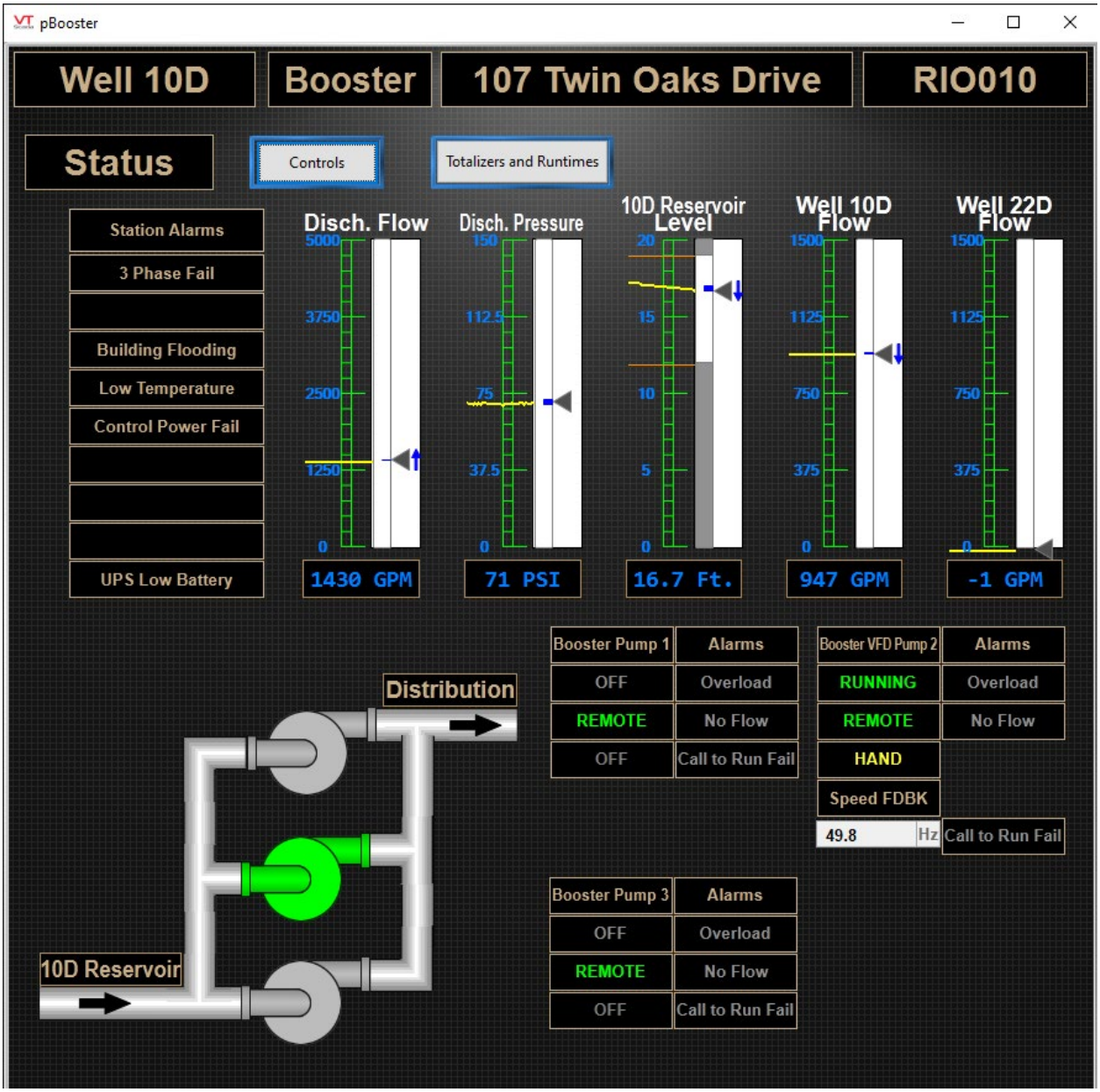


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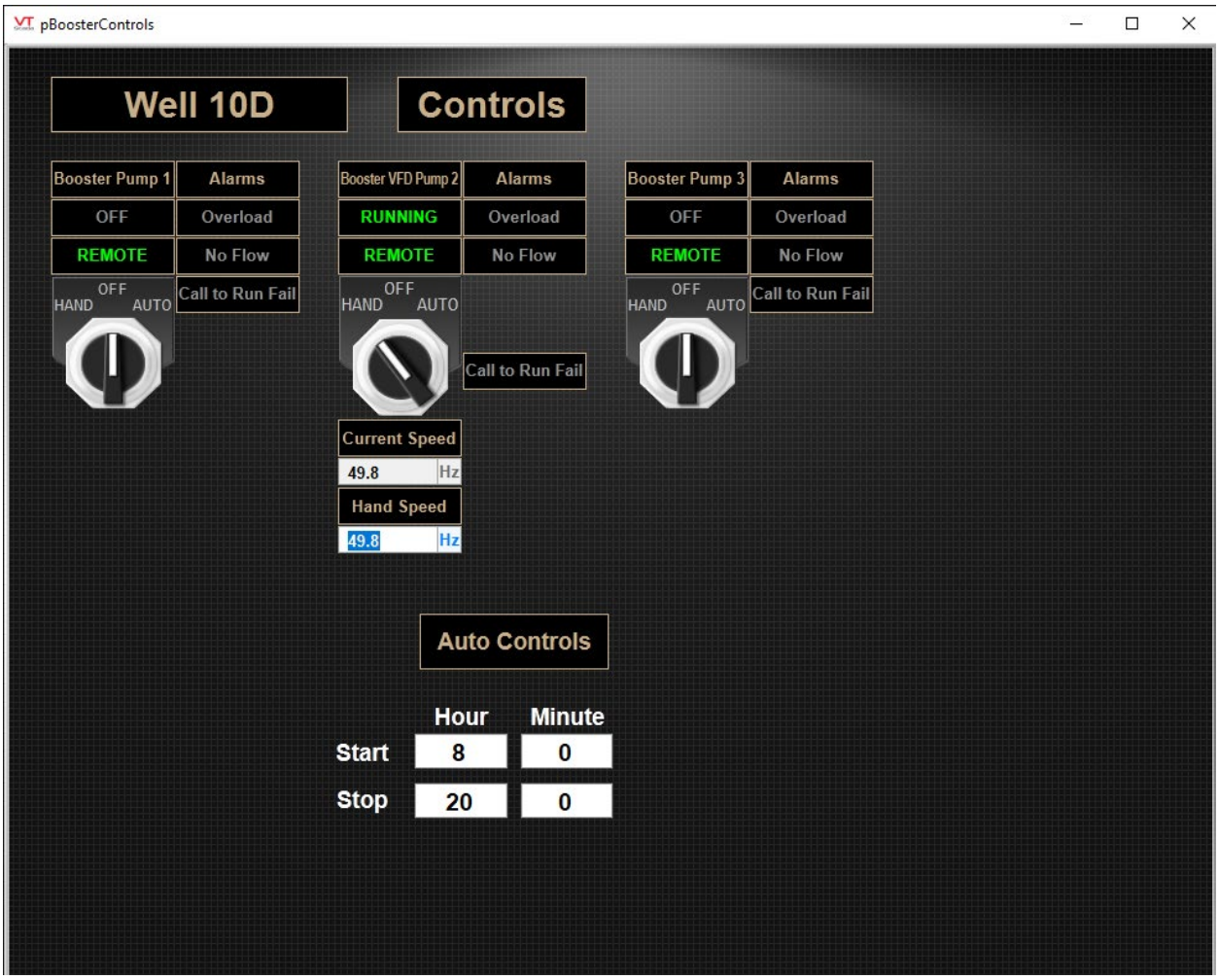




