

NOTICE TO CONTRACTORS

Notice is hereby given that sealed proposals for constructing BNR - Cowskin Air Release Valves and Lift Station Improvements will be received (electronically) in the office of the City Purchasing Manager, 12th Floor, City Hall, 455 North Main, Wichita, Kansas, prior to 10:00 o'clock A.M., on **FRIDAY, May 24, 2024**, at which time the bids will be opened publicly and read aloud and tabulated by the Board of Bids and Contracts for consideration by the City Council. Bids received after said time will be returned unopened. Proposals are to be submitted through the City's procurement website, Vendor Self Service (VSS) found at <https://www.wichita.gov/435/Vendor-Services>.

If you haven't already completed a Vendor Self Service (VSS) registration for system access, please visit <https://www.wichita.gov/435/Vendor-Services> for assistance. On the Purchasing website's Vendor Services page, you can find a video tutorial (Vendor Self Service Video) walkthrough and Registration Tutorial (Vendor Self Service User Guide) .pdf document to help in completion of the registration process. If you need further assistance, please contact the Purchasing Office directly at purchasing@wichita.gov or by phone at 316-268-4636.

NOTE: BIDDER SHALL AFFIX THE FOLLOWING PROJECT NUMBER TO THE BID ENVELOPE **468-2022-040654**

ATTENTION ALL BIDDERS: A BID BOND IN THE AMOUNT OF FIVE PERCENT (5%) OF THE TOTAL BID OR AN ANNUAL BID BOND IS REQUIRED PRIOR TO BID OPENING. SEE SECTION 102.3 OF THE CITY OF WICHITA STANDARD SPECIFICATIONS FOR FURTHER INFORMATION.

BIDDERS ARE ADVISED TO CONTACT THE OFFICE OF THE CITY ENGINEER (316-268-4501) SHOULD THEY HAVE ANY QUESTIONS OR CONCERNS ABOUT THE PLANS, SPECIAL OR SUPPLEMENTAL PROVISIONS, MINORITY STATUS, OR THE PROPER PREPARATION OF THE BID DOCUMENT.

THE BID FORM SHALL BE PREPARED USING PRICES PER BID ITEMS, UNLESS OTHERWISE NOTED



SUPPLEMENTAL PROVISIONS

to the Standard Specifications for City of Wichita

City of Wichita

Cowskin Force Main and Lift Station 60 Improvements

PROJECT NO. 35-210602-002-0042

PREPARED BY

PROFESSIONAL ENGINEERING CONSULTANTS, PA
303 South Topeka, Wichita, Kansas 67202
316-262-2691 / www.pec1.com

JANUARY 2024

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SECTION 00 01 07
ENGINEER'S STATEMENT OF RESPONSIBILITY

The following plans and documents were prepared under my direct supervision and are authenticated by my seal:

SPECIFICATIONS:

- 00 11 16 Invitation to Bid
- 00 21 13 Instructions to Bidder
- 00 51 01 Notice to Proceed Form
- 00 52 14 Agreement
- 00 72 00 General Conditions
- 00 73 00 Supplementary Conditions
- 00 73 00a WIFIA Federal Requirements
- 33 12 16 Valves & Appurtenances
- 33 32 13 Wastewater Pumping Stations
- 33 34 00 Sanitary Sewer Force Mains
- 43 21 31 Pressure Elements



By: _____
Trevor B. Kaufman, PE

END OF SECTION

SECTION 00 01 07
ENGINEER'S STATEMENT OF RESPONSIBILITY

The following plans and documents were prepared under my direct supervision and are authenticated by my seal:

SPECIFICATIONS:

- 26 05 00 Common Work Results for Electrical
- 26 05 19 Low Voltage Electrical Power Conductors and Cables
- 26 05 26 Grounding and Bonding for Electrical Systems
- 26 05 33 Raceways and Boxes for Electrical Systems
- 26 24 16 Panelboards
- 26 27 26 Wiring Device
- 26 28 10 Overcurrent Protective Devices
- 26 28 16 Enclosed Switches and Circuit Breakers
- 26 29 00 Motors
- 26 29 23 Motor Controllers
- 27 05 02 Common Work Results for Low Voltage System Cabling
- 27 40 00 Supervisory Control System (General)
- 27 41 15 Supervisory Control System (PLC)
- 27 41 18 Supervisory Control System (Control Panel Construction)



By: _____
Sean Gerety, PE

END OF SECTION

SECTION 00 11 16
INVITATION TO PROPOSE

City of Wichita, KS

Cowskin Force Main and Lift Station 60 Improvements

468-2022-034224

Sealed Bids for construction of Cowskin Force Main and Lift Station 60 Improvements will be received by the City of Wichita at the office of Josh Lauber, Purchasing Manager, 12th Floor, City Hall, 445N. Main, Wichita, Kansas 67202 or through the on-line procurement website at <https://www.wichita.gov/435/ Vendor-Services> until 10:00 AM, May 24, 2024. The scope includes:

1. Replacement of existing force main air releases and the rehabilitation of a lift station.

Contract Documents may be examined and/or obtained at the office of City of Wichita's on-line procurement website at <https://www.wichita.gov/630/Standard-Specifications>

Bidders may not withdraw their Proposals for a period of ninety days after the actual date of the opening of the Proposals.

The Successful Bidder must furnish a 100-percent Performance Bond and a 100-percent Payment Bond with a surety company acceptable to the Owner.

Complete instructions for filing Proposals are included in the Instructions to Bidders.

Wage rates for this Project are subject to both the minimum wage rates as per State of Kansas wage rate determination in effect at the time of City Council approval of the agreement and to the minimum Federal Wage Rates. The State of Kansas wage rate determination effective at the time of this bid publication is included in the specifications.

The Owner reserves the right to waive any informality in or to reject any or all Proposals if deemed to be in its best interest.

Bidders on this work will be required to comply with the presidents Executive Order No. 11246 (Equal Employment Opportunity) as amended. Requirements for Bidder and contractors under this order are explained in the specifications.

“Bidders must fully comply with Subpart C of 2 CFR Part 180 and 2 CFR Part 1532, entitled Responsibilities of Participants Regarding Transactions. Contractors, subcontractors, or suppliers that appear on the Excluded Parties List System at www.sam.gov are not eligible for award of any contracts funded by the KDHE State Revolving Fund programs.”

All contracts and subcontracts exceeding \$100,000, at any tier under a SRF Loan Agreement shall comply with the Anti-Lobbying Act, Section 319 of Public Law 101-121, and file an Anti-Lobbying Certification form, and the Disclosure of Lobbying Activities form, if required, to the next tier above.

Brandon Woods, Project Manager
City of Wichita, Kansas

END OF DOCUMENT

SECTION 00 21 13
INSTRUCTIONS TO BIDDERS

City of Wichita, KS

Cowskin Force Main and Lift Station 60 Improvements

468-2022-034224

INSTRUCTIONS TO BIDDERS

ARTICLE 1. QUALIFICATIONS OF BIDDERS

1.1 Bidders will be investigated by OWNER to determine if they are qualified to perform the Work. The lowest three Bidders shall submit all reference forms and documents within twenty-four hours after the proposal opening date and time. Refer to Items 1.5 and 1.6 below.

1.2 The investigation of a Bidder will seek to determine whether the organization is adequately capitalized and staffed, is authorized to do business in Kansas, has had previous successful experience on comparable projects and whether available equipment and financial resources are adequate to assure OWNER that the Work will be completed in accordance with the terms of the Agreement. The amount of other work to which the Bidder is committed may also be considered.

1.3 In evaluating Proposals, OWNER will consider the qualifications of only those Bidders whose Proposals are in compliance with the prescribed requirements.

1.4 OWNER reserves the right to reject any Proposal if the evidence submitted by, or the 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.

1.5 Summary of Items to Include in Bid Proposal:

- Proposal Form (Spec Section 004113.16 Proposal Form) completely filled out and properly executed by authorized persons with all attached forms.
- Bid Bond in the amount required on the Invitation to Bid.
- SRF forms included in Appendix A noted to be provided by the Contractor.

ARTICLE 2. COPIES OF CONTRACT DOCUMENTS

2.1 Complete sets of Contract Documents shall be used in preparing Proposals; neither OWNER nor ENGINEER assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Contract Documents.

2.2 OWNER and ENGINEER in making copies of Contract Documents available do so only for the purpose of obtaining Proposals on the Work and do not confer a license or grant for any other use.

ARTICLE 3. EXAMINATION OF CONTRACT DOCUMENTS AND SITE

3.1 Before submitting a Proposal, each Bidder must (a) examine the Contract Documents thoroughly, (b) visit the site to become familiar with local conditions that may in any manner affect cost, progress or performance of the Work, (c) become familiar with Federal, State and local laws, ordinances, rules and regulations that may in any manner affect cost, progress or performance of the Work; and (d) study and carefully correlate Bidder's observations with the requirements of the Contract Documents.

3.2 Surveys and investigative reports of subsurface or latent physical conditions at the site which have been relied upon by ENGINEER in preparing the Contract Documents are identified in Article 5 of the Supplementary Conditions. Copies of these reports are available through the City's procurement website as identified in the Invitation to Propose. These reports are not guaranteed or warranted as to accuracy or completeness, nor are they part of the Contract Documents.

3.3 Before submitting a Proposal, Bidders may, at their own expense, make such investigations and tests as they may deem necessary to determine their Proposal for performance of the Work in accordance with the time, price and other terms and conditions of the Contract Documents.

3.4 On request, OWNER will provide each Bidder access to the site to conduct such investigations and tests as each Bidder deems necessary for the submission of a Proposal.

3.5 The lands upon which the Work is to be performed, rights-of-way for access thereto and other lands designated for use by CONTRACTOR in performing the Work are identified in the Supplementary Conditions, General Requirements or on the Drawings.

3.6 The submission of a Proposal will constitute an incontrovertible representation that the Bidder has complied with every requirement of this Article 3 and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Work.

ARTICLE 4. INTERPRETATIONS

4.1 All questions about the meaning or intent of the Contract Documents shall be submitted in writing so as to be received by Julianne Kallman, P.E. with City of Wichita at jkallman@wichita.gov at least fourteen days before the date set herein for the opening of Proposals.

4.2 Written clarifications or interpretations will be issued by Addenda not later than seven days before the Proposal opening date. Only answers to questions provided by formal written Addenda will be binding. Oral and other clarifications or interpretations will be without legal effect. Addenda will be with return receipt requested, to all parties recorded as having received the Contract Documents.

4.3 Bidders are responsible for determining that they have received all Addenda issued.

ARTICLE 5. PRE-PROPOSAL CONFERENCE

5.1 A non-mandatory pre-proposal conference will be held on April 30 2024 at 1:30 PM at City of Wichita Sewage Treatment Plant #1 located at 3100 S. Grove, Wichita, KS 67216 to discuss the requirements of the Contract Documents.

ARTICLE 6. PROPOSAL SECURITY

6.1 Each Proposal must be accompanied by Proposal bond, or a certified check on, or a treasurer's or cashier's check issued by, a nationally chartered bank payable to OWNER. The Proposal Security shall be in the amount stated in the Invitation to Propose. Proposal Security shall be sealed in a separate envelope from the Proposal and then attached to the envelope containing the Proposal. All Proposal Securities except those of the three lowest responsible and eligible Bidders will be returned within five days, Saturdays, Sundays, and legal holidays excluded, after opening of the Proposals. All Proposal Securities will be returned on the execution of the Agreement or if no award is made, within **ninety days** after the actual date of opening of the Proposals, unless forfeited under the conditions herein stipulated.

6.2 In case a party to whom a Contract is awarded shall fail or neglect to execute the Agreement and furnish the satisfactory bonds within the time specified, OWNER may determine that the Bidder has abandoned the Contract, and thereupon the Proposal Forms and acceptance shall be null and void and the Proposal Security accompanying the Proposal Form shall be forfeited to OWNER as surety to cover damages for such failure or neglect and to indemnify said OWNER for any loss which may be sustained by OWNER being required to contract with a different bidder at a less favorable price. The amount forfeited to OWNER shall not exceed the difference between the Proposal Price of said Bidder and that of the next lowest responsible and eligible Bidder that executes the Agreement. . After execution of the Agreement and acceptance of the bonds by OWNER, the Proposal Security accompanying the Proposal Form of the Successful Bidder will be returned.

ARTICLE 7. PERFORMANCE, PAYMENT AND OTHER BONDS

7.1 Performance, Payment and other Bonds shall be provided in accordance with Article 6 of the Standard General Conditions of the Construction Contract.

7.2 All Bonds required as Contract Security shall be furnished with the executed Agreement.

ARTICLE 8. PROPOSAL FORM

8.1 Prospective Bidders must register as a Vendor with the City of Wichita. Information on doing business with the City can be found at <https://www.wichita.gov/435/Vendor-Services>.

8.2 Each Proposal shall be submitted electronically on the Proposal Form for the project found on the City's procurement website: <https://selfservice.wichita.gov/MSS/Vendors/default.aspx>.

8.3 Proposals by corporations shall be executed in the corporate name by the president or a vice president (or other corporate officer accompanied by evidence of authority to sign). The corporate address and state of incorporation shall be shown below the signature.

8.4 Proposals by Limited Liability Companies shall be executed in the Limited Liability name by the Manager (or other Limited Liability Company officer/representative accompanied by evidence of authority to sign.) The Limited Liability Company address and state where the Limited Liability Company was formed shall be shown below the signature.

8.5 Proposals by partnerships or joint ventures shall be executed in the partnership name and signed by a partner, whose title shall appear under the signature. Joint ventures shall be executed by each participating business in the joint venture. The official address of the partnership shall be shown below the signature.

8.6 All names shall be typed or printed below the signature.

8.7 The Proposal shall contain an acknowledgement of receipt of all Addenda (the numbers of which shall be filled in on the Proposal Form).

8.8 The name and address to which communications regarding the Proposal are to be directed shall be shown.

ARTICLE 9. RECEIPT OF PROPOSALS

9.1 Sealed Proposals for the work of this Contract will be received up to the time and date and at the place indicated in the Invitation to Propose.

9.2 Bidders are cautioned that it is the responsibility of each individual Bidder to assure that their proposal is in the possession of the responsible official or the designated alternate prior to the stated time and at the place of the Proposal Opening. Owner is not responsible for proposals delayed by mail and/or delivery services, technology failure or other cause.

ARTICLE 10. MODIFICATION AND WITHDRAWAL OF PROPOSALS

10.1 Proposals may be modified only by an appropriate document duly executed (in the manner that a Proposal must be executed) and delivered to the place where Proposals are to be submitted at any time prior to the opening of Proposals.

10.2 Proposals may be withdrawn prior to the scheduled time (or authorized postponement thereof) for the opening of Proposals.

10.3 Any Proposal received after the time and date specified shall not be considered. No Proposal may be withdrawn for a period of **ninety days** after the actual date of the opening of the Proposals.

ARTICLE 11. AWARD OF CONTRACT

11.1 OWNER reserves the right to reject any and all Proposals, to waive any and all informalities if it is in Owner's best interest to do so, and the right to disregard all nonconforming, non-responsive or conditional Proposals.

11.2 A Proposal which includes for any item a Proposal Price that is abnormally low or high may be rejected as unbalanced.

11.3 If the Contract is to be awarded, OWNER will give the Successful Bidder a Notice of Award within **ninety days** after the actual date of the opening of the Proposals. All Proposals shall remain open for **ninety days** after the actual date of the opening of the Proposals but OWNER may, at OWNER's sole discretion, release any Proposal and return the Proposal Security prior to that date.

ARTICLE 12. EXECUTION OF AGREEMENT

12.1 When OWNER gives a Notice of Award to the Successful Bidder, it will be delivered electronically.

ARTICLE 13. SAFETY AND HEALTH REGULATIONS

13.1 This project is subject to the Safety and Health Regulations (CFR 29, Part 1926 and all subsequent amendments) as promulgated by the U.S. Department of Labor on June 24, 1974 and CFR 29, Part 1910, General Industry Safety and Health Regulations Identified as Applicable to Construction.

13.2 The Successful Bidder shall comply with the Department of Labor Safety and Health Regulations for Construction promulgated under the Occupational Safety and Health Act of 1970 (PL-91-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (PL-91-54).

13.3 The Successful Bidder shall have a competent person or persons, as required under the Occupational Safety and Health Act, on the Site to inspect the Work and to supervise the conformance of the Work with the regulations of the Act.

ARTICLE 14. FEDERAL WAGE RATES

14.1 Davis Bacon (DB) Prevailing Wage Requirements

14.1.1 The following clauses shall apply to 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 treatment work under the CWSRF or a construction project under the DWSRF 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 § 5.1 or the FY 2012 Appropriations Act, the following clauses:

(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 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 Owner(s), on behalf of 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 State award official shall approve a request for 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 Owner(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the Owner(s) to the State award official. The State award official will transmit the request, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification request within 30 days of receipt and so advise the State award official or will notify the State award official 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 Owner(s) 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 request and the local wage determination, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The request shall be sent to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request 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 Owner(s) shall, upon written request of the EPA 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 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. Such records shall contain the name, address, and social security number of each such worker, their 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 Owner, that is, the entity that receives the sub-grant or loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the Owner shall provide written confirmation in a form satisfactory to the State 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). 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 <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 Owner(s) for transmission to the State or EPA if requested by EPA, the State, 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 the Owner(s).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or its 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 (1) 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 the State, 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 Federal agency or State 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 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 their 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 EPA 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 Owner(s), State, 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).