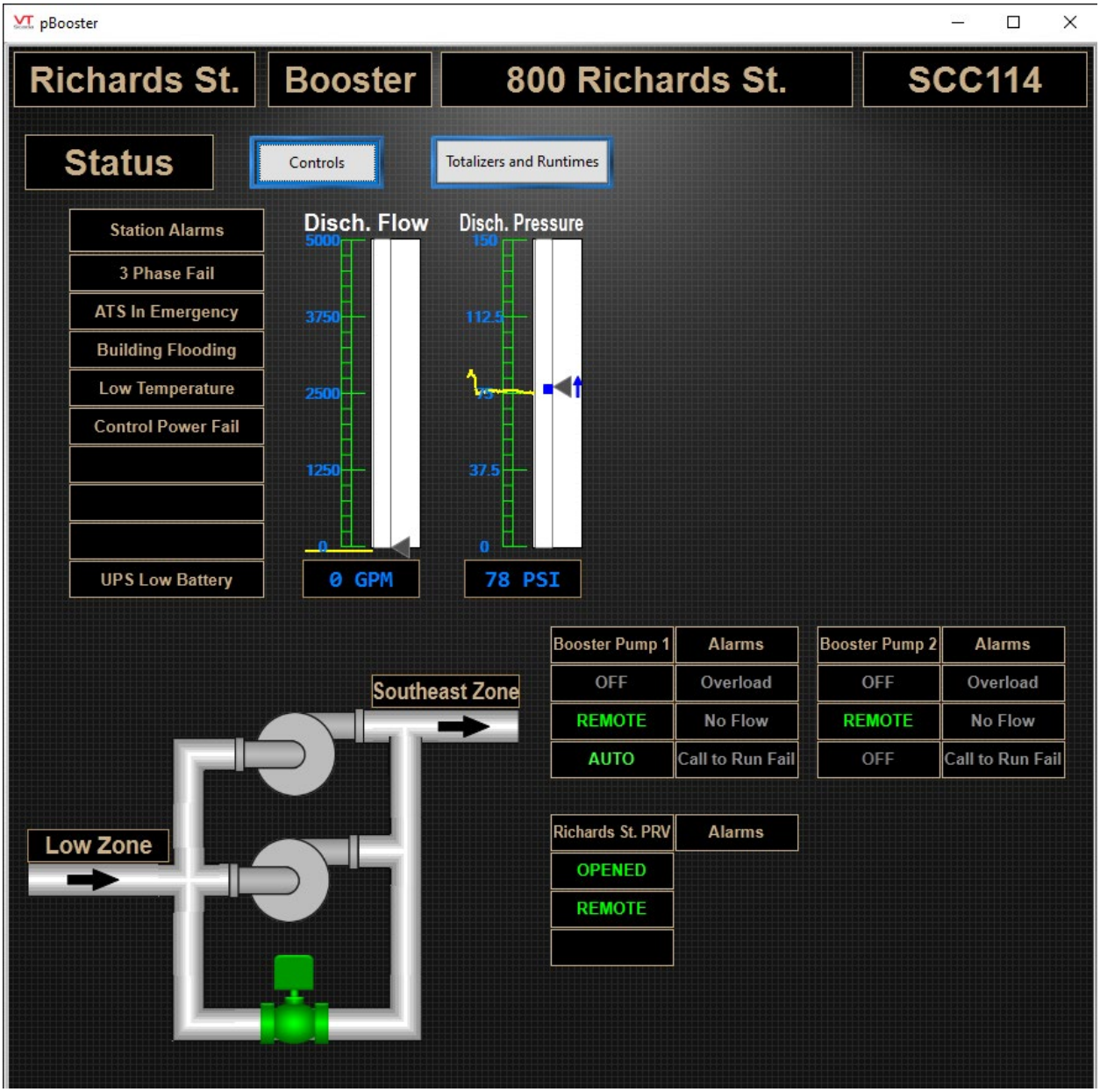
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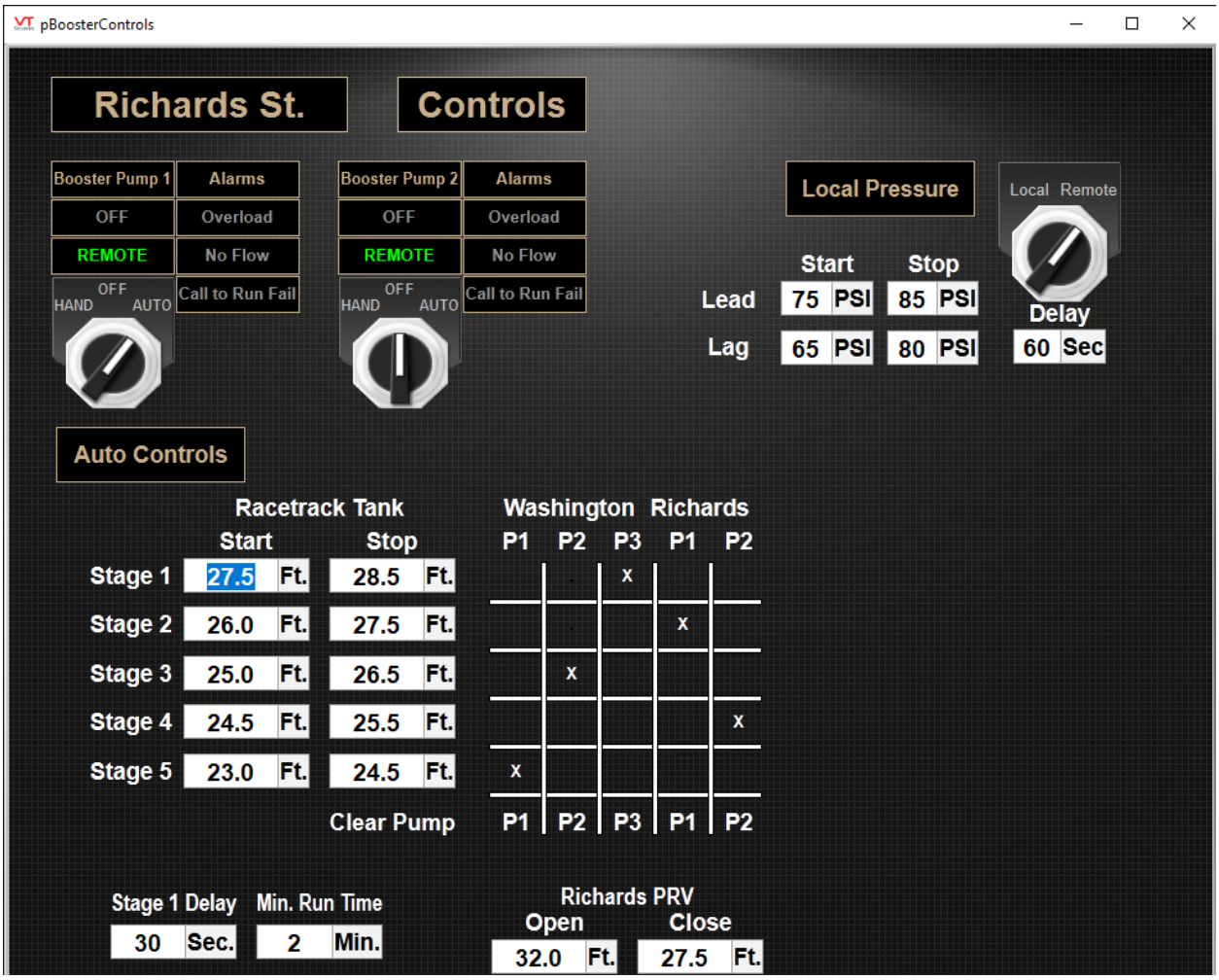


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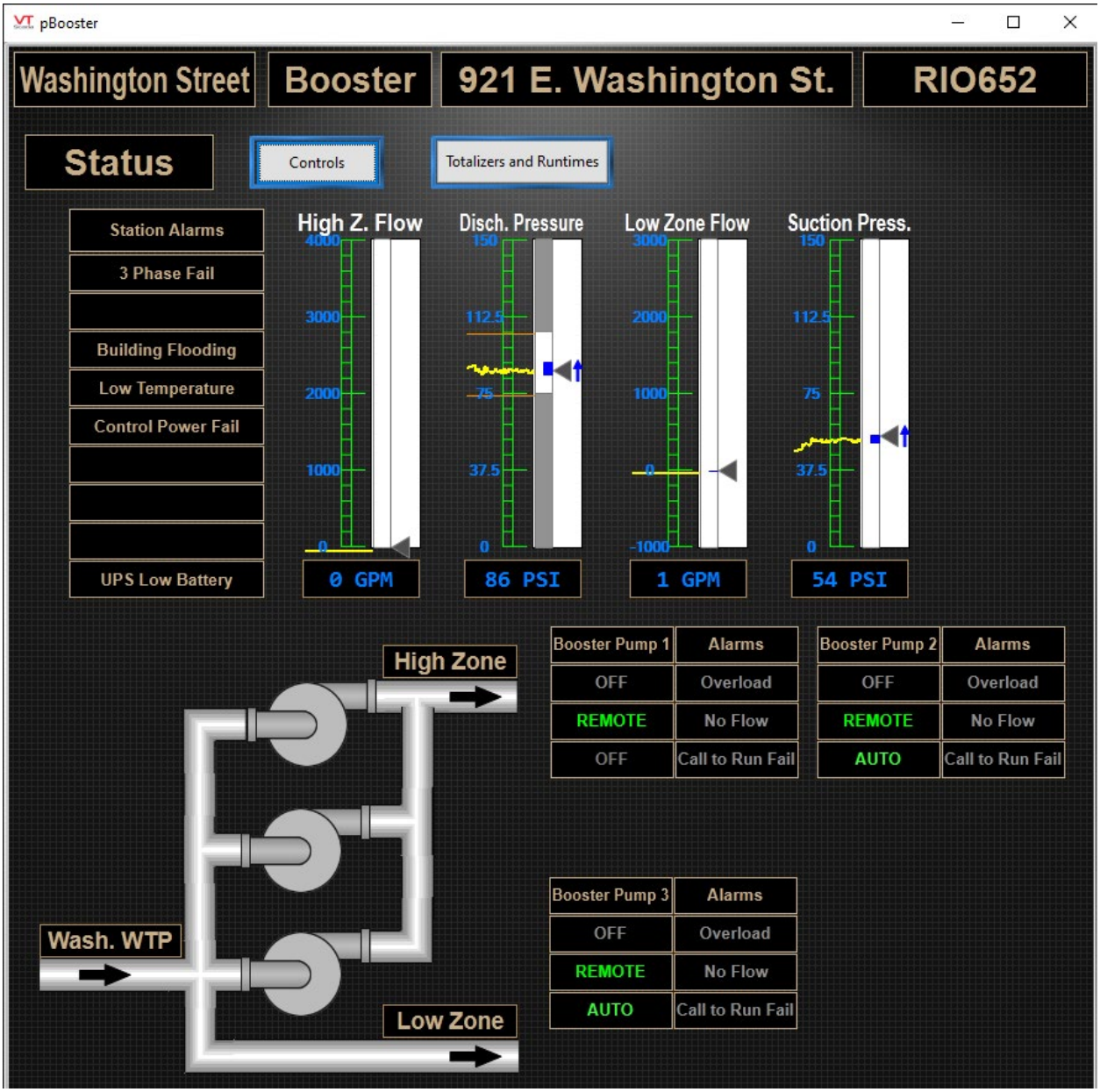