(11) 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.

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

(a) Contract Work Hours and Safety Standards Act. The following clauses set forth in paragraphs (a)(1), (2), (3), and (4) of this section in full shall apply to 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 apply in addition to the clauses required by Item 1, above or 29 CFR 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 (a)(1) of this section the contractor and any subcontractor responsible therefore 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 in paragraph (a)(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 (a)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The Owner, upon written request of the EPA Award Official or an authorized representative of the Department of Labor, shall 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 (a)(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 (a)(1) through (4) of this section.

(b) In addition to the clauses contained in Item 1, 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 Owner 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 Owner 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 (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

14.2 It is the responsibility of the Contractor before the Proposal opening to request, if necessary, any additional information on Federal Wage Rates for those tradespeople who are not covered by the applicable Federal Wage Determination, but who may be employed for the proposed work under this Contract.

14.3 All construction associated with this contract will be governed by Heavy and Building Rates.

ARTICLE 15. AMERICAN IRON AND STEEL REQUIREMENT

15.1 This project is subject to the American Iron and Steel Requirements of P.L. 113-76, the Consolidated Appropriations Act of 2014.

ARTICLE 16. DISCRIMINATION

16.1 Bidders on this work, including sub-contractors or vendors, will be required to comply with the Kansas Act Against Discrimination (K.S.A 44-1001 et.seq.), the Kansas Age Discrimination in Employment Act (K.S.A 44-1111 et. seq.) and the City of Wichita Ordinance relating to Nondiscrimination (2.06.010et.seq).

Brandon Woods, Project Manager

City of Wichita Kansas

END OF DOCUMENT



NOTICE TO PROCEED

DATE: _____

TO: _____ (Contractor)

Project #: _____

ORG CODE #: _____

Tax Exemption #: _____

Purchase Order #: _____

Project Description: Cowskin Force Main and Lift Station 60 Improvements

You are hereby notified to commence work with the above subject project not later than three days after issuance of this notice.

The work on this project shall be completed within 540 (Five Hundred and Forty) calendar days from the work order date in accordance with the plans and Standard Specifications.

Please note the attached Contractor's Certification Form included with the Notice to Proceed. This must be completed and returned to the field engineer. If you have any questions, please call the Engineering field office at 316-268-4048. Thank you.

CITY OF WICHITA, KANSAS

Owner

By: _____

Title: Construction Division Manager

c: Baalman
Weaver
Hall
File
Contractor

SECTION 00 52 14
AGREEMENT

City of Wichita, KS

Cowskin Force Main and Lift Station 60 Improvements

468-2022-034224

AGREEMENT

THIS AGREEMENT made as of the _____ day of _____ in the year 2024 by and

between _____ City of Wichita, KS _____

acting through its _____

hereinafter called OWNER and _____

with legal address and principal place of business at _____

_____ hereinafter called CONTRACTOR. OWNER and

CONTRACTOR in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1. WORK

1.1 CONTRACTOR shall perform the Work as specified or indicated in the Contract Documents. The Work is as described in SECTION 011000.

ARTICLE 2. ENGINEER

2.1 The Project has been designed by Professional Engineering Consultants who will act as ENGINEER in connection with completion of the Work in accordance with the Contract Documents.

ARTICLE 3. CONTRACT TIME

3.1 The Contract Time shall be 60 Calendar Days commencing twenty days following the Effective Date of this Agreement.

3.2 CONTRACTOR agrees that the Work shall be prosecuted regularly, diligently and uninterruptedly and at such rate of progress as will insure full completion thereof within the Contract Time stated above. It is expressly understood and agreed, by and between CONTRACTOR and OWNER that the Contract Time is reasonable for the completion of the Work, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality.

ARTICLE 4. CONTRACT PRICE.

4.1 OWNER will pay CONTRACTOR for performance of the Work in accordance with the Contract Documents in current funds at the price agreed upon in the CONTRACTOR's Proposal Form attached to this Agreement.

ARTICLE 5. APPLICATIONS FOR PAYMENT

5.1 Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified and paid for by Owner.

5.2 Payment Application Times: Submit Application for Payment to Owner by the 20th of the month. The period covered by each Application for Payment is one month, ending on the day before the submission of application.

1. Submit draft copy of Application for Payment by the 15th of the month for review by Owner.

ARTICLE 6. PROGRESS AND FINAL PAYMENTS

6.1 OWNER will make progress payments on account of the Contract Price on the basis of CONTRACTOR's Applications for Payment as recommended by ENGINEER, monthly during construction as provided below. All progress payments will be on the basis of the progress of the Work measured by the schedule of values provided for in Paragraph 15.01. of the Conditions of the Contract.

6.2 Prior to Substantial Completion, progress payments will be in an amount equal to 95 percent of the value of the Work completed and 95 percent of the value of materials and equipment not incorporated in the Work but delivered and suitably stored, less, in each case, the aggregate of payments previously made.

6.3 Upon Substantial Completion, OWNER will pay an amount sufficient to increase total payments to CONTRACTOR to 99 percent of the Contract Price, less retainages as ENGINEER shall determine, in accordance with Paragraph 15.01. of the Conditions of the Contract.

6.4 Upon final inspection and acceptance of the Work, in accordance with Paragraph 15.06. of the Conditions of the Contract, OWNER will pay the remainder of the Contract Price as recommended by ENGINEER.

ARTICLE 7. LIQUIDATED DAMAGES

7.1 OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the Work is not completed within the Contract Time specified in Article 3 above, plus any extensions thereof allowed in accordance with Article 11 of the General Conditions. They 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) CONTRACTOR shall pay OWNER \$1,200 per day for each calendar day of delay until the Work is complete.

7.2 Provided, that CONTRACTOR shall not be charged with liquidated damages or any excess cost when the delay in completion of the Work is for reasons included in Paragraph 4.05. of the General Conditions.

7.3 Provided, further, that CONTRACTOR shall furnish OWNER the required notification of such delays in accordance with Paragraph 11.06. of the General Conditions.

ARTICLE 8. ASSURANCE

8.1 CONTRACTOR has familiarized himself with the nature and extent of the Contract Documents, Work, locality, and with all local conditions and Federal, State and local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the Work.

8.2 CONTRACTOR has studied carefully all reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the Work which were relied upon by ENGINEER in the preparation of the Drawings and Specifications and which have been identified in Article 5 of the Supplementary Conditions.

8.3 CONTRACTOR has made or caused to be made examinations, investigations and tests and studies of such reports and related data [in addition to those referred to in the above paragraph] as CONTRACTOR deems necessary for the performance of the Work at the Contract Price within the Contract Time and in accordance with the other terms and conditions of the Contract Documents; and no additional examinations, investigations, tests, reports or similar data are or will be required for such purposes.

8.4 CONTRACTOR has correlated the results of all such observations, examinations, investigations, tests, reports and data with the terms and conditions of the Contract Documents.

8.5 CONTRACTOR has given ENGINEER written notice of any conflict, error, or discrepancy that CONTRACTOR has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR.

8.6 CONTRACTOR agrees that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Work.

ARTICLE 9. CONTRACT DOCUMENTS

9.1 The Contract Documents which comprise the Contract between OWNER and CONTRACTOR are attached hereto and made a part hereof and consist of the following:

9.1.1 Invitation To Propose.

9.1.2 Instructions To Bidders.

9.1.3 Proposal Form.

9.1.4 This Agreement.

9.1.5 006113 Bond Requirements with Forms.

9.1.6 General Conditions, EJCDC Document No. C-700, 2018 edition.

9.1.7 Supplementary Conditions.

9.1.8 WIFIA Federal Requirements.

9.1.9 KDHE SRF Provisions.

9.1.10 Notice of Award.

9.1.11 Notice to Proceed.

9.1.12 Specifications (as listed in Table of Contents).

9.1.13 City of Wichita Standard Specifications.

9.1.14 Drawings, numbered _____ through _____, inclusive and dated _____.

9.1.15 Addenda numbers _____ to _____, inclusive.

9.1.16 Any modification, including Change Orders, duly delivered after execution of Agreement.

ARTICLE 10. MISCELLANEOUS

10.1 Terms used in this Agreement which are defined in Article 1 of the Conditions of the Contract shall have the meanings assigned in the Conditions of the Contract.

10.2 Neither OWNER nor CONTRACTOR shall, without the prior written consent of the other, assign or sublet in whole or in part any interest under any of the Contract Documents; and, specifically but without limitation, CONTRACTOR shall not assign any monies due or to become due without the prior written consent of OWNER. In case CONTRACTOR assigns all or any part of any monies due or to become due under this Contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any monies due or to become due to CONTRACTOR shall be subject to prior claims of all persons, firms and corporations for services rendered or materials supplied for the performance of the Work called for in this Contract.

10.3 OWNER and CONTRACTOR each binds themselves, their partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.

10.4 The Contract Documents constitute the entire agreement between OWNER and CONTRACTOR and may only be altered, amended or repealed by a Modification.

IN WITNESS WHEREOF, the parties hereto have signed this Agreement in sextuple. Four copies each have been delivered to OWNER and one copy each to CONTRACTOR and ENGINEER. All portions of the Contract Documents have been signed or identified by OWNER and CONTRACTOR or by ENGINEER on their behalf.

This Agreement shall become effective on _____, 20__.

CONTRACTOR

OWNER

BY

BY

(CORPORATE SEAL)

(CORPORATE SEAL)

Attest

Attest

Address for giving notices

Address for giving notices

Note: If CONTRACTOR is a corporation, an affidavit giving the principal the right to sign the Agreement must accompany the executed Agreement.

END OF DOCUMENT

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

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared By



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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
 3. *Application for Payment*—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 5. *Bidder*—An individual or entity that submits a Bid to Owner.
 6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
 7. *Bidding Requirements*—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
 8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.
 9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
 10. *Claim*
 - a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by Engineer concerning the

- requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.
- b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.
 - c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.
 - d. A demand for money or services by a third party is not a Claim.
11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
 12. *Contract*—The entire and integrated written contract between Owner and Contractor concerning the Work.
 13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
 14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.
 15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
 16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
 17. *Cost of the Work*—See Paragraph 13.01 for definition.
 18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
 19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
 20. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.
 21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the

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

22. *Engineer*—The individual or entity named as such in the Agreement.
23. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
24. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.
 - a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.
 - b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.
 - c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.
25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
27. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.
28. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
29. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
30. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.
32. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.
34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals.
36. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor’s Applications for Payment.
37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.
38. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by Owner which are designated for the use of Contractor.
39. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
40. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.
41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers’ instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.
42. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion of such Work.

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

1.02 Terminology

- A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:* The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.
- C. *Day:* The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:* The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - 1. does not conform to the Contract Documents;
 - 2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - 3. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).
- E. *Furnish, Install, Perform, Provide*
 - 1. The word “furnish,” when used in connection with services, materials, or equipment, means to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
 - 2. The word “install,” when used in connection with services, materials, or equipment, means to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
 - 3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, means to furnish and install said services, materials, or equipment complete and ready for intended use.
 - 4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

- F. *Contract Price or Contract Times*: References to a change in “Contract Price or Contract Times” or “Contract Times or Contract Price” or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term “or both” is not expressed.
- G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2—PRELIMINARY MATTERS

2.01 *Delivery of Performance and Payment Bonds; Evidence of Insurance*

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

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

- A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for timely review:
 - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
 - 2. a preliminary Schedule of Submittals; and
 - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work

into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will be made to Contractor until acceptable schedules are submitted to Engineer.
 - 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
 - 2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
 - 3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.
 - 4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.
- B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one Contract Document is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.
- F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.
- G. Nothing in the Contract Documents creates:
 - 1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or
 - 2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

3.02 *Reference Standards*

- A. *Standards Specifications, Codes, Laws and Regulations*
 - 1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 - 2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility

inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
2. *Contractor's Review of Contract Documents:* If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
 - a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work.

- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

- A. Contractor and its Subcontractors and Suppliers shall not:
 - 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or
 - 2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work may be done at the Site prior to such date.

4.03 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the

established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
 - 1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
 - 2. Abnormal weather conditions;
 - 3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and
 - 4. Acts of war or terrorism.

- D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:
1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.
 2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.
 3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.
- E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:
1. The circumstances that form the basis for the requested adjustment;
 2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;
 3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;
 4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and
 5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.
- Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.
- F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.
- G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

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

5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor in writing of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
 2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.
 - C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment

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

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

5.03 *Subsurface and Physical Conditions*

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

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

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

- C. *Reliance by Contractor on Technical Data:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.

- D. *Limitations of Other Data and Documents:* Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;
3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or
4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

- A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:
1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;
 2. is of such a nature as to require a change in the Drawings or Specifications;
 3. differs materially from that shown or indicated in the Contract Documents; or
 4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

- B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- E. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in

Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

- a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
 - b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,
 - c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
- a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;
 - b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
 - c. Contractor failed to give the written notice required by Paragraph 5.04.A.
3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.
- F. *Underground Facilities; Hazardous Environmental Conditions*: Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 *Underground Facilities*

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

3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;
 4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.
- C. *Engineer's Review:* Engineer will:
1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;
 2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;
 3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and
 4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.

During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- F. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown

or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

- a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
 - b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and
 - c. Contractor gave the notice required in Paragraph 5.05.B.
2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
 3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.
 4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 *Hazardous Environmental Conditions at Site*

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

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

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures

- of construction to be employed by Contractor, and safety precautions and programs incident thereto;
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.
- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.
- H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special

conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

- I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.
- B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.
- C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or

Regulations, and must be issued and signed by a surety named in “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual’s authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

- D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.
- E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.
- F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner’s termination rights under Article 16.
- G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.
- H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 *Insurance—General Provisions*

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

Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.

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

- L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.
- M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.
- N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

6.03 *Contractor's Insurance*

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

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

6.04 *Builder's Risk and Other Property Insurance*

- A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.
- B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.
- C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.
- D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.
- E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 *Property Losses; Subrogation*

- A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against

Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.
 2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.
1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.
- C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.
- D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.
- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

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

7.02 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.03 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall maintain good discipline and order at the Site.

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

7.04 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.05 *"Or Equals"*

- A. *Contractor's Request; Governing Criteria:* Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.
 - 1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that the proposed item:
 - 1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

- 2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
 - 3) has a proven record of performance and availability of responsive service; and
 - 4) is not objectionable to Owner.
- b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:
- 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.
- D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.
- E. *Treatment as a Substitution Request*: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 *Substitutes*

- A. *Contractor's Request; Governing Criteria*: Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.
1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.
 2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:
 - a. will certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design;
 - 2) be similar in substance to the item specified; and
 - 3) be suited to the same use as the item specified.
 - b. will state:
 - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;
 - 2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and
 - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
 - c. will identify:
 - 1) all variations of the proposed substitute item from the item specified; and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.
- B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
- C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

- E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
- F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 *Concerning Subcontractors and Suppliers*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.
- B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.
- E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.
- F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

- H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.
- J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.
- K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.
- L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.
- M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If an invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights will be disclosed in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.09 *Permits*

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

7.10 *Taxes*

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

7.11 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.
- C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.
- B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.
- C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
 - 1. all persons on the Site or who may be affected by the Work;
 - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 - 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.
- F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
- G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.
- H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

- I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).
- J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as material safety data sheets) or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

- 1. Before submitting a Shop Drawing or Sample, Contractor shall:
 - a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determine and verify:
 - 1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;
 - 2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - 3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;
 - c. confirm that the Submittal is complete with respect to all related data included in the Submittal.
- 2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.
- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.
1. *Shop Drawings*
 - a. Contractor shall submit the number of copies required in the Specifications.
 - b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.
 2. *Samples*
 - a. Contractor shall submit the number of Samples required in the Specifications.
 - b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.
 3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. *Engineer's Review of Shop Drawings and Samples*
1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
 2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.
 3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
 4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will

document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.
6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.
8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. Resubmittal Procedures for Shop Drawings and Samples

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.
2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

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

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

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

7.17 Contractor's General Warranty and Guarantee

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.
- B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:
1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and
 2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.
- C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 2. normal wear and tear under normal usage.
- D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:
1. Observations by Engineer;
 2. Recommendation by Engineer or payment by Owner of any progress or final payment;
 3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 4. Use or occupancy of the Work or any part thereof by Owner;
 5. Any review and approval of a Shop Drawing or Sample submittal;
 6. The issuance of a notice of acceptability by Engineer;
 7. The end of the correction period established in Paragraph 15.08;
 8. Any inspection, test, or approval by others; or

9. Any correction of defective Work by Owner.
- E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable.
- B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

7.19 *Delegation of Professional Design Services*

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

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

ARTICLE 8—OTHER WORK AT THE SITE

8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.
- D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

- E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.
- F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:
 - 1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
 - 2. An itemization of the specific matters to be covered by such authority and responsibility; and
 - 3. The extent of such authority and responsibilities.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

- A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.
 - 1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.
 - 2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.
- C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

- A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents will be that of the former Engineer.

9.03 *Furnish Data*

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

- 9.05 *Lands and Easements; Reports, Tests, and Drawings*
- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.
 - B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
 - C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.
- 9.06 *Insurance*
- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.
- 9.07 *Change Orders*
- A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.
- 9.08 *Inspections, Tests, and Approvals*
- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.
- 9.09 *Limitations on Owner's Responsibilities*
- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- 9.10 *Undisclosed Hazardous Environmental Condition*
- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.
- 9.11 *Evidence of Financial Arrangements*
- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).
- 9.12 *Safety Programs*
- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.
 - B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Resident Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.
- B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 *Engineer's Authority*

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

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

10.05 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.06 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.07 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, will create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Contractor under Paragraph 15.06.A, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Resident Project Representative, if any.

10.08 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs of which Engineer has been informed.

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

- A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
- B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.
- C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 *Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
 - 1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;
 - 2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
 - 3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and
 - 4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 *Work Change Directives*

- A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.

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

11.04 *Field Orders*

- A. Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.
- B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.05 *Owner-Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.
- B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.
- C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.
- B. An adjustment in the Contract Price will be determined as follows:

1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);
 2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or
 3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).
- C. *Contractor's Fee:* When applicable, the Contractor's fee for overhead and profit will be determined as follows:
1. A mutually acceptable fixed fee; or
 2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;
 - b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;
 - c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;
 - d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
 - e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and
 - f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

11.08 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.
- B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 *Change Proposals*

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

B. *Change Proposal Procedures*

1. *Submittal:* Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.
2. *Supporting Data:* The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.
 - a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.
 - b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

3. *Engineer's Initial Review:* Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.
4. *Engineer's Full Review and Action on the Change Proposal:* Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change

Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- C. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.
- D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12—CLAIMS

12.01 *Claims*

- A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:
 1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;
 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and
 4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.
- B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge

and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

- C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation*
 - 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.
 - 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.
 - 3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13—COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
 - 1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included:* Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:
1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.
 2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, and Contractor shall make provisions so that they may be obtained.
 3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
 4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.
 5. Other costs consisting of the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are

consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

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

c. *Construction Equipment Rental*

- 1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.
- 2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.
- 3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.

- d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
- e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
- f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded*: The term Cost of the Work does not include any of the following items:

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

D. *Contractor's Fee*

- 1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:
 - a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.
 - b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:
 - 1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.
 - 2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.
- 2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change

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

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

13.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.
- B. *Cash Allowances*: Contractor agrees that:
1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.
- C. *Owner's Contingency Allowance*: Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision

thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

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

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply with such procedures and programs as applicable.

14.02 *Tests, Inspections, and Approvals*

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

- D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
 2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
 3. by manufacturers of equipment furnished under the Contract Documents;
 4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
 5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects:* Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement:* Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties:* When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages:* In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs,

losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

- A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.
 - 1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
 - 2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work,

or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.
- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

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

15.01 *Progress Payments*

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments*
 - 1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.
 - 2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation

establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

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

C. *Review of Applications*

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

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

D. *Payment Becomes Due*

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

E. *Reductions in Payment by Owner*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

- b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
 - c. Contractor has failed to provide and maintain required bonds or insurance;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
 - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
 - f. The Work is defective, requiring correction or replacement;
 - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - h. The Contract Price has been reduced by Change Orders;
 - i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;
 - j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
 - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or
 - l. Other items entitle Owner to a set-off against the amount recommended.
2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.
 3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 *Substantial Completion*

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

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

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

15.04 *Partial Use or Occupancy*

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

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

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.
2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.
2. The final Application for Payment must be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents;
 - b. consent of the surety, if any, to final payment;
 - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

- d. a list of all duly pending Change Proposals and Claims; and
 - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.
- B. *Engineer's Review of Final Application and Recommendation of Payment:* If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.
- C. *Notice of Acceptability:* In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.
- D. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.
- E. *Final Payment Becomes Due:* Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 *Waiver of Claims*

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

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

- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

15.08 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. correct the defective repairs to the Site or such adjacent areas;
 - 2. correct such defective Work;
 - 3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.
- B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.
- C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.
- D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

- F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:
 - 1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);
 - 2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
 - 3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
 - 4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:
 - 1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and
 - 2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects,

attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

- F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.
- G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate for Convenience*

- A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and
 - 3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The

provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this article:
1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and
 2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this article, Owner or Contractor may:
1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;
 2. agree with the other party to submit the dispute to another dispute resolution process; or
 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18—MISCELLANEOUS

18.01 *Giving Notice*

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

18.02 *Computation of Times*

- A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 *Cumulative Remedies*

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

18.04 *Limitation of Damages*

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

18.05 *No Waiver*

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

18.06 *Survival of Obligations*

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

18.07 *Controlling Law*

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

18.08 *Assignment of Contract*

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

18.09 *Successors and Assigns*

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

18.10 *Headings*

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

SECTION 00 73 00
SUPPLEMENTARY CONDITIONS

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PART II - FEDERAL AND STATE GOVERNMENT PROVISIONS

1.0. FEDERAL GOVERNMENT PROVISIONS

2.0. STATE GOVERNMENT PROVISIONS

SECTION 00 73 00
SUPPLEMENTARY CONDITIONS

PART 1 - AMENDMENTS TO GENERAL CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (EJCDC Document No. C-700, 2018 edition) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

ARTICLE 2 - PRELIMINARY MATTERS

SC-2.01C.

Delete Paragraph 2.01C of the General Conditions in its entirety.

SC-2.02A.

Delete "four printed copies " in the first line and replace with " one electronic copy "

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

SC-3.01G.

Add the following new paragraph immediately after Paragraph 3.01G. of the General Conditions which is to read as follows:

H. Each and every provision of law and clause required by law to be inserted in these Contract Documents shall be deemed to be inserted herein, and they shall be read and enforced as though they were included herein, and if through mistake or otherwise, any such provision is not inserted, or if not correctly inserted, then upon the application of either party, the Contract Documents shall forthwith be physically amended to make such insertion.

ARTICLE 4 - COMMENCEMENT AND PROGRESS OF THE WORK

SC-4.01A.

Delete Paragraph 4.01A of the General Conditions in its entirety and replace with the following:

A. The Contract Time will commence to run upon receipt of Notice to Proceed.

SC-4.03A.

Add the following new paragraph immediately after Paragraph 4.03A of the General Conditions which is to read as follows:

B. Engineer may check the lines, elevations, reference marks, batter boards, etc., set by Contractor, and Contractor shall correct any errors disclosed by such check. Such a check shall not be considered approval of Contractor's work and shall not relieve Contractor of the responsibility for accurate construction of the entire Work. Contractor shall furnish personnel to assist Engineer in checking lines and grades.

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

5.03 Subsurface and Physical Conditions

SC-5.03 Delete Paragraph 5.03.C in its entirety and replace with the following:

C. Reliance by Contractor on Technical Data: Reports and Drawings containing technical data are not Contract Documents and the Technical Data contained within is provided for information only. The Contractor may rely on the accuracy of the Technical Data, but the reliance is limited to the time and location the data was obtained as identified in the report. The data shall not be used as a baseline of the existing conditions to be encountered across the entire site. Bidder is responsible for any interpretation or conclusion Bidder draws from the Technical Data. The Technical Data does not relieve Bidders of the responsibility to make their own determinations regarding construction costs nor of the responsibility for the means, methods, techniques, sequences, and procedures of construction.

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

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

Report Title	Date of Report	Technical Data
No Reports		

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

Report Title	Date of Report	Technical Data
No Reports		

5.04 Differing Subsurface or Physical Conditions

SC-5.04 Delete Paragraph 5.04.A.1 in its entirety.

5.06 Hazardous Environmental Conditions

2. Property Damage	\$1,000,000 \$1,000,000	Each Occurrence Annual Aggregate
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SC-6.03

Add new Subparagraph 6.03.A.1 as follows:

1. Contractor’s Insurance

a. Workers' Compensation: Contractor shall purchase and maintain workers’ compensation and employer’s liability insurance for:

1. claims under workers’ compensation, disability benefits, and other similar employee benefit acts.
2. United States Longshoreman and Harbor Workers’ Compensation Act and Jones Act coverage (if applicable).
3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor’s employees (by stop-gap endorsement in monopolist worker’s compensation states).
4. Foreign voluntary worker compensation (if applicable)
5. Stop Gap Employer Liability for work in ND, OH, WA, WY & Puerto Rico
6. The limits of liability for the workers compensation insurance required by Paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by law.

(1) Worker's Compensation	Statutory
(2) Employer's Liability	\$1,000,000 Each Occurrence \$1,000,000 Disease per employee
(3) U.S. Longshoremen's and Harbor Workers' Compensation Act	\$1,000,000
(4) Admiralty Jurisdiction, Coverage/Program II	\$1,000,000

b. Commercial General Liability – Claims Covered: Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:

1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor’s employees.
2. claims for damages insured by reasonably available personal injury liability coverage.
3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
4. Contractor’s commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:
5. Products and completed operations coverage:

- 1) Such insurance shall be maintained for three years after final payment.
- 2) 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.

- 6. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to tort liability and coverage of Contractor’s contractual indemnity obligations in Paragraph 7.18.
- 7. Severability of interest.
- 8. Underground, explosion, and collapse coverage.
- 9. Personal injury coverage.
- 10. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.
- 11. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, “Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured” or its equivalent.
- 12. There shall be no specific exclusions associated with scope or work or any cross-suit exclusions for Additional Insureds.
- 13. Commercial General Liability Insurance shall not be less than the following amounts.

Bodily Injury:	\$1,000,000	Each Occurrence
	\$1,000,000	Annual Aggregate
Property Damage:	\$1,000,000	Each Occurrence
	\$1,000,000	Annual Aggregate
Personal Injury:	\$1,000,000	Annual Aggregate

- c. Comprehensive Automobile Liability including all owned (private and others), hired and non-owned vehicles, including contractual liability coverage and MCS-90 endorsement if Contractor is hauling goods:

Bodily Injury	\$1,000,000	
Each Person	\$1,000,000	Each Accident
Property Damage: Each accident		
Combined Single Limit of	\$1,000,000	Each Occurrence

- d. Umbrella or Excess Liability:

Per Occurrence	\$1,000,000
General Aggregate	\$1,000,000

- e. Contractor’s Pollution Liability:

Each Occurrence	\$1,000,000
General Aggregate	\$1,000,000

- If box is checked, Contractor is required to provide Contractor's Pollution Liability insurance under this Contract.

SC 6.03 B

Add a new subparagraph 6.03 B .6 as follows

6. All policies of insurance required to be provided by the Contractor shall contain provisions that the insurer(s) waive all rights of subrogation against the City of Wichita, Garver and Professional Engineering Consultants, and their subsidiaries, directors, partners and other consultants and subcontractors of each and any of them and other parties identified in the Supplementary Conditions.

SC 6.03 C.1 Additional Insureds

Add the following two sentences to subparagraph 6.03.C.1 of the General Conditions:

The City of Wichita, Garver and Professional Engineering Consultants, and their subsidiaries officers, directors, partners, employees and other consultants and subcontractors are named as additional insureds. All insurers waive all rights of subrogation against the City of Wichita, Garver and Professional Engineering Consultants, their subsidiaries, officers, directors, partners, employees and other consultants and subcontractors.

ARTICLE 7 - CONTRACTOR'S RESPONSIBILITIES

SC-7.02

Add the following 2 new paragraphs immediately after Paragraph 7.02B. of the General Conditions which are to read as follows:

C. Regular working hours are defined as 10 hours per day, Monday through Friday, excluding holidays, between the hours of 7:00 AM and 7:00 PM. Requests to work other than regular working hours shall be submitted to Owner/Garver not less than 48 hours prior to any proposed weekend work or scheduled extended work weeks. Occasional unscheduled overtime on weekdays may be permitted provided two hours' notice is given to Engineer.

D. Contractor shall reimburse the Owner for additional engineering and/or inspection costs incurred as a result of overtime work in excess of the regular working hours stipulated in Paragraph SC-7.02C. At Owner's option, overtime costs may either be deducted from the Contractor's monthly payment request or deducted from the Contractor's retention prior to release of final payment. Overtime costs for the Owner's personnel shall be based on the individual's current overtime wage rate. Overtime costs for personnel employed by the Engineer or Owner's independent testing laboratory shall be calculated in accordance with the terms of their respective contracts with the Owner.

SC-7.02E.

Add the following new paragraphs immediately after what will be Paragraph 7.02D of the General Conditions, which are to read as follows:

E. This Agreement is subject to the applicable provisions of the Contract Work Hours and Safety Standards Act, Public Law 87-581, 87th Congress. No Contractor or Subcontractor contracting for any part of the Work shall require or permit any laborer or mechanic to be employed on the Work in excess of forty hours in any work week unless such laborer or mechanic receives compensation at a rate not less than one and one-half times that person's basic rate of pay for all hours worked in excess of forty hours in such work week.

F. Contractor shall employ only competent persons to do the work and whenever Owner shall notify Contractor, in writing, that any person on the Work appears to be incompetent, disorderly, or otherwise unsatisfactory, such person shall be removed from the Project and shall not again be employed on it except with the consent of Owner.

G. Contractor and Subcontractors shall, insofar as practicable, give preference in the hiring of workers for the Project to qualified local residents with first preference being given to citizens of the United States who have served in the armed forces of the United States and have been honorably discharged therefrom or released from active duty therein.

H. Contractor and all Subcontractors shall pay to all laborers and mechanics employed for the construction covered by this Contract the minimum rates of pay as determined by the Secretary of Labor in accordance with the Act of March 3, 1931, as amended, known as the Davis-Bacon Act (40 U.S.C. 276a through 276a-7). Furthermore, Contractor and Subcontractors shall adhere to the stipulations and provisions published by the Secretary of Health, Education, and Welfare in "Labor Standards (Federal Water Pollution Control Act)." The Wage Rate Schedule as prepared by the Secretary of Labor and the "Labor Standards" are part of this Contract and are included in Appendix C of these Supplementary Conditions.

I. Contractor and all Subcontractors shall comply with the Regulations of the Secretary of Labor made pursuant to the Anti-Kickback Act of June 30, 1940 (40 U.S.C. 276c) and all amendments or modifications thereto. Contractor and all Subcontractors shall furnish Owner with weekly Statements of Compliance. In case of Subcontracts, Contractor shall cause appropriate provision to be inserted in all subcontracts for the Work which Contractor may let to ensure compliance with said Anti-Kickback Act by all Subcontractors subject thereto, and Contractor shall be responsible for the submission of all Statements of Compliance required of Subcontractors by said Anti-Kickback Act except as the Secretary of Labor may specifically provide for reasonable limitations, variations, and exemptions from the requirements thereof. These Regulations are part of this Contract and are included in PART II of these Supplementary Conditions.

SC-7.10A

Add the following new Paragraph 7.10B to the General Conditions to read as follows:

B. Certain materials and supplies to be used in the Work of this Contract may be exempt from the Sales and Use Tax. Contractor shall obtain the proper certificates, maintain the necessary records and otherwise comply with the requirements of and any amendments thereto.

SC-7.15A.

Delete the last sentence in Paragraph 7.15A. of the General Conditions in its entirety and replace with the following:

If Engineer determines that the incident giving rise to the emergency action was not the responsibility of the Contractor and that a change in the Contract Document is required because of the action taken by the Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

SC-7.16D.1.

Add the following new sentence at the end of paragraph 7.16.D.1 of the General Conditions to read as follows:

Approval of Shop Drawings for equipment requiring Efficiency Guarantee Bonds will be withheld until the receipt of such Bonds.

SC-7.17A.

Add the following new paragraph immediately after Paragraph 7.17A. of the General Conditions which is to read as follow:

1. The Contractor guarantees that the Work and Services to be performed under the Contract, and all workmanship, materials and equipment performed, furnished, used or installed in the construction of the same shall be free from defects and flaws, and shall be performed and furnished in strict accordance with the Drawings, Specifications, and other Contract Documents, that the strength of all parts of all manufactured equipment shall be adequate and as specified and that the performance test requirements of the Contract shall be fulfilled. This guarantee shall be for a period of two years from and after the date of substantial completion. If part of the Work is accepted in accordance with Paragraph 15.04 of the General Conditions, the guarantee for that part of the Work shall be for a period of one year from the date fixed for such acceptance.
2. If at any time within the said period of guarantee any part of the Work requires repairing, correction or replacement, the Owner may notify the Contractor in writing to make the required repairs, correction or replacements. If the Contractor neglects to commence making such repairs, corrections or replacements to the satisfaction of the Owner within seven (7) days from the date of receipt of such notice, or having commenced fails to prosecute such Work with diligence, the Owner may employ other persons to make said repairs, correction or replacements, and charge the costs, including compensation for additional professional services, to the Contractor.
3. The Contractor's guarantee under Paragraph 7.17A, is in addition to the Contractor's express or implied warranties under this Contract and State law and in no way diminish any other rights that the Owner may have against the Contractor.

SC-7.17E.

Add the following new paragraph immediately after Paragraph 7.17E. of the General Conditions which is to read as follows:

F. Manufacturer's Guaranty/Warranty

1. The Contractor shall obtain the following guaranty/warranty from the manufacturer of all major pieces of equipment furnished and installed on this Project. Such guaranty/warranty shall be for the benefit of Owner and be furnished in writing by the manufacturer. The Contractor's and manufacturer's obligations under this provision are in addition to other express or implied warranties under the Contract Documents and under the law and in no way diminish any other right that the Owner may have against the Contractor or manufacturer for faulty material, equipment or work. The warranty period shall not be interpreted as a limitation on the time in which the Owner can enforce such other duties, obligations, rights, or remedies.
2. The manufacturer warrants and guarantees for a period of two years from the date of Substantial Completion, or such longer period that may be specified in the Contract Documents, that all materials and equipment furnished and installed shall be free from flaws, defects in material and workmanship and shall be in conformance with the Contract Documents.

SC-7.18A.