OWNER'S EXISTING VT SCADA GRAPHICS

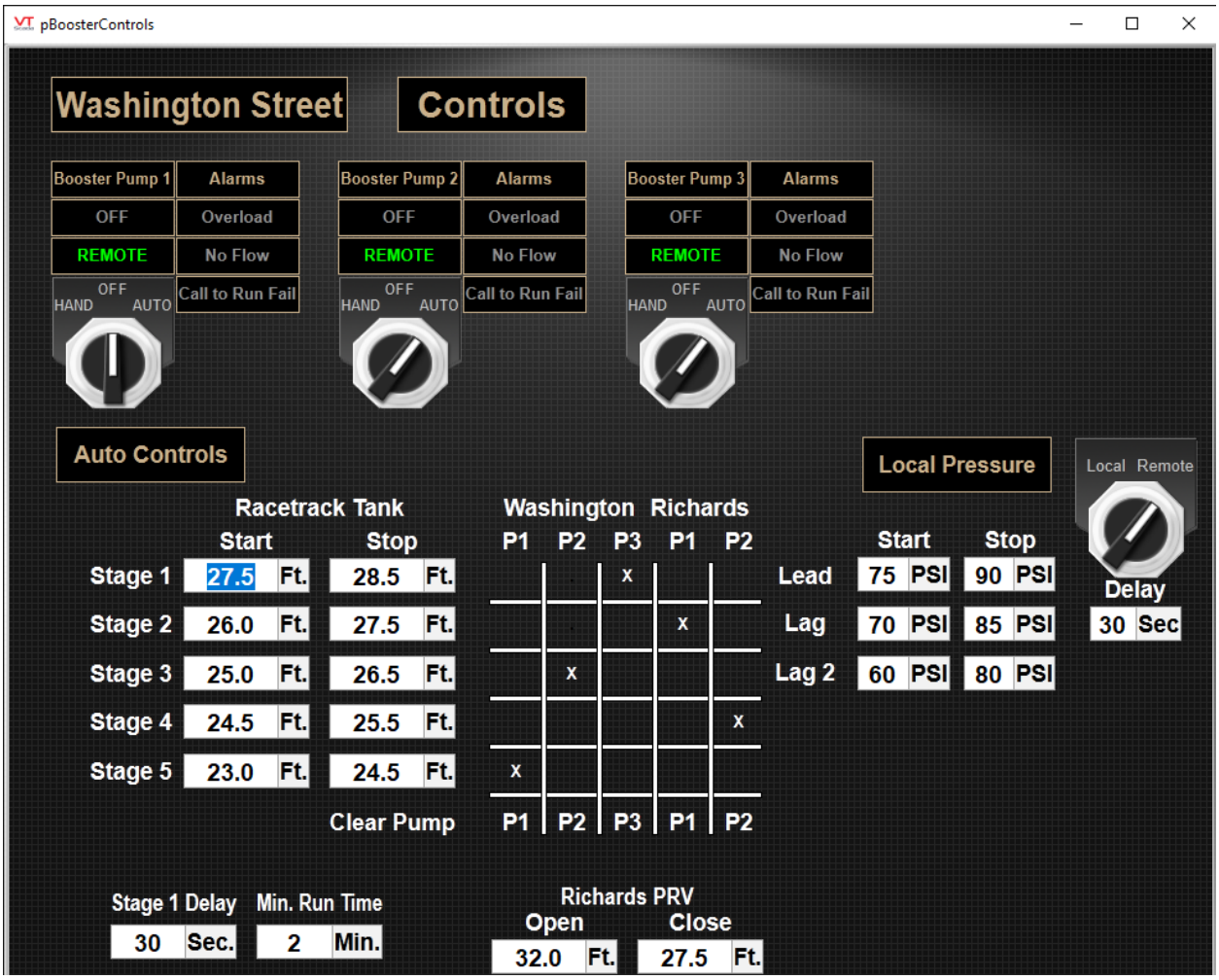



pBoosterControls
Richards St.