Delete Paragraph 7.18A of the General Conditions in its entirety and replace with the following:

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 defend, indemnify and hold harmless City of Wichita, Garver and Professional Engineering Consultants, and their subsidiaries, 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 reasonable fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost or loss or damage:

1. is attributable to bodily injury, sickness, disease or death or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom; and

2. is caused in whole or in part by any 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, regardless of whether or not caused in part by any negligence or omission of an individual or entity indemnified hereunder or whether liability is imposed upon such indemnified party by Laws and Regulations regardless of the negligence of any such indemnified party unless caused by the sole negligence of a party indemnified hereunder. If through the omissions or acts of neglect on the part of Contractor, any other contractor or any Subcontractor shall suffer loss or damage on the Work, Contractor shall settle with such other contractor or Subcontractor by agreement or arbitration if such other contractor or Subcontractor will so settle. If such other contractor or Subcontractor shall assert any claim against Owner and/or Engineer, or the officers, directors, members, partners, employees, agents, consultants and subcontractors of each on account of any damage alleged to have been sustained, Owner shall notify Contractor, who shall defend, indemnify and save harmless City of Wichita, Garver and Professional Engineering Consultants, and their subsidiaries, directors, members, partners, employees, agents, consultants and subcontractors of each against any such claims.

ARTICLE 8 – OTHER WORK AT THE SITE

SC-8.02 Coordination

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

C. Proposed site improvements on the Full Vision Addition properties (Sta. 18+70 to Sta. 27+05) may be under construction over the duration of this project. This project is private and is not under the direct control of the Owner. A partial plan set of the proposed improvements is provided for reference and the full set is available upon request.

1. The Contractor shall be responsible for maintaining and coordinating their own safety requirements with the adjacent work, but the Contractor is not responsible for any coordination of the work itself with the private improvements. Any work coordination issues shall be directed to the Owner and the Owner will complete the coordination directly with the private owner/contractor.

ARTICLE 9. OWNER'S RESPONSIBILITIES

SC-9.04a

Add the following new paragraph immediately after Paragraph 9.11A of the General Conditions which is to read as follows:

B. Payment Requests: Review applications for payment with Contractor for compliance with the established procedure for their submission.

C. Shop Drawings and Samples:

- a. Record date of receipt of Samples and Contractor-approved Shop Drawings.

- b. Receive Samples which are furnished at the Site by Contractor and notify Engineer of availability of Samples for examination.

D. Certificates, Operation and Maintenance Manuals: During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Contract Documents to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.

SC-9.11A.

Add the following new paragraph immediately after Paragraph 9.11A of the General Conditions which is to read as follows:

B. Upon request of Contractor prior to the execution of any Change Order involving a percent increase in the Contract Price, Owner shall furnish to Contractor responsible evidence that adequate financial arrangements have been made by Owner to enable Owner to fulfill the increased financial obligations to be undertaken by Owner as a result of such Change Order.

SC-9.13

Add the following new paragraph immediately after Paragraph 9.12 of the General Conditions which is to read as follows:

9.13 Owner's Site Representative

A. Owner will furnish an "Owner's Site Representative" to represent Owner at the Site and assist Owner in observing the progress and quality of the Work. The Owner's Site Representative is not Engineer's consultant, agent, or employee.

ARTICLE 10 - ENGINEER'S STATUS DURING CONSTRUCTION

10.03 Resident Project Representative

SC-10.03C.

Add the following new paragraphs immediately after paragraph 10.03B of the General Conditions which are to read as follows:

C. The Resident Project Representative (RPR) will be Owner's representative at the Site, as employee of Owner's Agent, Garver.

1. General: RPR's dealings in matters pertaining to the Work in general shall be with Engineer, Owner's Agent, and Contractor. RPR's dealings with Subcontractors shall only be through or with the full knowledge and approval of Contractor. RPR shall generally communicate with Owner only with the knowledge of and under the direction of the Owner's Agent.

2. Schedules: Review the progress schedule, schedule of Shop Drawing and Sample submittals, and Schedule of Values prepared by Contractor and consult with Owner's Agent and Engineer concerning acceptability.
3. Conferences and Meetings: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings. The entity responsible for conducting meeting will record significant discussion and distribute minutes.
4. Liaison:
 - a. Serve as Owner's Agent's liaison with Contractor. Working principally through Contractor's authorized representative or designee and City's Program Manager, assist in providing information regarding the provisions and intent of the Contract Documents.
 - b. Assist Engineer and Owner's Agent in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.
 - c. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.
5. Interpretation of Contract Documents: Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.
6. Shop Drawings and Samples:
 - a. Maintain a file with list of shop drawings/submittals received. This does not relieve Contractor of responsibility to maintain record documents as outlined in Article 7.
 - c. Advise Engineer, Owner's Agent, and Contractor of the commencement of any portion of the Work requiring a Shop Drawing or Sample submittal for which RPR believes that the submittal has not been approved by Engineer.
7. Modifications: Report Contractor's suggestions for modifications to Engineer and Owner's Agent. Transmit to Contractor in writing decisions as issued by Engineer.
8. Review of Work and Rejection of Defective Work:
 - a. Conduct on-Site observations of Contractor's work in progress to assist Owner's Agent in determining if the Work is in general proceeding in accordance with the Contract Documents.
 - b. Report to Owner's Agent and Engineer whenever RPR believes that any part of Contractor's work in progress is defective, will not produce a completed Project that conforms generally to the Contract Documents, or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.

9. Inspections, Tests, and System Start-ups:

- a. Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate Owner's personnel.
- b. Verify delivery to Owner copies of all tests, inspections, and system startup data.
- c. Due to size, complexity and the potential for multiple construction contracts covered by the RPR's and Owner's Advisor, the RPR resources are limited and may not be able to observe all activities on site. Contractor shall coordinate and schedule critical activities with RPR and shall at a minimum provide 24 hours written notice for those critical activities.

10. Records:

- a. Prepare a daily report or keep a diary or log book, recording Contractor's hours on the Site, Subcontractors present at the Site, weather conditions, data relative to questions of Change Orders, Field Orders, Work Change Directives, or changed conditions, Site visitors, deliveries of equipment or materials, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to Engineer. This does not alleviate Contractor from requirement to prepare daily construction reports. Due to size, complexity and the potential for multiple construction contracts covered by the RPR's and Owner's Advisor, the RPR resources are limited and may not be able to observe all activities on site.
- b. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.
- c. Maintain records for use in preparing Project documentation.

11. Reports:

- a. Furnish to Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the Progress Schedule and schedule of Shop Drawing and Sample submittals.
- b. Coordinate change orders with the Owner and Contractor for changes in the work falling outside the scope of work originally provided for in the construction contract documents.
- c. Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, force majeure or delay events, damage to property by fire or other causes, or the discovery of any Constituent of Concern or Hazardous Environmental Condition.

12. Completion:

- a. Participate in Engineer's visits to the Site to determine Substantial Completion, assist in the determination of Substantial Completion and the preparation of a punch list of items to be completed or corrected.

- b. Participate in Engineer's final visit to the Site to determine completion of the Work, in the company of Owner and Contractor, and prepare a final punch list of items to be completed and deficiencies to be remedied.
- c. Observe whether all items on the final list have been completed or corrected and make recommendations to Owner's Agent and Engineer concerning acceptance and issuance of the notice of acceptability of the work.

D. The RPR shall not:

- 1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).
- 2. Exceed limitations of Owner's Agent's authority as set forth in the Contract Documents.
- 3. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.
- 4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences, or procedures of Contractor's work.
- 5. Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.
- 6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.
- 7. Accept Shop Drawing or Sample submittals from anyone other than Contractor.
- 8. Authorize Owner to occupy the Project in whole or in part.

ARTICLE 11 - CHANGES TO THE CONTRACT

SC-11.07C.2.b.

In paragraph 11.07C.2.b, before the semicolon add the following words "based on subcontractor's Cost of the Work";

ARTICLE 12 – CLAIMS

Delete Article 12 in its entirety and replace with the following:

A. Notice of Claim: If Owner and Contractor are not in agreement regarding a proposed or requested Change Order, other proposed adjustment of contract Price or Contract Times, a Work Change Directive issued by Owner, or any other relief proposed or requested under the Contract, then either party may provide written notice of Claim to the other party. Such notice of Claim shall be given within 90 days of: the proposal or request for a Change Order; such other proposed adjustment of Contract Price or Contract Times; the issuance of the Work Change Directive; or the proposal or request for other relief under the Contract. The notice of Claim shall be given within the 90 days regardless of whether the other party has responded to such proposal, request, or issuance, and regardless of whether discussions or negotiations are in progress; provide, however, that the parties may extend the time to give such notice of Claim by mutual written agreement. The notice of Claim shall include a statement of position, specification of the remedy sought, and supporting documentation.

B. Response: Within 30 days of the date of notice of Claim, the receiving party shall respond with a written statement of position and any supporting documentation.

C. Direct Negotiations: Owner and Contractor agree to directly negotiate all Claims between them in good faith for a period of 60 days from the date of notice of Claim.

D. Mediation: If direct negotiations are unsuccessful in resolving the Claim, then the Owner and Contractor shall submit the unsettled Claim to mediation by a mutually agreeable mediator or mediation service. Owner and Contractor agree to participate in the mediation process in good faith. The process shall be conducted on a confidential basis and shall be completed within 120 days.

1. The fees and expenses, including filing fees, of the mediator and any mediation service shall be shared equally by Owner and Contractor.
2. The mediation shall be held in the locality where the Project is located, unless another location is mutually agreed by the parties.
3. A settlement (if any) resulting from such mediation shall be specifically enforceable under the prevailing law, by any court having jurisdiction.
4. Participation in the mediation process in good faith is a condition precedent to commencing final or binding dispute resolution.

E. If mediation is unsuccessful in resolving a Claim, then within 120 days of the completion of the mediation the claimant may give notice to the other that the claimant will seek to have the dispute resolved by a court of competent jurisdiction. Failure by claimant to give such notice in a timely manner shall result in a waiver of the Claim.

ARTICLE 13 - COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

SC-13.01B.1.

Delete the second sentence in paragraph 13.01B.1. of the General Conditions in its entirety and replace with the following:

Such employees shall include foremen at the site.

SC-13.01B.1.

Add the following new paragraph immediately after paragraph 13.01B.1. of the General Conditions which is to read as follows:

a. Following award and prior to execution of a construction contract Contractor shall establish, in the Agreement, the Direct Labor Cost percentage. This percentage, where approved by Owner, will be used in the determination of the Direct Labor Cost listed in the Change Order Form included in PART II of the Supplementary Conditions. The Direct Labor Costs are defined to include social security contributions, unemployment, excise and payroll taxes, workers' and workmen's compensation, health and retirement benefits, sick leave, vacation and holiday pay, and cost of premiums for all additional insurance required because of changes in the Work.

SC-13.02.

Delete Paragraph 13.02 of the General Conditions in its entirety.

SC-13.03E.

Delete Paragraph 13.03E. of the General Conditions in its entirety and replace with the following:

E. The unit price of an item of Unit Price Work shall be subject to re-evaluation and adjustment under the following conditions:

1. if the total cost of a particular item of Unit Price Work amounts to 5 percent or more of the Contract Price and the variation in the quantity of that particular item of Unit Price Work performed by Contractor differs by more than 15 percent from the estimated quantity of such item indicated in the Agreement; and
2. if there is no corresponding adjustment with respect to any other item of Work; and
3. if Contractor believes that Contractor has incurred additional expense as a result thereof; or if Owner believes that the quantity variation entitles Owner to an adjustment in the unit price, either Owner or Contractor may make a claim for an adjustment in the Unit Price for that quantity by which the actual quantity exceeds 115% of the estimated quantity in accordance with Article 12 if the parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed.

ARTICLE 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

SC-14.06A.

Add the following new paragraph immediately after Paragraph 14.06A. of the General Conditions to read as follows:

- C. If Owner stops Work under Paragraph 14.06A. Contractor shall not be entitled to any extension of Contract Time or increase in Contract Price.

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

SC-15.01B.1.

Remove and replace the first sentence of paragraph 15.01.B.1 to read as follows:
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 Owner's Agent for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.

SC-15.01B.4.

Add the following new paragraph immediately after paragraph 15.01B.4 of the General Conditions which is to read as follows:

5. Contractor shall furnish evidence that payment received on the basis of materials and equipment not incorporated and suitably stored, has in fact been paid to the respective supplier(s) within sixty (60) days of payment by Owner. Failure to provide such evidence of payment may result in the withdrawal of previous approval(s) and removal of the cost of related materials and equipment from the next submitted Application for Payment.

SC-15.01D.1.

In paragraph 15.01D.1. of the General Conditions delete the word "Ten" and replace with the word "Twenty".

SC-15.01D.1.

Add the following new paragraphs immediately after paragraph 15.01D.1. of the General Conditions which are to read as follows:

2. Should Contractor neglect to pay any undisputed claims, made in writing to Owner within thirty days after completion of the Work, but continuing unsatisfied for a period of ninety days, Owner may pay such claim and deduct the amount thereof from the balance due Contractor. Owner may also, with the written consent of Contractor, use any monies retained, due, or to become due under this Contract for the purpose of paying for both labor and materials for the Work, for which claims have not been filed.

3. Security is provided both by the Payment Bond and the power of Owner to retain any monies for claims, but payment by one shall in no way impair or discharge the liability of the other.

4. All monies paid by Owner in settlement of liens, with the costs and expenses incurred by Owner in connection therewith, shall be charged to Contractor, shall bear interest at the rate of three percentage points above the rediscount rate then charged by the Federal Reserve Bank, and shall be deducted from the next payment due Contractor under the terms of this Contract.

SC-15.02

Add the following new paragraphs immediately after Paragraph 15.02A of the General Conditions which are to read as follows:

B. No materials or supplies for the Work shall be purchased by Contractor or Subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. Contractor warrants that Contractor has good title to all materials and supplies used by Contractor in the Work, free from all liens, claims or encumbrances.

C. Contractor shall defend, indemnify and save Owner, Owner's Agent and Engineer harmless from all claims growing out of the lawful demands of Subcontractors, laborers, workmen, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this Contract. Contractor shall at Owner's request, furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged, or waived. If Contractor fails to do so, then Owner may, after having served written notice on the said Contractor either pay unpaid bills, of which Owner has written notice, direct, or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to Contractor shall be resumed, in accordance with the terms of this Contract, but in no event shall the provisions of this sentence be construed to impose any obligations upon Owner to either Contractor or Contractor's Surety. In paying any unpaid bills of the Contractor, Owner shall be deemed the agent of Contractor and any payment so made by Owner shall be considered as payment made under the Contract by Owner to Contractor and Owner shall not be liable to Contractor for any such payment made in good faith.

SC-15.06B.

Delete paragraph 15.06B of the General Conditions in its entirety and replace with the following:

Engineer's Review of Final Application and Recommendation of Payment: If, on the basis of Owner's Agent's or Engineer's observation of the Work during construction and final inspection, and Owner's Agent's review of the final Application for Payment and accompanying documentation - all as required by the Contract Documents, Owner's Agent is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Owner's Agent will indicate in writing Owner's Agent's recommendation of payment and present the Application to Owner for payment. Thereupon Owner's Agent will give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of paragraph 15.07. Otherwise, Owner's Agent will return the Application 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. If the Application and accompanying documentation are appropriate as to form and substance, Owner shall in accordance with the applicable laws and regulations, pay Contractor the amount recommended by Owner's Agent.

SC-15.06E.

Add the following new paragraph immediately after Paragraph 15.06E. of the General Conditions which is to read as follows:

F. Final payment will be reduced by the amount of excessive costs of plant inspection of pipe. Excessive costs are defined as the inspection costs incurred by Owner for that amount of pipe which exceeds 125 percent of the aggregate length of each type installed.

ARTICLE 16 - SUSPENSION OF WORK AND TERMINATION

SC-16.02A.4.

Add the following new paragraph immediately after paragraph 16.02.A.4 of the General Conditions which is to read as follows:

5. If Contractor abandons the Work, or sublets this Contract or any part thereof, without the previous written consent of Owner, or if the Contract or any claim thereunder shall be assigned by Contractor otherwise than as herein specified.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

SC-17.01B.

Delete Paragraph 17.01.B. and items 17.01.B.1., 17.01.B.2., 17.01.B.3. in its entirety and replace with the following:

“B. *Final Resolution of Disputes*: For any dispute subject to resolution under this article, Owner or Contractor shall give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction. Such litigation can be filed only after the parties have completed the mandatory dispute escalation procedure.”

Add a new paragraph immediately after paragraph 17.01B. of the General Conditions which is to read as follows:

C. Contractor shall carry on the Work and maintain the progress schedule during the dispute resolution proceedings, unless otherwise agreed by Contractor and Owner in writing.

ARTICLE 18 - MISCELLANEOUS

SC-18.10

Add the following new paragraphs immediately after Paragraph 18.10 of the General Conditions which are to read as follows:

18.11 Addresses

A. Both the address given in the Proposal Form upon which this Agreement is founded, and Contractor's office at or near the site of the Work are hereby designated as places to either of which notices, letters, and other communications to Contractor shall be certified, mailed, or delivered. The delivering at the above-named place, or depositing in a postpaid wrapper directed to the first-named place, in any post office box regularly maintained by the post office department, of any notice, letter or other communication to Contractor shall be deemed sufficient service thereof upon Contractor; and the date of said service shall be the date of such delivery or mailing. The first-named address may be changed at any time by an instrument in writing, executed and acknowledged by Contractor, and delivered to Owner, Owner's Agent and Engineer. Nothing herein contained shall be deemed to preclude or render inoperative the service of any notice, letter, or other communication upon Contractor personally.

18.12 Wage Rates

A. The requirements and provisions of all applicable laws and any amendments thereof or additions thereto as to the employment of labor, and to the schedule of minimum wage rates established in compliance with laws shall be a part of these Contract Documents. Copies of the wage schedules effective at the time of this bid publication are included in PART II of these Supplementary Conditions. The wage schedule in effect at the time of City Council's approval of the Agreement shall be utilized for this project. If, after the Notice of Award, it becomes necessary to employ any person in a trade or occupation not classified in the wage determinations, such person shall be paid at not less than such rates as shall be determined by the officials administering the laws mentioned above. Such approved minimum rate shall be retroactive to the time of the initial employment of such person in such trade or occupation. Contractor shall notify Owner of Contractor's intention to employ persons in trades or occupations not classified in sufficient time for Owner to obtain approved rates for such trades or occupations.

B. The schedules of wages referred to above are minimum rates only, and Owner will not consider any claims for additional compensation made by Contractor because of payment by Contractor of any wage rate in excess of the applicable rate contained in these Contract Documents. All disputes between Contractor and employees of Contractor in regard to the payment of wages in excess of these specified in the schedules shall be resolved by Contractor.

C. The said schedules of wages shall continue to be the minimum rates to be paid during the life of this Agreement and a legible copy of said schedules shall be kept posted in a conspicuous place at the site of the work.

D. Both Federal and State schedules of minimum wage rates are included in PART II of these Supplementary Conditions. Where rates differ, the higher rates shall apply as a minimum for that trade.

PART 2 - FEDERAL AND STATE GOVERNMENT PROVISIONS

Federal and State Government Provisions included herein have been selected from those to which specific references have been made elsewhere in the Contract Documents. Each and every other provision of law or clause required by law to be inserted in this Contract shall be deemed to be also inserted herein in accordance with Paragraph 3.01H of the Supplementary Conditions. In the event of any inconsistency, conflict or ambiguity among these provisions, the more stringent of the two provisions shall apply.

1.0. FEDERAL GOVERNMENT PROVISIONS

1.1. Davis Bacon Act Requirements

1.2. Federal Wage Rates

1.3. American Iron and Steel Requirements of P. L. 113-76, the Consolidated Appropriations Act of 2014.

This project is subject to American Iron and Steel. The amendments to the Clean Water Act, as part of WRRDA, apply the American Iron and Steel (AIS) requirements to all treatment works projects.

2.0. STATE GOVERNMENT PROVISIONS

2.1. Owner and Contractor agree that the following State Government Provisions apply to the work to be performed under this Contract and that these provisions supersede any conflicting provisions of this Contract.

2.1.1 KDHE SRF Provision

END OF SECTION

WIFIA SPECIFICATION PACKAGE AND BID CONTRACT LANGUAGE

Last Updated: November 2022

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ECONOMIC AND MISCELLANEOUS AUTHORITIES

DEBARMENT AND SUSPENSION AND PROHIBITIONS RELATING TO VIOLATIONS OF CWA AND CAA WITH RESPECT TO FEDERAL CONTRACTS, GRANTS, OR LOANS

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

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

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

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.

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
Entire Project	7.9	6.9% ³

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 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

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

The Contractor acknowledges to and for the benefit of **City of Wichita** (“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 Contractor 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

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 contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.
- (2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (b)(1) of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. 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 in paragraph (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 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 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.

PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT

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.

SECTION 26 05 00
COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 GENERAL CONDITIONS:

- A. The General Conditions, Supplementary General Conditions, General Requirements, and Special Conditions shall be and are hereby made a part of this Section of the specifications.
- B. In case of conflicts between the electrical drawings and Division 26 of these specifications, the more stringent requirements shall govern. In all cases, notify the Engineer for direction.
- C. The requirements of COMMON WORK RESULTS FOR ELECTRICAL establish minimum requirements, apply to, and are hereby made a part of all sections of Division 26, 27, and 28 of this specification.
- D. The Contractor shall be responsible for excavation of all earth, soil, and rock conditions at the site. Review the elevations and soil boring logs and include all associated costs.

1.2 DESCRIPTION:

- A. The electrical work shall include all labor, materials, tools, transportation, equipment, services, and facilities, required for the complete, proper, and substantial installation of all electrical work shown on the plans, and/or outlined in these specifications. The installation shall include all materials, appliances, and apparatus not specifically mentioned herein or noted on the drawings, but which are necessary to make a complete working installation of all electrical systems.
- B. All of the electrical related work required for this project (unless specified otherwise) is a part of the Electrical Contract price but is not necessarily specified under this division of the specifications or shown on the electrical drawings. Therefore, all divisions of the specifications and all drawings shall be consulted.
- C. The plan drawings are schematic only and are not intended to show the exact routing of raceway systems unless dimensions are noted on the drawings. Final routing will be governed by field conditions (structural members, mechanical equipment, ductwork, underground piping, duct banks, etc.) and shall be determined by the Contractor and approved by the Architect. Any changes in routing shall not change the design of the raceway system.

- D. The plan drawings showing device and equipment locations are schematic only and are not intended to show exact locations unless dimensions are noted on the drawings. The Contractor shall review all contract drawings that may affect the location of devices and equipment to avoid possible interference and permit full coordination of all work. The right to make any reasonable change in location within 6'-0", is reserved by the Architect up until the time of rough-in at no extra cost.
- E. Furnish and install electrical wiring, systems, equipment, and accessories in accordance with the specifications and drawings. Capacities and ratings of transformers, cable, switchgear, panelboards, motor control, and other items, arrangement for specified items in general are shown on drawings.
- F. Electrical service entrance equipment (arrangements for temporary and permanent connections to the power company's system) shall conform to the power company's requirements. Coordinate fuses, circuit breakers and relays with the power company's system, and obtain power company approval. Provide all required temporary building power and lighting. Remove when finished. Installation of temporary power and lighting shall comply with N.E.C. and OSHA requirements.
- G. Ampacities specified or shown on the drawings are based on copper conductors, with the conduit and raceways accordingly sized.

1.3 MINIMUM REQUIREMENTS:

- A. Codes Rules and Regulations: Execute all work under ADA, the latest rules and regulations of the National Electrical Code (NEC), the National Fire Protection Association, and with all laws, regulations and ordinances of the County, State, City, and the Utility Company.
- B. Codes shall govern in case of any direct conflict between codes, plans and specifications; except when plans and specifications require higher standards than those required by code. Variance from the plan and specifications made to comply with code must be approved by the Architect. If approved they shall be made with no increased cost to the Owner.

1.4 STANDARDS:

- A. All material and equipment shall be listed, labeled, or certified by UL LLC, where such standards have been established. Equipment and material which are not covered by UL Standards will be accepted provided equipment and material is listed, labeled, certified, or otherwise determined to meet safety requirements of a nationally recognized testing laboratory. Equipment of a class which no nationally recognized testing laboratory accepts, certifies, lists, labels, or determines to be safe, will be considered if inspected or tested in accordance with national industrial standards, such as NEMA, or ANSI. Evidence of compliance shall include certified test reports and definitive shop drawings.

B. Definitions:

1. Certified: Equipment is "certified" if:
 - a. Equipment has been tested and found by a nationally recognized testing laboratory to meet nationally recognized standards, or to be safe for use in a specified manner.
 - b. Production is periodically inspected by a nationally recognized testing laboratory.
 - c. It bears a label, tag, or other record of certification.
2. Nationally recognized testing laboratory: A testing laboratory, which is approved, in accordance with OSHA regulations, by the Secretary of Labor.

1.5 QUALIFICATIONS (PRODUCTS AND SERVICES):

- A. Manufacturers' Qualifications: The manufacturer shall regularly and presently produce, as one of the manufacturer's principal products, the equipment and material specified for this project, and shall have manufactured the item for at least three years.
- B. Product Qualification:
 1. Manufacturer's product shall have been in satisfactory operation, on three installations of similar size and type as this project, for approximately three years.
 2. The Engineer reserves the right to require the Contractor to submit a list of installations where the products have been in operation before approval.
- C. Service Qualifications: There shall be a permanent service organization maintained or trained by the manufacturer which will respond within two hours of receipt of notification that service is needed. Submit the name and address of service organization.

1.6 MANUFACTURED PRODUCTS:

- A. Materials and equipment furnished shall be new, of best quality and design, free from defects, of current production by manufacturers regularly engaged in the manufacture of such items, for which replacement parts should be available. All items used on this project shall be free of asbestos, PCB, and mercury material.
- B. When more than one unit of the same class of equipment is required, such units shall be the product of a single manufacturer.
- C. Equipment Assemblies and Components:
 1. Components of an assembled unit need not be products of the same manufacturer unless indicated otherwise.

2. Manufacturers of equipment assemblies, which include components made by others, shall be completely responsible for the final assembled unit.
 3. Components shall be compatible with each other and with the total assembly for the intended service.
 4. Constituent parts which are similar shall be the product of a single manufacturer.
- D. Factory and Field wiring shall be identified on the equipment being furnished and on all wiring diagrams.
- E. When Factory Testing is Specified:
1. The Engineer shall have the option of witnessing factory tests. The Contractor shall notify the Engineer a minimum of 15 working days prior to the manufacturer making the factory tests.
 2. Four copies of certified test reports containing all test data shall be furnished to the Engineer prior to final inspection and not more than 90 days after completion of the tests.
 3. When equipment fails to meet factory test and reinspection is required, the Contractor shall be liable for all additional expenses, including expenses of the Engineer.

1.7 EQUIPMENT PROTECTION:

- A. Equipment and material shall be protected during shipment and storage against physical damage, dirt, moisture, cold and rain.
- B. During installation, equipment, controls, controllers, circuit protective devices, and other like items, shall be protected against entry of foreign matter and be vacuum cleaned both inside and outside before testing, operating, and painting.
- C. Damaged equipment shall be, as determined by the Engineer, placed in satisfactory operating condition, or be returned to the source of supply for repair or replacement.
- D. Painted surfaces shall be protected with factory installed removable heavy Kraft paper, sheet vinyl or equal.
- E. Damaged paint on equipment and materials shall be restored to the original quality of paint and workmanship as used by the manufacturer so repaired area is not obvious.

1.8 GENERAL WORK REQUIREMENTS:

- A. Arrange, phase, and perform work to assure electrical service both temporary and permanent for buildings at all times.
- B. Coordinate location of equipment and conduit with other trades to minimize interferences.

- C. Examination of Site:
1. Visit the site, inspect the existing conditions, and check the drawings and specifications so as to be fully informed of the requirements for completion of the work.
 2. Lack of such information shall not justify an extra to the contract price.
- D. Permits:
1. Obtain and pay for all licenses and permits, fees, inspection and certificates required for the execution of this work.
 2. Pay fees and charges for connection to outside services and use of property.
 3. Deliver permits and certificates to the Architect to be transmitted to the Owner.
- E. Services:
1. This Contractor shall pay for all expenses, deposits, reimbursements, etc., required by the local rules and codes for the service to the buildings, complete and ready for use. See plot plan.
 2. Consult Power Company for their requirements and for coordinating with their installation. Contractor shall provide any work thus required beyond that indicated by the drawings and specifications. He shall bear all expense involved for the complete installation of the electrical service (both temporary and permanent) to the building ready for operation, including utility service charges, except as specifically excluded on the plans.
 3. This Contractor shall consult all local departments to verify requirements and bid installation of service in accordance with local codes and Utility company rules and regulations.
 4. This Contractor shall bear all expense involved for the complete telephone and internet service conduit installation and pull wire ready for cable installation. Verify complete installation with the local telephone company and internet service provider and bid installation to comply with their requirements.
- F. Responsibility:
1. This Contractor will be held responsible for any and all damage to any part of the building or to the work of other contractors, as may be caused through this contractor's operation.
 2. Any mutilation of building finishes or equipment initiated by electrical construction shall be properly corrected by the respective finishing contractor and paid for by the Electrical Contractor.
 3. The operation of the temporary power and the permanent electrical system shall be the responsibility of this Contractor until acceptance of the building by the Owner.
- G. Work to be done by General Contractor:

1. Build in all openings, sleeves, chases, etc., for conduit and equipment as established, furnished, and set by this Contractor. The General Contractor shall seal or grout all openings after this Contractor has installed the conduits.
2. Build in bolts, brackets, hangers etc., for work established, furnished, and set by this Contractor.
3. All concrete work required for equipment furnished and set by this Contractor includes clean up pads under electrical gear, fixture bases, transformer bases, etc.
4. Painting: All painting of electrical equipment installed in finished areas shall be done by the General Contractor. Painting will not be required on receptacles, switches, circuit breakers etc. All fixtures and exterior poles specified to be factory-primed shall be painted by General Contractor. Paint all wiremold, exposed conduit and equipment, etc., to match final wall colors.
5. Provide fireproofing above fixtures located in fire rated ceilings per U.L. requirements.
6. Pay all utility costs for operation of electrical system during construction until acceptance of building by the Owner.

H. Workmanship and Coordination:

1. Make installation substantially as shown on the plans.
2. Make alterations in location of apparatus or conduit as may be required to conform to building construction without extra charge.
3. Mechanical equipment service clearances and electrical apparatus service clearances as specified in their respective manufacturer's product data shall be maintained free from conduit.
4. Cooperate with other trades in their installation of work.
5. Complete the installation in a workmanlike manner, completely connected and ready to give proper and continuous service.
6. Use only experienced licensed electricians.

I. Cutting and Patching:

1. Notify the General Contractor in ample time of the location of all chases, sleeves, and other openings required in connection with the work of this contract.
2. Cutting and patching made necessary because of failure to comply with the above shall be done by the General Contractor at the expense of the Electrical Contractor.
3. When it is necessary for the Electrical Contractor to cut building materials, it shall be done in a neat and workmanlike manner meeting with the approval of the Architect.
4. Holes through concrete shall be carefully drilled with a "Concrete Termite" drill. A Star Drill or Air Hammer will not be permitted. Structural members shall not be cut without approval from the Architect.

5. Any penetrations through the roof shall be made with "Stoneman" 900 Series flashing connections as manufactured by Elmdor/Stoneman, City of Industry, California, or as approved by the Architect.
6. Any penetrations made in exterior, or basement foundation walls shall be sealed with Thunderline "Link-Seal" connections, as manufactured by Thunderline Corporation, Wayne, Michigan.

J. Manufacturer's Instructions:

1. Apply, install, connect, erect, use, clean, and condition articles, materials and equipment as directed by the manufacturer.

K. Provide separate support for all devices mounted in or to lay-in ceiling tile. Ceiling tile shall not be used to support any device.

1.9 EQUIPMENT INSTALLATION AND REQUIREMENTS:

A. Equipment location shall be as close as practical to locations shown on the drawings.

B. Working spaces shall not be less than specified in the National Electrical Code for all voltages specified.

C. Inaccessible Equipment:

1. Where the Engineer determines that the Contractor has installed equipment without proper clearances or not conveniently accessible for operation and maintenance, equipment shall be removed and reinstalled as directed at no additional cost to the Owner.

- a. Install access panels as approved by the Architect to provide access to all equipment, J-boxes and outlets located in non-accessible spaces. Panels shall be flush locking type with a fire rating equal to the ceiling system.

2. "Conveniently accessible" is defined as being capable of being reached without the use of ladders, or without climbing or crawling under or over obstacles such as motors, pumps, belt guards, transformers, piping, and ductwork. Outlet and box covers shall be removable by using regular length (8") screw drivers.

D. Distribution Equipment:

1. All items of Electrical Distribution Equipment (switchboards - panelboards - disconnects) shall be of one manufacturer, unless specifically noted on the drawings, in the specifications, or approved by the Engineer. Intermixing of distribution equipment by different manufacturers will not be permitted.

2. Provide a Type 1 surge protective device for lightning protection on each service entrance for each building. The surge protective device shall meet the requirements of UL 1449. Refer to drawings for voltage and phasing of service. Arrester shall be located within the main switch, panel or switchboard enclosure and connected with 12" maximum leads. Surge protective devices shall have an enclosure suitable for indoor or outdoor mounting and shall utilize metal oxide varistors that are individually fused.
 - a. 120/208V and 120/240V Single Phase: Maximum Voltage Protection Ratings shall be 700V L-N and 1200V L-L. Minimum MCOV rating shall be 150V L-N and 300V L-L, minimum nominal discharge current shall be 10,000A, minimum short circuit current rating shall be 25,000A, and minimum surge current rating shall be 36,000A. Square 'D' #SDSA1175 or approved equal.
3. Equipment layouts on the drawings are based on one manufacturer. Verify all actual equipment sizes with equipment manufacturer prior to bidding.
4. If layout changes are required due to differing electrical manufacturer's equipment size, they must be submitted to and approved by the Engineer. National Electric Code working clearances must be maintained at all times. Extra remuneration will not be allowed for layout changes that differ from those shown.
5. Provide and install all steel supports as required for mounting of electrical equipment.
6. Anchor all free-standing electrical equipment including switchboards, switchgear, substations, motor control centers, paralleling gear, transfer switches, transformers, etc. to the floor with plated, 1/2" diameter minimum, anchor bolts or as recommended by the manufacturer.