Controls
Booster Pump 1
Alarms
OFF
Overload
REMOTE
No Flow
OFF
HAND
AUTO
Call to Run Fail
Booster Pump 2
Alarms
OFF
Overload
REMOTE
No Flow
OFF
HAND
AUTO
Call to Run Fail
Local Pressure
Start
Stop
Lead
75 PSI
85 PSI
Lag
65 PSI
80 PSI
Local Remote
Delay
60 Sec
Auto Controls
Racetrack Tank
Start
Stop
Stage 1
27.5 Ft.
28.5 Ft.
Stage 2
26.0 Ft.
27.5 Ft.
Stage 3
25.0 Ft.
26.5 Ft.
Stage 4
24.5 Ft.
25.5 Ft.
Stage 5
23.0 Ft.
24.5 Ft.
Clear Pump
Washington
Richards
P1
P2
P3
P1
P2
P1
P2
P3
P1
P2
Stage 1 Delay
30 Sec.
Min. Run Time
2 Min.
Richards PRV
Open
Close
32.0 Ft.
27.5 Ft.

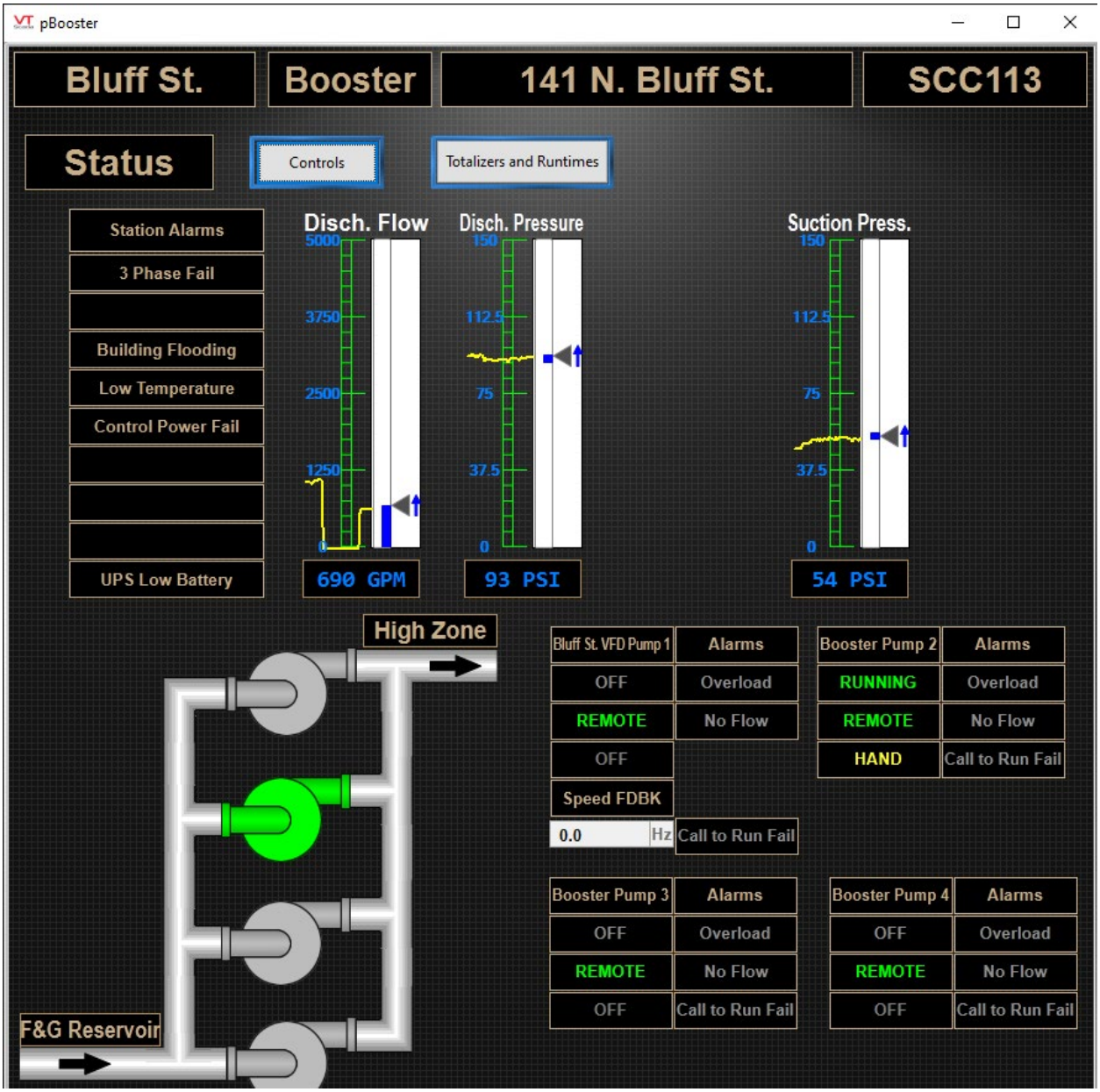
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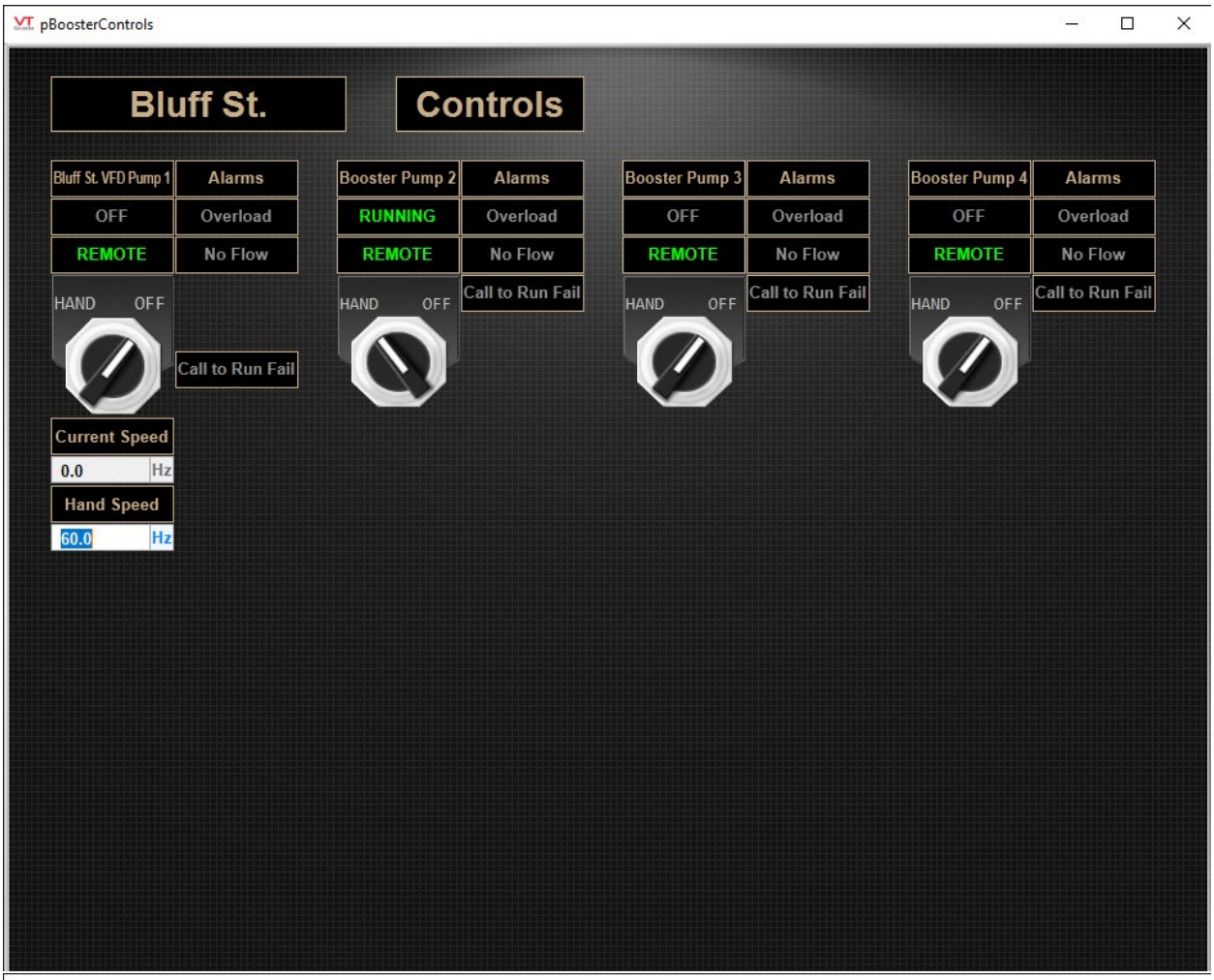
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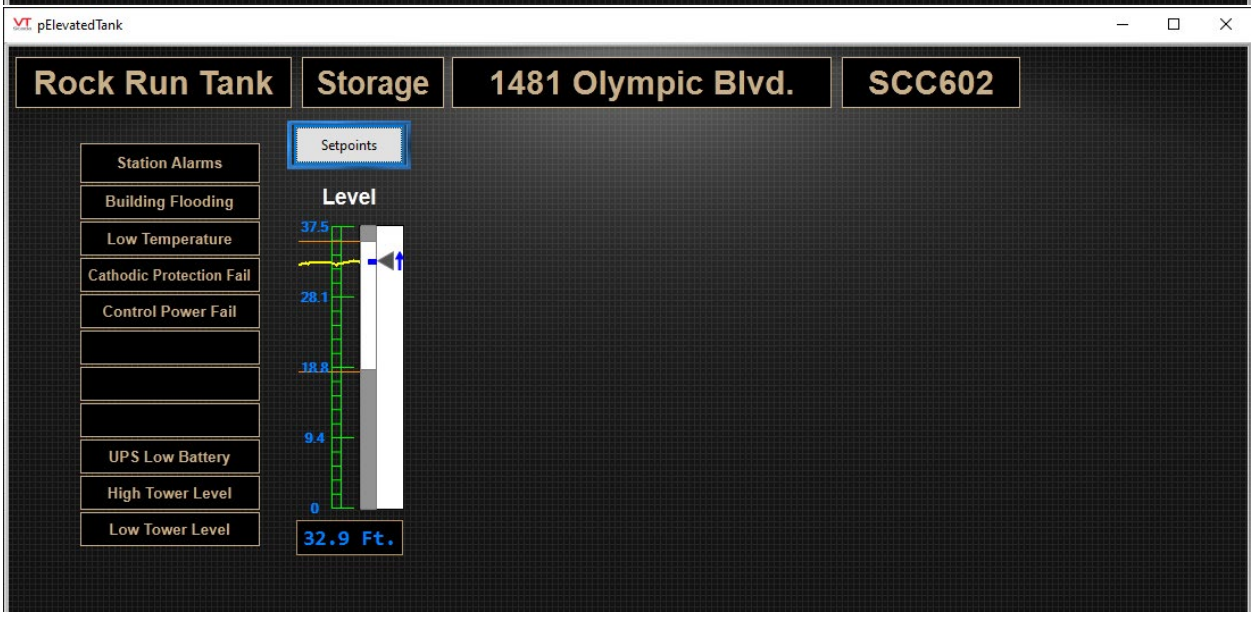


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