1.10 EQUIPMENT CONNECTIONS, CONTROLS, AND INSTRUMENTATION:

- A. General: The following applies to all electrical power and control connections for all equipment requiring electrical installation work provided by others.
- B. Electrical Contractor shall install and connect the following items for equipment requiring electrical power that is either furnished or specified by other Contractors and/or the Owner. Where these required items are not furnished with the equipment being connected, it shall be the Electrical Contractors responsibility to provide the necessary items including conduit, boxes, and wiring.
 1. Starters
 2. Variable Frequency Drives
 3. Disconnecting Devices
 4. Thermal Overload Devices
 5. Overcurrent Devices
 6. Short Circuit Protective Devices
 7. Voltage Transformation Equipment

8. Control Devices (Local and Remote)

- C. In general, all major equipment will be specified to be factory prewired with only service and interconnecting wiring required at the site by the electrical contractor; however, the Electrical Contractor shall check all divisions of the specification to verify if the equipment is specified factory prewired and if not, then it shall be the responsibility of the Electrical Contractor to provide the complete wiring of the equipment in accordance with wiring diagrams provided by other contractors and/or Owner to the Electrical Contractor. All interconnecting of equipment shall be by the Electrical Contractor.
- D. All line and low voltage wiring, and connections required to control the equipment are a part of this section. All wiring shall be in conduit. All conduit, wiring, and terminations shall be provided by the Electrical Contractor.
- E. The Electrical Contractor shall provide 120-volt control power supply; #12 Ga. CU. THHN/THWN in 1/2" C. minimum at all points required by controls, instrumentation, and sprinkler risers. Circuit as shown on the plans or to the nearest 120-volt panel if no circuiting is indicated. Use spare 20 Amp. breakers. Each control panel shall be on a separate circuit unless otherwise indicated. If the controlled equipment is fed from the emergency system, then the control power supply must feed from the emergency system.
- F. The Contractor shall become familiar with the equipment to be furnished by the other Contractors and/or the Owner in connection with this work and include provisions for such connections and work in the Contractor's price. Extra remuneration will not be allowed for such work.
- G. Connections to all equipment have been designed from units as specified on the drawings or in the specifications. In the event equipment or control differs on approved shop drawings it shall be the responsibility of the Supplying Contractor to coordinate electrical connections to the units and reimburse Electrical Contractor for any changes in system design. These changes shall not involve additional costs to the Owner.
- H. Review all plans and specifications to verify all equipment connections that are required by mechanical and/or other contractors. Although the electrical drawings will show equipment connection requirements, it is the Electrical Contractor's responsibility to connect all equipment furnished by other Contractor's at no extra cost to the Owner, even if this equipment connection is not shown on the electrical drawings. Coordinate all required connections not shown on the electrical drawings with the Engineer.

1.11 NAMEPLATES:

- A. General: The following items shall be equipped with nameplates:

1. Disconnect switches (fused or nonfused), transformers, switchgear, and switchboards (including branch circuit breakers/switches), panelboards, separately mounted circuit breakers, starters, contactors, relays, junction boxes and pull boxes.
- B. Inscription: Nameplates shall adequately describe the function or use of the particular equipment involved. Nameplates for panelboards and switchboards shall include the panel designation, voltage, and phase, A.I.C. rating of the supply (see schedules, one-line diagram, and color coding). For example, "Panel A" 120/208 V, 3-Phase, 4-Wire, 10,000 A.I.C. or "50,000 AIC with 22 KA Breakers, Series with class 'J' Fuses":
 1. Phase A - Black
 2. Phase B - Red
 3. Phase C - Blue
 4. Neutral - White
 5. Ground - Green
- C. The name used for a machine nameplate shall be the same as the one used on the machine's motor starter, disconnect and P.B. station nameplates. Nameplates for fused switches and panels shall also indicate fuse type and size.
 1. Nameplates shall be as follows:
 - a. Normal power - laminated phenolic plastic white front and back with black core.
 2. Lettering shall be engraved through front layer to form 1/4" characters. Nameplates shall be securely fastened to the equipment to be identified, with No. 4 Phillips, round head, cadmium plated, steel self-tapping screws or nickel-plated brass bolts. Motor nameplate may be nonferrous metal not less than 0.03 inches thick, die stamped. In lieu of separate plastic nameplates, engraving directly on device plates is acceptable. Letters engraved thus shall be filled with contrasting enamel. All nameplates and their installation are part of this work. Free hand lettering or dymo label marker will not be acceptable.

1.12 MATERIALS OF APPROVED EQUAL:

- A. Where items of equipment and/or materials are specifically identified herein by a manufacturer's name, model, or catalog number, and only such specific items may be used in the base bid, except as hereinafter provided.
- B. Unless requests for changes in base bid specifications are received, approved, and noted by written addendum prior to the opening of bids, the successful contractor will be held to furnish specified items.

- C. After the contract is awarded, changes in specifications shall be made only as defined under "Substitution of Equipment".

1.13 SUBSTITUTION OF EQUIPMENT:

- A. After execution of the contract, substitution of equipment of makes other than those specifically named in the contract documents, may be approved by the Engineer, only if the equipment named in the specifications cannot be delivered to the job in time to complete the work in proper sequence and due to conditions beyond control of the Contractor. Provide documentary proof in writing from the manufacturer that the specified equipment will not be available in time. If the Contractor is responsible for the delay, the substitution will not be approved.
- B. Requests for substitutions must be accompanied by documentary proof of equality or difference in price and delivery, if any, in the form of certified quotations from suppliers of both specified and proposed equipment.

1.14 SUBMITTALS: IN ACCORDANCE WITH SECTION SAMPLES AND SHOP DRAWINGS, FURNISH THE FOLLOWING:

- A. The Engineer's approval shall be obtained for all equipment and material before delivery to the job site. Delivery, storage or installation of equipment or material which has not had prior approval will not be permitted at the job site.
- B. All submittals shall include adequate descriptive literature, catalog cuts, shop drawings and other data necessary for the Engineer to ascertain that the proposed equipment and materials comply with specification requirements. Catalog cuts submitted for approval shall be legible and clearly identify equipment being submitted.
- C. Submittals shall be complete and submitted together for each section. Individual systems and equipment assemblies which consist of more than one item or component shall be made for the system or assemble as a whole. Partial submittals will not be considered for approval.
 - 1. Mark the submittals, "SUBMITTED UNDER SECTION_____". Mark out all statements on sheets that do not apply otherwise. The Engineer may select options and equipment not originally specified. All options that are not marked out will be assumed that the Contractor will furnish the same.
 - 2. Submittals shall be marked to show specification reference including the section and paragraph numbers.
 - 3. Submit each section separately.
 - 4. Mark catalog cuts to indicate equipment, capacities, finishes, sizes, etc. Each individual item shall have its own sheet provided for approval. (Example: Separate sheets for each panelboard.)
- D. The submittals shall include the following:

1. Information that confirms compliance with contract requirements. Include the manufacturer's name, model or catalog numbers, catalog information, technical data sheets, shop drawings, pictures, nameplate data and test reports as required.
 2. Elementary and interconnection wiring diagrams for communication and signal systems, control system and equipment assemblies. All terminal points and wiring shall be identified on wiring diagrams.
 3. Parts list which shall include those replacement parts recommended by the equipment manufacturer, quantity of parts, current price, and availability of each part.
 4. Quantities of materials will not be verified by the Architect or Engineer. Approval stamp on shop drawings does not constitute approval of quantities listed on shop drawings.
 5. Shop drawings:
 - a. All shop drawings shall be checked and signed by this contractor and general contractor prior to submittal to the Architect/Engineer.
 - b. Shop drawings submitted without Contractor's signatures or approval and verification will not be approved.
 - c. Shop drawings shall be submitted on devices, motor starters, panelboards, disconnects, raceway systems, low-voltage systems, etc.
 6. Each sheet shall be either 8 1/2" x 11"; 8 1/2" x 13"; or 11" x 17" bond with a 5" x 3" clear area for engineer's stamp. (This area shall not be used by this contractor or the general contractor's stamp.) Larger drawings shall be able to be blue printed.
 7. Submittals for low-voltage systems (fire alarm, security, PA, controls, sound, clock, nurses' call, intercom, etc.) shall include complete riser diagrams showing all conductors and conduit sizes.
- E. Engineer's acceptance of Compliance Submittals will not relieve the Contractor from his responsibility for any deviations from the requirements of the contract documents, unless Contractor has in writing called Engineer's attention to such deviation at the time of submission and the Engineer has given written approval to the specific deviation; nor shall any acceptance by Engineer relieve Contractor from responsibility for errors or omissions in Compliance Submittals.
- F. Quantity of Submittals: See the general specification sections.
- 1.15 ELECTRICAL WORK COMPLETION:
- A. Before requesting final inspection, the following work must be completed.
 - B. Operating Instructions:

1. The Contractor shall submit along with the shop drawings of the equipment, three (3) copies of operating instructions for all items. Instructions shall be prepared by the manufacturer of the equipment.
2. After the operating instructions have been approved by the Engineer, the Contractor shall include the three (3) copies in maintenance instructions brochures.
3. The Contractor shall also obtain all manufacturers' instructions, manuals, and one complete set of drawings and turn these over to the Architect at the completion of the project.
4. The Contractor shall keep in a safe place; all keys and special wrenches furnished with equipment under this contract and shall give same to the Architect at the completion of the project.
5. The Contractor shall prepare a complete brochure, in triplicate, covering all systems and equipment furnished and installed under his contract. Brochures shall be submitted to the Architect-Engineer for approval and delivery to the Owner. The cost of this brochure shall be included in the contract cost. Brochures shall contain the following:
 - a. Certified equipment drawings and/or catalog data clearly marked for equipment furnished as required for approval submission under detailed section of the specifications.
 - b. Complete operating and maintenance instructions for each item of equipment.
 - c. Complete part list for each equipment item.
 - d. Any special emergency operating instructions or a list of service organizations (including addresses and telephone numbers) capable of rendering emergency service to the various parts of the system.
6. Brochures shall be bound in hardbacked three ring binders with an index, sub dividers and reinforced sheets.
 - a. Project name and address.
 - b. Section of work covered by brochure, i.e., "Electrical Work".
 - c. Name and address of Architect.
 - d. Name and address of Engineer.
 - e. Name and address of Contractor.
 - f. Telephone number of Contractor, including night or emergency number.
7. In addition to these written instructions, each respective Contractor shall fully and carefully instruct the Owner, or Owner's selected representatives, as to the proper operation, care and maintenance of each system and its equipment.

1.16 TESTING AND ADJUSTMENT:

- A. Record loads on each phase of all panelboards, distribution panels, switchboards, transformers and submit final readings to the Architect for records. This Contractor shall adjust equipment, instruments, gages, meters etc., as required to test and adjust these systems.
- B. Check, test, and adjust the mechanisms of all electrical equipment and adjustable parts of lighting fixtures as required for optimum performance.
- C. Perform tests for insulation resistance in accordance with the requirements of the National Electrical Code and ensure that all circuits are free from short circuits.
- D. Always keep a calibrated voltmeter and ammeter available and provides service for test readings when and as required, up until the project is accepted by the Owner.
- E. Electrical Testing and Verification: Refer to the following specification sections (as applicable) for required tests and verifications:
 - 1. 260519 – Low Voltage Electrical Power Conductors and Cables
 - 2. 260526 – Grounding and Bonding for Electrical Systems
 - 3. 262416 – Panelboards
 - 4. 262726 – Wiring Devices

1.17 AS-BUILT DRAWINGS:

- A. Show on black or blue line prints in red ink all changes from original plans made during the installation. Return two (2) sets of red marked drawings, specifications, and addenda, as set forth in the General Conditions, to the Architect upon completion of the project.

1.18 FINAL INSPECTION:

- A. Final inspection will be made upon written request from the General contractor after the project is completed, in accordance with the Supplementary General Conditions.
- B. Furnish a workman familiar with this project to accompany the Engineer on final inspection and have available ladders, drop cords, and other equipment as required to gain access to any portion of this system.
- C. This Contractor and his principal subcontractors shall be represented at the inspection by a person of authority responsible for demonstrating to the engineer that his work conforms to the intent of the plans and specifications.
- D. Extra inspections made necessary by the Electrical Contractor's failure to comply with the conditions as set forth above shall be charged to the Contractor for the Inspector's time both on the job and spent in travel between the office and the project site.

1.19 GUARANTEE:

- A. Guarantee all work, material, and equipment for a period of one year after the date of substantial completion.
- B. During the one-year guarantee period the Electrical Contractor shall be responsible for any defects which develop in the electrical systems. Upon notification of a defect by the General Contractor the Electrical Contractor shall make immediate effort to correct it and shall notify the Architect when this work is completed. This guarantee does not include ordinary lamp failure.
- C. Repairs and/or replacements shall be made with no cost to Owner.
- D. Provide as part of the work of this contract, in addition to the first year's guarantee on equipment and materials, the following routine maintenance and inspection. (The one-year time period will not start until each item is completed in accordance with plans and specifications and accepted by the Owner). Correct and adjust all emergency systems, controls, fire alarm, transformer, etc. This service is to be provided throughout the guarantee period.

1.20 SINGULAR NUMBER:

- A. Where any device or part of equipment is referred to in these specifications in the singular number (such as "the switch"), such reference shall be deemed to apply to as many such devices as are required to complete the installation as shown on the drawings.

1.21 LOW-VOLTAGE SYSTEMS:

- A. Equipment and wiring for special systems shall be as shown in the following schedule:

SYSTEM	EQUIPMENT FURNISHED BY	EQUIPMENT INSTALLED BY	WIRING FURNISHED AND INSTALLED BY
Voice/Data	Contractor	Contractor	Contractor

- B. Power wiring for low-voltage systems shall be furnished and installed by the contractor as shown on the drawings and as required by the equipment manufacturer.
- C. Low voltage outlets shall be installed as shown on the drawings and shall be as specified for voice outlets, hereinbefore, or as otherwise shown or required by the application or by the equipment manufacturer.
- D. Systems shall be completely installed in separate conduit systems. All cable for these systems shall be in conduit and shall not be combined with any other system cable. Conduits systems shall be furnished and installed by the Electrical Contractor.

- E. Conduit for low-voltage systems other than nurse call, code blue, medical gas, and fire alarm shall be limited to the following and shall be furnished and installed by the Electrical Contractor.
 - 1. Conduit in walls, from outlets to accessible ceilings, terminated with open end bushing above ceiling.
 - 2. Conduits between floors, terminated with open end bushings.
 - 3. Conduits across fire and/or smoke walls, terminated with open end bushings, and sealed with approved fire rated material.
 - 4. Other conduits as shown on drawings.
- F. Conduits shall be sized as required by the number and type of conductors applied and/or as noted on plans (minimum 1") and shall be not smaller than sizes recommended by the equipment manufacturer. All conduits shall be labeled to identify which system it is to be used for i.e.: Fire Alarm, Nurse Call, Code Blue, P.A. etc.
- G. When ceiling voids are used as air return plenums, only U.L. Listed plenum cable shall be used or cables shall be completely routed in conduit.
- H. All low voltage wiring installed in ceiling voids shall be bundled, neatly routed, suspended above the grid system, or located in cable tray and labeled with appropriate tags as to service.
- I. Low voltage wire and cable shall be specifically designed to function with the equipment supplied. Cable shall be color coded for ease of installation and service, twisted, shielded, and grounded for control of voice circuits and covered with wear-resistant moisture proof protective insulation. Wire shall bear manufacturer's trademark either embossed or printed on cable.

END OF SECTION

SECTION 26 05 19
LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY:

- A. Section includes:
 - 1. Building wires and cables rated 600 VAC and less.
 - 2. Connectors, splices, and terminations rated 600 VAC and less.
 - 3. Wire lubricating compound.
 - 4. Control wiring.
 - 5. Communication and signal wiring.
 - 6. Fireproofing tape.

1.3 SUBMITTALS

- A. Product Data (Where indicated in Section “Common Work Results for Electrical”, provide the following information): For each type of product indicated.

1.4 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended use.
- B. Comply with NFPA 70.
- C. Comply with NEMA WC 70.

PART 2 - PRODUCTS

2.1 CONDUCTORS AND CABLES (POWER AND LIGHTING):

A. Conductors and Cables: NEMA WC 70, except as hereinafter specified.

1. All conductors shown on plans are sized for copper.
2. UL label required.

B. Single Conductor:

1. Soft annealed copper.
2. Stranded for sizes No. 8 and larger. Solid or stranded for sizes No. 10 and smaller, except that conductors for remote control, alarm, and signal circuits, classes 1, 2, and 3, shall be stranded unless specifically indicated otherwise.
3. Minimum size No. 12, except where larger sizes are shown. (Size No. 14 minimum for controls).

C. Stranding:

1. Conductors between stationary and moving devices, such as hinged doors or panels, shall have Class H or Class K stranding. All other conductors shall have Class B or Class C stranding.

D. Insulation:

1. THHN-THWN, XHHW - Sizes No. 12 and larger.

2.2 SPLICES AND JOINTS:

A. In accordance with UL 486 A, B, D and NEC.

B. Split-bolt type connectors are not allowed.

C. Branch circuits (No. 10 and smaller):

1. Connectors: Solderless, screw-on, reusable pressure cable type, 600-volt, 105-degree C. with integral insulation, approved for copper and aluminum conductors.
2. The integral insulator shall have a skirt to completely cover the stripped wires.
3. The number, size, and combination of conductors, as listed on the manufacturer's packaging shall be strictly complied with.

D. Branch Circuits (No. 8 and No. 6):

1. Connectors: Pre-insulated, mechanical, reusable cable type, 600-volt, 90-degree C. with integral insulation, approved for copper and aluminum conductors, cold temperature rated to -45-degree C. Connectors shall be equal to those manufactured by Polaris Connectors.
2. Provide connectors rated for the location where installed.
3. The number, size, and combination of conductors, as listed on the manufacturer's packaging shall be strictly complied with.

E. Feeder Circuits:

1. All feeder conductors shall be the same size and type and be continuous from the overcurrent device to the panel or equipment the feeder terminates at.
2. Connectors shall be indent type, UL listed for use with the size and type of wire installed of high conductivity and corrosion-resistant material. Do not install more than one conductor per connector unless the connector is UL listed for use with the number of conductors installed.
3. Power distribution blocks shall be provided for splices or where quantity or size of conductors exceeds the terminal rating of the device to be connected. Power distribution blocks shall be equal to Square D by Schneider Electric Class 9080 Type LB or Mersen Electrical Power MPDB series. Provide with covers. Power distribution blocks shall be securely mounted in a code sized enclosure.
4. Field installed compression connectors for cable sizes 250 kcmil and larger shall have not less than two clamping elements or compression indents per wire.
5. Insulate splices and joints with materials approved for the particular use, location, voltage, and temperature. Insulation rating shall be not less than that of the conductor that is being joined.
6. Plastic electrical insulating tape: Flame retardant, cold and weather resistant.

2.3 CONTROL WIRING:

- A. Unless otherwise specified in other sections of these specifications, size control wiring as specified for power and lighting wiring, except the minimum size shall be not less than No. 14, 90 degrees C. insulation. Where stranded conductors are used, provide with spade type insulated copper terminals.
- B. Size wire large enough so that the voltage drop under inrush conditions does not adversely affect operation of the controls.

2.4 COMMUNICATION AND SIGNAL WIRING:

- A. Shall conform to the recommendations of the manufacturers of the communication and signal systems; however, not less than what is shown.
- B. Wiring shown is for typical systems. Provide wiring as recommended by the manufacturer for the systems being furnished.
- C. Multi-conductor cables shall have the conductors color coded.

2.5 WIRE LUBRICATING COMPOUND:

- A. The cable pulling lubricant shall be compatible with all cable jackets. The lubricant shall be UL (or CSA) listed. The lubricant shall contain no waxes, greases, silicones, or polyalkylene glycol oils or waxes.
- B. A 200-gram sample of the lubricant, when placed in an one-foot, split metal conduit and fully dried for 24 hours at 105 degrees C, shall not spread a flame more than three-inches beyond a point of ignition at a continued heat flux of 40 kW/m². Total time of test shall be one-half hour.
- C. Approved Lubricant is:
 - 1. Polywater J from American Polywater Corporation

PART 3 - EXECUTION

3.1 INSTALLATION, GENERALLY:

- A. Install in accordance with the NEC, and as specified.
- B. Install all wiring in raceway systems.
- C. Where No. 10 or No. 12 stranded conductors terminate at receptacles, toggle switches, or other devices with a screw-type connection, provide a solid conductor pigtail or spade-type connector listed for use with the appropriate class of stranded wire.
- D. Install a ground wire sized per NEC 250.122 in each conduit containing phase conductors.
- E. Color Code:

1. All conductors shall be identified by circuit number and color coding at all termination points and splices. All conductors shall be identified in all pull and junction boxes by the following method of color coding. Means of identification shall be permanently posted at each branch circuit panel with a nameplate identifying color coding system used in that panelboard.

Phase	240/120V
A	Black
B	Orange
C	Blue
Neutral	White
Ground	Green

2. Use solid color compound or solid color coating for No. 6 and smaller branch circuit conductors and neutral sizes.
3. Phase conductors No. 4 and larger color code using one of the following:
 - a. Solid color compound or solid color coating.
 - b. Colored as specified using 3/4-inch wide tape. Apply tape in half overlapping turns for a minimum of three inches for terminal points, and in junction boxes, pull boxes, troughs, manholes, and handholes. Apply the last two laps of tape with no tension to prevent possible unwinding. Where cable markings are covered by tape, apply tags to cable stating size and insulation type.
 - c. Yellow stripe on isolated ground may be 1/4-inch-wide yellow tape on top of green.
4. Where neutrals are located in the same raceway, junction box or enclosure, neutrals shall be marked or labeled to indicate which circuit conductor (phase conductor) they are associated with. Neutrals (with stripes matching the associated phase conductor color) meeting the requirements of NEC Section 200.6 are acceptable for this purpose.
5. For modifications and additions to existing wiring systems, color coding shall conform to the existing wiring system.
6. Provide plastic engraved color code legend on each panelboard and switchboard per NEC Section 210.5 (C).
7. All improperly color-coded conductors will be completely replaced at no additional cost to Owner.

- F. All cable and wiring shall be continuous between electrical equipment. Splices shall not be added except as required for taps in branch circuits or as approved by the engineer.
- G. Splice cables and wires only in outlet boxes, junction boxes, pull boxes, manholes, or handholes. Do not splice cables in panelboards, switchboards, disconnects, etc.
- H. Install cable supports for all vertical feeders in accordance with the NEC. Provide split wedge type which firmly clamps each individual cable and tightens due to cable weight.
- I. For panelboards, cabinets, wireways, switches, and equipment assemblies, neatly form, and tie all cables.
- J. Seal cable and wire entering a building from underground between the wire and conduit, where the cable exits the conduit, with a non-hardening approved compound.
- K. Wire Pulling:
 - 1. Provide installation equipment that will prevent the cutting or abrasion of insulation during pulling of cables.
 - 2. Use ropes made of nonmetallic material for pulling feeders.
 - 3. Attach pulling lines for feeders by means of either woven basket grips or pulling eyes attached directly to the conductors, as approved by the Engineer.
 - 4. Pull multiple cables into a single conduit with a single continuous pull.
 - 5. Use wire lubricant per this specification when recommended by the cable manufacturer or as required to prevent damage to cables during installation.
- L. Individual neutrals shall be provided for each circuit. Multi-wire branch circuits (i.e., Two or more phase sharing a neutral conductor) shall not be allowed, unless specifically noted or shown on the plans. Where multi-wire branch circuits are shown or noted on the plans, provide a disconnecting means that will simultaneously disconnect all phase conductors at the panel where the branch circuit originates.

3.2 INSTALLATION IN MANHOLES:

- A. Install and support cables in manholes on the steel racks with porcelain or equal insulators. Train the cables around the manhole walls, but do not bend to a radius less than six times the overall cable diameter.

3.3 SPLICE INSTALLATION:

- A. Splices and terminations shall be mechanically and electrically secure.
- B. Where the Engineer determines that unsatisfactory splices or terminations have been installed, remove the devices, and install approved devices at no additional cost to the Owner.

3.4 CONTROL, COMMUNICATION, AND SIGNAL WIRING INSTALLATION:

- A. Unless otherwise specified in other sections of these specifications, install wiring as described below. Wiring shall be connected to perform the functions shown and specified in other sections of this specification.
- B. Except where otherwise required, install a separate power supply circuit for each system, or control equipment, or control power. Circuit to nearest 120-volt panel or nearest emergency panel if equipment controlled is connected to emergency system. Use spare 20 Amp breakers in panels where none are designated. Verify all requirements with actual equipment supplied in field.
- C. Install a breaker lock-on clip on the handle of the branch circuit breaker for the power supply circuit for each system to prevent accidental de-energizing of the systems. Lock-on clips for circuit breakers serving fire alarm systems shall be painted red.
- D. System voltages shall not exceed 120 volts and shall be lower voltages where shown on the drawings or required by the NEC.
- E. Wire and cable identification:
 - 1. Install a permanent wire marker on each wire at each termination, outlet box, junction box, panel, and device. Markers shall be typed or handwritten and shall be clearly legible.
 - 2. Identifying numbers and letters on the wire markers shall correspond to those on the wiring diagrams used for installing the systems.
 - 3. Wire markers shall retain their markings after cleaning.
 - 4. In each manhole and handhole, install permanent, waterproof tags to identify the cable type/system and the building or area served.

3.5 FEEDER IDENTIFICATION:

- A. In each interior pullbox and junction box, identify each phase, neutral and/or ground conductor by conductor color coding or tape based on system voltage.
- B. In manholes and handholes, install permanent, waterproof tags to identify the cable type. Identify each phase, neutral, and/or ground conductor by conductor color coding or tape based on system voltage.

3.6 FIELD TESTING:

- A. Feeders and branch circuits shall have their insulation tested after installation and before connection to utilization devices such as fixtures, motors, or appliances.
- B. Test shall be performed by megger and conductors shall test free from short-circuits and grounds.
- C. Test conductors' phase-to-phase and phase-to-ground.
- D. Megger motors after installation but before start-up and test free from grounds.
- E. The Contractor shall furnish the instruments, materials, and labor for these tests.

END OF SECTION

SECTION 26 05 26
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this section.

1.2 SUMMARY:

- A. This section includes grounding and bonding systems and equipment.

1.3 SUBMITTALS:

- A. Product Data (Where indicated in Section “Common Work Results for Electrical”, provide the following information): For each type of product indicated.
- B. As-Built Data: Plans showing dimensioned as-built locations of grounding features, including the following:
 - 1. Ground rods.
 - 2. Grounding arrangements and connections for separately derived systems.
- C. Test Records: Submit the following test records to the Engineer for review and approval, and include in the operational and maintenance manuals:
 - 1. Grounding system tests per paragraph FIELD QUALITY CONTROL in Part 3 of this Section.

1.4 QUALITY ASSURANCE:

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with UL 467 for grounding and bonding materials and equipment.

PART 2 - PRODUCTS

2.1 CONDUCTORS:

- A. Insulated General Purpose: UL and NFPA 70 approved types, copper, with THW, XHHW or dual rated THHN-THWN insulation color identified green.
- B. Bare Copper Conductors:
 - 1. Solid Conductors: ASTM B3.
 - 2. Stranded Conductors: ASTM B8.
- C. Size conductors not less than what is shown on the drawings and not less than required by the NFPA 70.

2.2 GROUND BUS:

- A. Pre-drilled rectangular bars of annealed copper, 1/4 by 4 inches in cross-section with 9/32-inch holes spaced 1-1/8 inches apart. Stand-off insulators shall comply with UL 891 for use in switchboards, 600V and shall be Lexan or PVC, impulse tested at 5000V.

2.3 GROUND RODS:

- A. Copper-clad steel, sectional type, 3/4-inch diameter by 20 feet long.

2.4 CONNECTORS:

- A. Listed and labeled by a NRTL acceptable to the authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.
- B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy.
- C. Welded Connections:
 - 1. Exothermic welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.
 - 2. For structural steel, steel grounding stud for compression connector.
- D. Compression Connectors: Hydraulic crimped, irreversible compression type kits. Connectors shall be factory filled with oxide inhibitor. All crimps shall be made with a hydraulic tool that embosses the index number on the outside of the connector.
- E. Bus-Bar Connectors: Mechanical type, cast silicon bronze, solderless compression-type wire terminals, and long barrel, two-bolt connection to ground bus bar.

- F. All splices and grounding electrode connections shall be made with exothermic welds or with hydraulic compression fittings.

2.5 INTERSYSTEM GROUND BAR:

- A. Complies with UL 467.
- B. Base and cover shall be impact resistant and UV rated.
- C. Shall be rated for copper and aluminum conductors.
- D. Shall have provisions for one main grounding electrode conductor and a minimum of four bonding conductors.

PART 3 - EXECUTION

3.1 APPLICATIONS:

- A. Conductors: Install solid or stranded conductors for #10 AWG and smaller and stranded conductors for #8 AWG and larger unless otherwise indicated.
- B. Grounding Bus: Install in electrical equipment rooms, in rooms housing service equipment, and elsewhere as indicated.
 - 1. Install bus horizontally, on insulated spacers 2 inches minimum from wall, 6 inches above finished floor unless otherwise indicated.
- C. Isolated Ground Conductors: Green colored insulation with continuous yellow stripe. On feeders with isolated ground, identify isolated grounding conductor with alternating bands of green and yellow tape, with at least three bands of green and two bands of yellow.
- D. Conductor Terminations and Connections:
 - 1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
 - 2. Underground Connections: Welded connectors or hydraulic compression connectors except as otherwise indicated.
 - 3. Connections to Structural Steel: Welded connectors.
 - 4. Aboveground Connections to Ground Rods: Bolted connectors.

3.2 INSTALLATION, GENERALLY:

- A. Ground in accordance with the NFPA 70 as shown, and as hereinafter specified. All equipment ground conductors shall be terminated on a ground bus or ground lug attached to equipment can.
- B. Service Grounding:
 - 1. Equipment grounding conductors and grounding electrode conductors shall be connected to the ground bus.
 - 2. Install a main bonding jumper between the neutral and ground buses.
- C. System Grounding:
 - 1. Secondary service neutrals shall be grounded at the supply side of the secondary disconnecting means and at the related transformers.
 - 2. Separately derived systems (transformers downstream from the service entrance) ground the secondary neutral.
 - 3. Individual Buildings: Bond Main Disconnect ground bus to building steel, 20 foot re-bar in foundation, water pipe, driven ground, and ground ring.
- D. Equipment Grounding:
 - 1. Metallic structures, enclosures, raceways, junction boxes, outlet boxes, cabinets, machine frames, and other conductive items in close proximity with electrical circuits shall be grounded for personnel safety and to provide a low impedance path for possible ground fault currents.

3.3 PRIMARY EQUIPMENT AND CIRCUITS:

- A. Comply with IEEE C2 (National Electrical Safety Code) grounding requirements.
- B. Metallic Conduit: Metallic conduits which terminate without mechanical connection to housing of electrical equipment by means of locknut and bushings or adapters, provided with grounding bushings. Connect bushings with a bare grounding conductor to the equipment ground box.

3.4 SECONDARY EQUIPMENT AND CIRCUITS:

- A. Main Bonding Jumper: Connect the secondary service neutral to the ground bus in the service equipment.
- B. Water Pipe and Supplemental Electrode:
 - 1. Provide a ground conductor connection between the service equipment ground bus and the metallic water pipe system. Jumper insulating joints in the water pipe.

2. Provide a supplemental grounding electrode and bond to the water pipe ground or connect to the service equipment ground bar.
- C. Service Disconnect: Provide a ground bar bolted to the enclosure with lugs for connecting the various grounding conductors. Connect the neutral to the ground bus (main bonding jumper).
- D. Conduit Systems:
1. Ground all metallic conduit systems.
 2. Non-metallic conduit systems shall contain a grounding conductor.
 3. Conduit provided for mechanical protection containing only a grounding conductor, bond to that conductor at the entrance and exit from the conduit via grounding bushings.
- E. Feeders and Branch Circuits: Install green grounding conductors with feeders and branch circuits in all feeders and branch circuits and in any raceway containing a phase conductor.
- F. Boxes, Cabinets, Enclosures, and Panelboards:
1. Bond the grounding wires to each pullbox, junction box, outlet box, cabinets, and other enclosures through which the ground wires pass (except for special grounding systems for intensive care units and other critical units shown.).
 2. Make ground wire connections to ground bus in motor control centers, panelboards, etc.
- G. Receptacles and toggle switches are not approved for grounding through their mounting screws. Ground with a ground wire from green ground terminal on the device to the outlet box ground screw.
- H. Fixed electrical appliances and equipment shall have a ground lug installed for termination of the green ground conductor.

3.5 CONDUCTIVE PIPING:

- A. Bond all conductive piping systems in the building to the electrical system ground. Bonding connections shall be made as close as practical to the water pipe ground or service equipment ground bus.

3.6 SPLICES:

- A. All splices and grounding electrode connections shall be made with exothermic welds or with hydraulic compression fittings.

3.7 GROUNDING RESISTANCE:

- A. Grounding system ground resistance must not exceed 5 ohms. Final tests shall ensure that this requirement is met.
- B. Where permanent ground connections are required, make the connections by the exothermic process or hydraulic compression method to form solid metal joints.
- C. Where rock prevents the driving of vertical ground rods, install grounding electrodes in horizontal trenches to achieve the specified resistance.
- D. Where more than one ground rod is required to meet the specified resistance, they shall be located at least 10 feet apart. Interconnect with grounding electrode conductor below grade and as otherwise indicated.

3.8 INSTALLATION:

- A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where subject to strain, impact, or damage.
- B. Grounding electrode conductors shall be continuous.

3.9 FIELD QUALITY CONTROL:

- A. Inspect grounding and bonding system conductors and connections for tightness and proper installation. Inspect compression type connections for proper die index number embossment.
- B. Perform the following testing:
 - 1. After installing grounding system, but before permanent electrical circuits have been energized, test for compliance with requirements.
 - 2. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, at ground test wells, and at ground rods. Make tests at ground rods before any conductors are connected.
 - a. Measure ground resistance no fewer than two full days after the last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
 - b. Perform tests by fall-of-potential method according to IEEE 81. Submit test results to the Engineer.

- c. Excessive Ground Resistance: If resistance to ground exceeds specified values, promptly notify Engineer, and include recommendations for reducing ground resistance.

END OF SECTION

SECTION 26 05 33
RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Description:

- 1. This section includes the furnishing, installation, and connection of raceways, fittings, and boxes to form complete, coordinated, grounded raceway systems. Raceways are required for all wiring unless shown or specified otherwise.
- 2. The term conduit, as used in this specification, shall mean any or all of the raceway types specified.