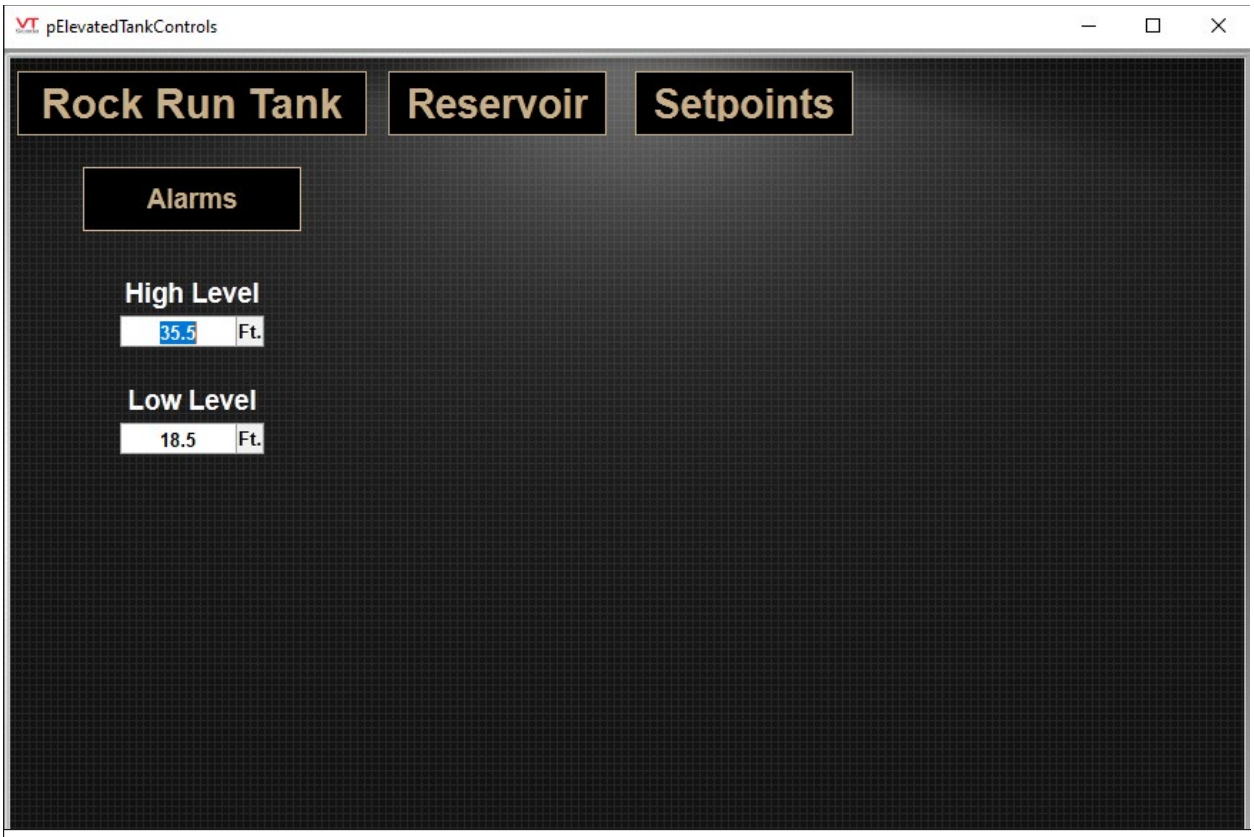


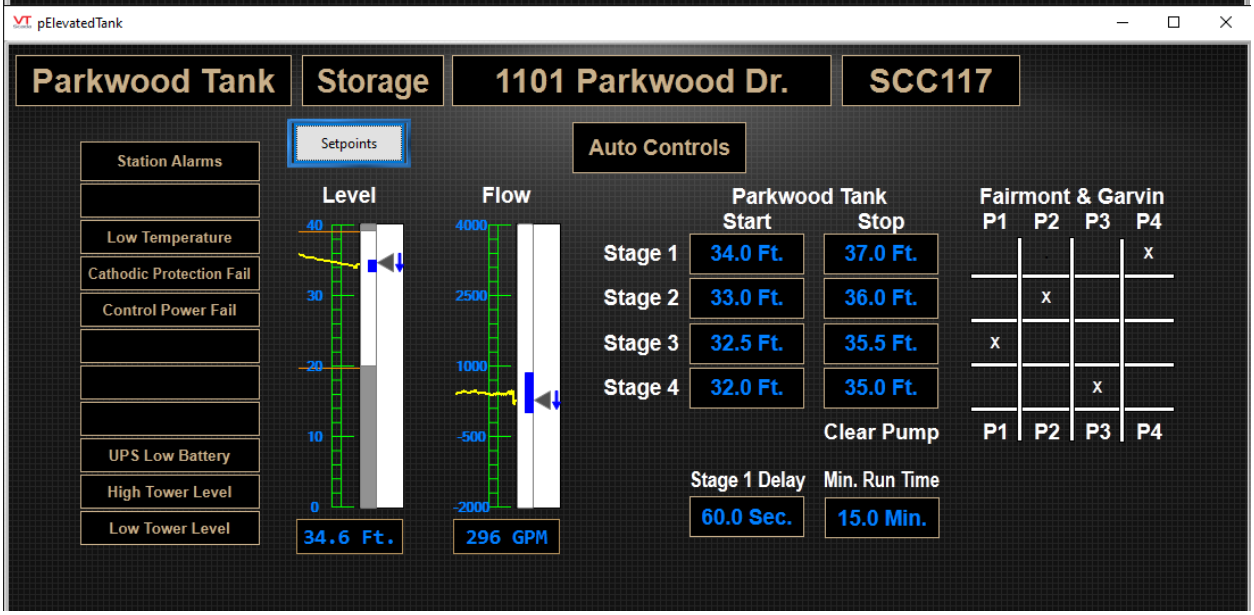
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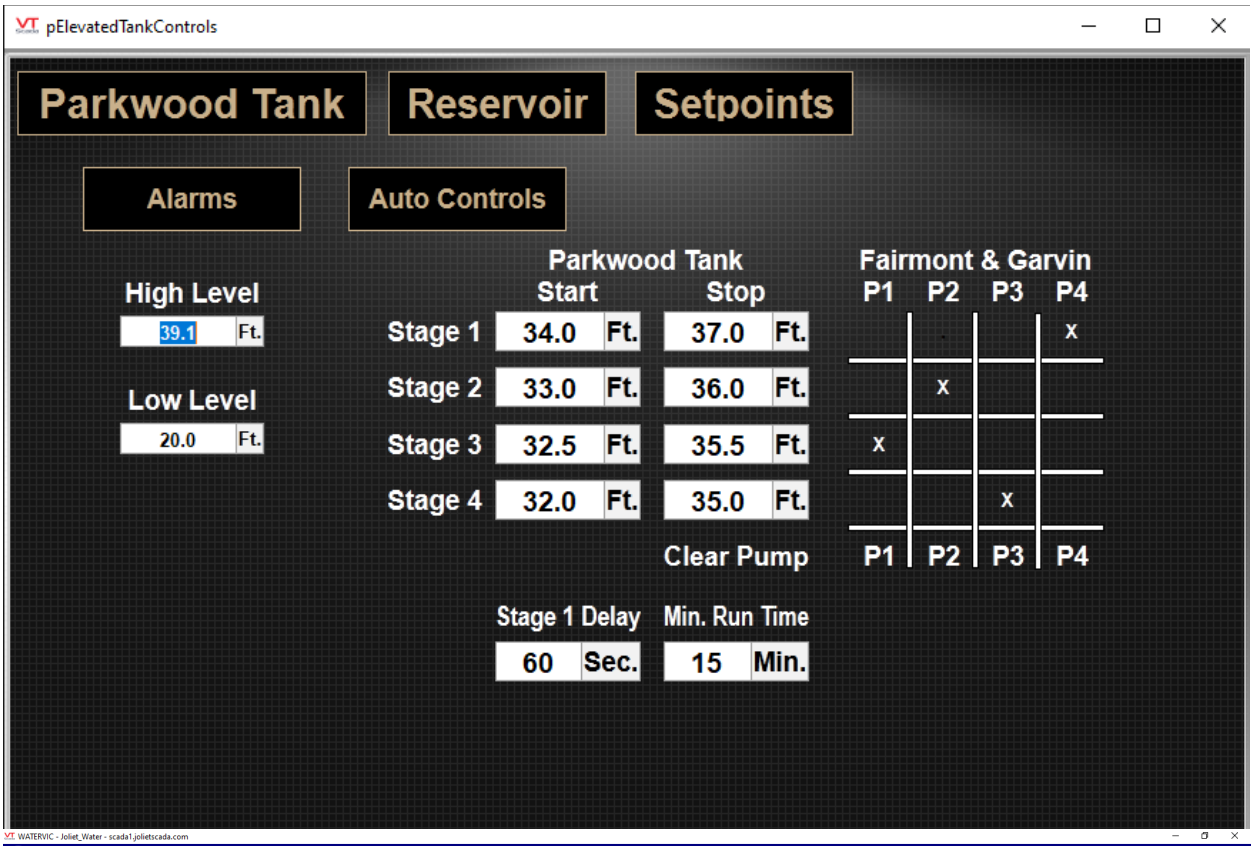


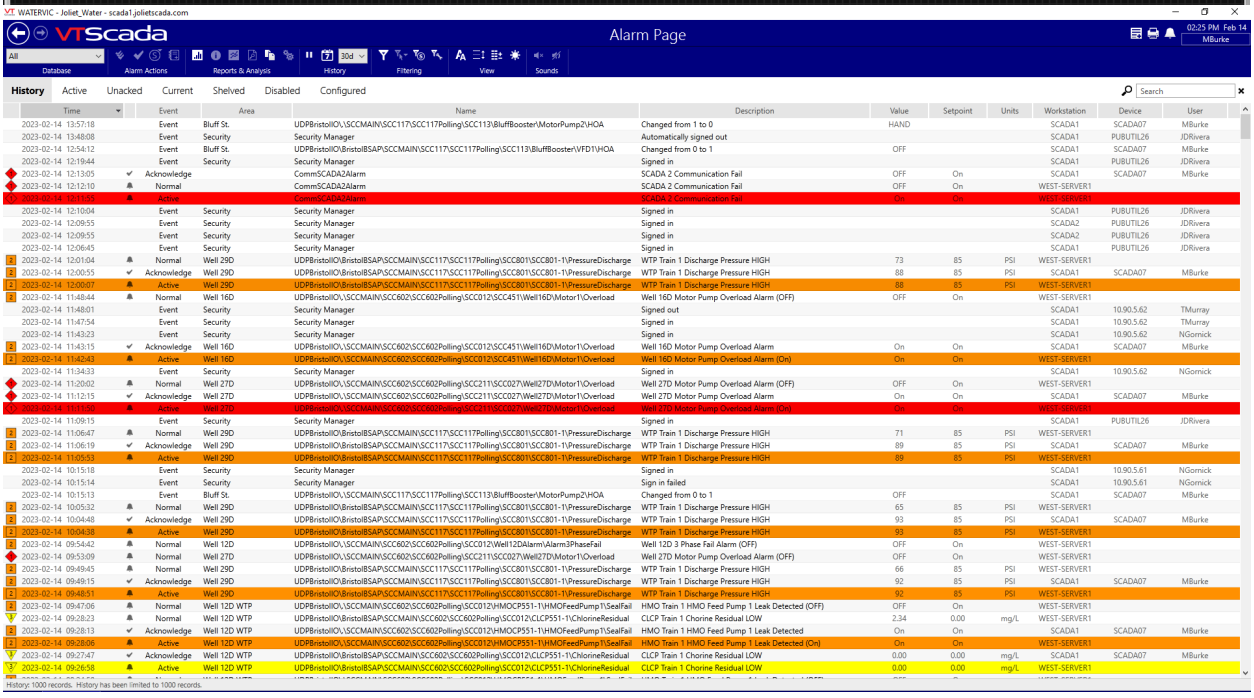
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