B. Section Includes:

- 1. Metal conduits, tubing, and fittings.
- 2. Non-metallic conduits and fittings.
- 3. Metal wireways and auxiliary gutters.
- 4. Non-metallic wireways and auxiliary gutters.
- 5. Surface raceways.
- 6. Boxes and enclosures.

1.3 DEFINITIONS:

- A. ARC: Aluminum rigid conduit.
- B. GRC: Galvanized rigid steel conduit.
- C. IMC: Intermediate metal conduit.
- D. RGS: Rigid galvanized steel.

1.4 ACTION SUBMITTALS:

- A. Product Data (Where indicated in Section “Common Work Results for Electrical”, provide the following information): For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.
- B. Shop Drawings (Where indicated in Section “Common Work Results for Electrical”, provide the following information): For custom enclosures and cabinets. Include plans, elevations, sections, and attachment details.

PART 2 - PRODUCTS

2.1 CONDUIT:

- A. Raceway Size: In accordance with the NFPA 70 but not less than 1/2-inch unless otherwise shown. Where permitted by the NFPA 70, 1/2-inch flexible conduit may be used for connections to recessed lighting fixtures.
- B. Raceway Supports:
 - 1. Parts and hardware: Zinc-coat or provide equivalent corrosion protection.
 - 2. Pipe Straps: Fed. Spec. FF-S-760, Type I, Style A or B.
 - 3. Individual Raceway Hangers: Designed for the purpose, having a pre-assembled closure bolt and nut, and provisions for receiving a hanger rod.
 - 4. Multiple Raceway (trapeze) hangers: Not less than 1-1/2 by 1-1/2-inch, 12-gauge steel, cold formed, lipped channels or not less than 2-1/8 by 2-1/8 inch, 18 gauge B-Line “4Dimension Channel”; with not less than 3/8-inch diameter steel hanger rods.
 - 5. Solid Masonry and Concrete Anchors: Fed. Spec. FF-S-325; Group III self-drilling expansion shields, or machine bolt expansion anchors Group II, Type 2 or 4, or Group VIII.
- C. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 886 and NFPA 70.

2.2 RACEWAYS:

- A. Install raceway types as shown on drawings and as listed below.
- B. Metal Conduit:
 - 1. Rigid steel: UL 6 and ANSI C80.1.
 - 2. Rigid aluminum: UL 6A and ANSI C80.5.
 - 3. Rigid intermediate steel conduit (IMC): UL 1242 and ANSI C80.6.
 - 4. Electrical metallic tubing (EMT): U.L. 797 and ANSI C80.3. Maximum size 5-inch. Permitted only with cable rated 600 volts or less.

5. Flexible steel conduit (commercial Greenfield): UL 1, zinc-coated steel.
6. Liquid-tight flexible metal conduit: UL 360 flexible galvanized steel tubing covered with extruded liquid-tight jacket of polyvinyl chloride (PVC). Provide conduit with a continuous copper bonding conductor spiral between the convolutions.
7. PVC Coated Rigid Steel: NEMA RN 1. Conduit and fittings shall be as manufactured by Robroy Industries; Plasti-Bond, Perma-Cote, and KorKap or Thomas & Betts; Ocal. Any deviation will require approval of the specifying Engineer or Owner.
 - a. Shall be UL listed.
 - b. All male threads on conduit, elbows and nipples shall be protected by application of a urethane coating.
 - c. All female threads on fittings or conduit couplings shall be protected by application of a urethane coating.

C. Conduit Fittings for Metal Conduit:

1. Comply with NEMA FB 1 and UL 514B.
2. Rigid steel and IMC conduit fittings:
 - a. Standard threaded couplings, locknuts, bushings, and elbows: Fed. Spec. W-F-408, except only material of steel or malleable iron is acceptable. Integral retractable type IMC couplings are acceptable also.
 - b. Locknuts: Bonding type with sharp edges for digging into the metal wall of an enclosure
 - c. Bushings: Metallic insulating type, consisting of an insulating insert molded or locked into the metallic body of the fitting. Bushings made entirely of metal or nonmetallic material are not permitted. Bushings for conduit smaller than 1-1/4-inch shall have flared bottom with ribbed sides.
 - d. Erickson (union-type) and set screw type couplings: Approved for use in concrete are permitted for use to complete a conduit run where conduit is installed in concrete. Use set screws of case-hardened steel with hex head and cup point to firmly seat in conduit wall for positive ground. Tightening of set screws with pliers is prohibited.
 - e. Sealing fittings: Threaded cast iron type. Use continuous drain type sealing fittings to prevent passage of water vapor. In concealed work, install fittings in flush steel boxes with blank coverplates having the same finishes as that of other electrical plates in the room.

- f. In trade sizes 2-1/2 inches to 4-inches for rigid steel raceway or intermediate metal raceway, contractor may use Allied 'Kwik-Couple' fittings in lieu of individual steel couplings. 'Kwik-Couple' fittings shall not be used in hazardous locations. Where 'Kwik-Couple' fittings are used exterior for vertical risers, install fitting with taper end up.
3. Rigid aluminum conduit fittings:
 - a. Standard threaded couplings, locknuts, bushings, and elbows: Malleable iron, steel, or aluminum alloy materials. Zinc or cadmium plate iron or steel fittings. Aluminum fittings containing more than 0.4 percent copper are prohibited.
 - b. Locknuts and bushings: As specified for rigid steel and IMC raceways.
 - c. Set screw fittings: Not permitted for use with aluminum raceway.
4. Electrical metallic tubing fittings:
 - a. Fed. Spec. W-F-408, except only material of steel for compression type. Steel or die-cast is acceptable for set screw type. Die-cast compression is not acceptable.
 - b. Couplings and connectors: Concrete tight and rain tight, with connectors having flared throats. Use gland and ring compression type or set screw type couplings and connectors. Set screw type couplings for conduit 2 inches and larger shall be four set screws each. Use set screws of case-hardened steel with hex head and cup point to firmly seat in wall of conduit for positive grounding.
 - c. Indenter type connectors or couplings are prohibited.
 - d. In trade sizes 1-1/4 inches to 4 inches, contractor may use Allied "Kwik-Fit EMT" or "Kwik-Fit Compression EMT" fittings in lieu of individual steel couplings.
5. Flexible steel conduit (greenfield) fittings:
 - a. Fed. Spec. W-F-406 and UL 5, except only steel or malleable iron material is acceptable.
 - b. Clamp type, with insulated throat.
6. Liquid-tight flexible metal conduit fittings:
 - a. Fed. Spec. W-F-406, except only steel or malleable iron material is acceptable.
 - b. Type incorporating a threaded grounding cone, a steel or plastic compression ring, and a gland for tightening. Connectors shall have insulated throats.

7. Expansion and deflection couplings:
 - a. UL 467 and UL 514.
 - b. Accommodate, 1.9 cm (0.75") deflection, expansion, or contraction in any direction, and allow 30-degree angular deflections.
 - c. Include internal flexible metal braid sized to guarantee conduit ground continuity and fault currents in accordance with UL 467, NFPA 70 Section 250.98, and the NFPA 70 code tables for ground conductors.
 - d. Shall be watertight, seismically qualified, corrosion-resistant, threaded for and compatible with rigid or intermediate metal conduit.
 - e. Jacket: Flexible, corrosion-resistant, watertight, moisture and heat resistant molded rubber material with stainless steel jacket clamps.
 - f. Expansion fittings shall accommodate a minimum of 4-inches of movement.

D. Nonmetallic Conduit:

1. PVC Conduit: NEMA TC 2 and UL 651 Schedule 40, conduit size is 3/4-inch minimum.

E. Conduit Fittings for Non-Metallic Conduits:

1. PVC Conduit: Comply with NEMA TC 3; match to conduit type and material.

2.3 OUTLET BOXES:

- A. UL-50, UL514A and NEMA OS 1.
- B. Cast metal where required by NFPA 70 or shown and equipped with rustproof boxes; NEMA FB 1.
- C. Sheet metal boxes: 4-inch square, galvanized steel, except where otherwise shown.
- D. Boxes installed in concrete or masonry and boxes larger than two gang shall be masonry type.
- E. Box extensions used to accommodate building finishes shall be of the same material as the recessed box.
- F. Boxes for use with IMC or RGS raceways shall be cast 'F' type or stainless steel unless noted otherwise on the drawings.

2.4 WIREWAYS AND AUXILIARY GUTTERS:

- A. Sized according to NFPA 70.

- B. Equip with hinged covers, except where removable covers are shown. Wireways shall only be permitted as indicated on the drawings or approved by the Engineer.
- C. Fittings and accessories: Include covers, couplings, offsets, elbows expansion joints, adapters, hold down straps, end caps, and other fittings to match and mate with wireways as required for a complete system.
- D. Metal Wireways:
 - 1. Sheet metal complying with UL 870 and NEMA 250.
 - 2. Metal wireways installed outdoors shall be listed and labeled as defined in NFPA 70 and shall be marked for intended location and application.

2.5 PULL AND JUNCTION BOXES:

- A. Small boxes shall comply with NEMA OS 1.
- B. Larger boxes shall comply with UL 50 and NEMA 250.
- C. Pull and junction boxes shall be code gauge steel boxes with hinged, bolted, or screwed covers. Boxes shall be flush, or surface mounted as shown or required.
- D. Junction and pull box shall be installed where shown on drawings and additional boxes shall be installed if required for pulling of wire provided location and installation is approved by the Architect. All boxes shall be code construction with screw type cover and shall be installed in accessible locations.
- E. Pull and junction boxes for use with IMC or RGS raceways shall be cast 'FS' type or stainless steel unless noted otherwise on the drawings. Comply with NEMA FB 1 and UL 1773 with gasketed cover.

2.6 SURFACE METALLIC RACEWAY:

- A. Raceways shall be Wiremold #500 minimum or #700 for small sizes and Wiremold Series 2000, 3000, and 4000 for larger capacities or equal by MonoSystems, Inc. In all cases, do not exceed the fill per the manufacturers published data.
- B. Use outlets and fittings by the same manufacturer and approved for use with the raceway.
- C. Provide multiple compartment raceways where power and low voltage wiring are located in the same raceway.

PART 3 - EXECUTION

3.1 RACEWAY:

- A. Minimum 1/2-inch above grade, 3/4-inch below grade, and 1-inch on site, unless otherwise noted.
- B. A ground wire, sized per NFPA 70 Section 250.122 shall be installed in all conduits containing phase conductor(s).
- C. RGS or IMC must be used at all times when exposed to weather or physical abuse and in all NFPA 70 classified hazardous locations. EMT may not be used in direct contact with earth, or in concrete slabs on grade.
- D. U.L. approved Schedule 40 P.V.C. conduit may be used where feeders or branch circuits are to be run in earth or slabs (3/4" minimum).
 - 1. Use PVC coated RGS ells and risers approved for underground use. All conduit risers through concrete floors shall be RGS from below the top of the floor slab. Use conduit adapters when converting from PVC to steel conduit.
 - 2. Use plastic spacers when more than one conduit is installed together. See Drawings for areas requiring concrete encasement.
- E. All nonmetallic (PVC and fiberglass) conduits shall be provided with separate ground conductor sized per NFPA 70.

3.2 PENETRATIONS:

- A. Cutting or Holes:
 - 1. Locate holes in advance where they are proposed in the structural sections such as ribs or beams. Obtain the approval of the Structural Engineer prior to drilling through structural sections.
 - 2. Cut holes through concrete and masonry in new and existing structures with a diamond core drill or concrete saw. Pneumatic hammer, impact electric, hand or manual hammer type drills are not allowed, except where permitted by the Structural Engineer as required by limited working space.
- B. Fire Stop:
 - 1. Where conduits, wireways, and other electrical raceways pass through fire partitions, fire walls, smoke partitions, or floors, install a fire stop that provides an effective barrier against the spread of fire, smoke, and gases, and maintains specified fire rating. Completely fill and seal clearances between raceways and openings with the fire stop material. See Section "Common Work Results for Low Voltage Systems Cabling" for firestopping requirements for low voltage cabling sleeves.

C. Waterproofing:

1. Install sleeves and sleeve seals at exterior floor, exterior wall, and roof conduit penetrations and completely seal clearances around the conduit and sleeve and make watertight as specified in Section, SEALING AND CAULKING.

3.3 CONDUIT SYSTEMS INSTALLATION, GENERAL:

A. Installation: In accordance with UL, NFPA 70, as shown, and as hereinafter specified.

1. Where non-metallic (PVC or fiberglass) conduits are used, a ground wire sized per NFPA 70 Section 250.122 shall be provided if not already specified.

B. All branches of the emergency system shall be installed entirely independent of other raceway systems. Common supports and hangers may be used.

C. Raceway Burial Depths: (Underground work)

1. 18” minimum, 30” maximum cover to grade or bottom of floor slab.
2. 24” minimum under streets, highways, roads, alleys, driveways, and parking lots.
3. 2” minimum below concrete slab inside a building.
4. Prior to any underground work, contractor shall verify and locate all existing underground utilities. All existing utilities may not be shown on the drawings. Verify in field with owner and with utility locating services. The contractor shall exercise extreme caution when trenching or boring, hand digging at all crossings and where in close proximity of existing utilities. Repair existing parking lots, streets, roads, alleys, driveways, etc. to its original condition in a timely manner prior to substantial completion. Contractor shall be responsible for any damage to underground utilities.
5. Underground conduits shall be installed in a sand bed and in an organized manner.

D. Install raceways as follows:

1. Comply with NECA 1, comply with NECA 101 for metal conduit and NECA 102 for aluminum conduit except where requirements on drawings or this article are stricter.
2. In complete runs before pulling in cables or wires.
3. Flattened, dented, or deformed raceways are not permitted. Remove and replace the damaged raceways with new undamaged material.
4. Assure raceway installation does not encroach into the ceiling height head room, walkways, or doorways.
5. Cut square with a hacksaw, ream, remove burrs, and draw up tight.

6. Mechanically and electrically continuous.
 7. Independently support raceway. Do not use other supports i.e., (suspended ceilings, suspended ceiling supporting members, lighting fixtures, mechanical piping, or mechanical ducts.). Group raceways with common supports where possible. Conduit shall be supported within 12-inches of connectors.
 8. Close ends of empty raceway with plugs or caps at the rough-in stage to prevent entry of debris, until wires are pulled in.
 9. Raceway installations under fume and vent hoods are prohibited.
 10. Secure raceways to cabinets, junction boxes, pull boxes and outlet boxes with bonding type locknuts. For RGS and IMC raceway installations, provide a locknut on the inside of the enclosure, made up wrench tight. Do not make raceway connections to junction box covers.
 11. Flashing of penetrations of the roof membrane is specified in Section, FLASHING AND SHEET METAL.
 12. Raceways shall not be used as a support.
 13. Use thread compounds that are UL approved conductive type to ensure low resistance ground continuity through the raceways.
 14. Tightening set screws with pliers is prohibited.
 15. Keep raceways a minimum of 6 inches away from parallel runs of flues and steam or hot-water pipes.
- E. Raceway Bends:
1. Make bends with standard raceway bending machines.
 2. Raceway hickey may be used for slight offsets, and for straightening stubbed out raceways.
 3. Bending of raceways with a pipe tee or vise is prohibited.
- F. Raceways Installed Under Metal - Corrugated Sheet Roof Decking:
1. Where rigid metal conduit or intermediate metal conduit is not used, raceways shall be installed and supported so the nearest outside surface of the raceway is not less than 1.5 inches from the nearest surface of the roof decking.
- G. PVC coated RGS:
1. Use only fittings listed for use with this type of conduit.
 2. Patch and seal all joints, nicks, and scrapes in PVC coating after installing conduit and fittings. Use sealant recommended by conduit manufacturer and apply in thickness and number of coats recommended by manufacturer.
 3. Right angle beam clamps and U bolts shall be specially formed and sized to snugly fit the outside diameter of the coated conduit.
 4. All clamping, cutting, threading, bending, and assembly instructions listed in the manufacturer's installation guide should be vigorously followed. Installer certification, before installation, is required.

3.4 CONCEALED WORK INSTALLATION:

A. General:

1. Raceway and Outlet Boxes Installation: All raceway systems work, and outlet boxes shall be installed concealed in walls, floor and roof construction or concealed within furred spaces or above ceilings. In equipment or mechanical rooms exposed work shall include feeders and connections to equipment unless noted otherwise.

B. In Concrete:

1. Raceway: RGS, IMC, PVC or EMT; except do not install EMT in concrete slabs that are in contact with soil, gravel, or vapor barriers.
2. Align and run raceways in direct lines.
3. Install raceways through concrete beams only when the following occurs:
 - a. Where shown on the structural drawings.
 - b. As approved by the Structural Engineer prior to construction, and after submittal of drawing showing location, size, and position of each penetration.
4. Installation of raceways in concrete that is less than three inches thick is prohibited. All raceways installed in concrete shall be approved by the Structural Engineer.
 - a. Raceway outside diameter larger than one-third of the slab thickness is prohibited.
 - b. Space between raceways in slabs: Approximately six conduit diameters apart, except one conduit diameter at conduit crossings.
 - c. Install raceways approximately in the center of the slab so that there will be a minimum of 3/4-inch of concrete around the raceways.
5. Make couplings and connections watertight.

3.5 EXPOSED WORK INSTALLATION:

A. Raceways for Conductors 600 volts and below:

1. RGS, IMC, rigid aluminum, or EMT. Types mixed indiscriminately in the system are prohibited.
2. Do not use aluminum in wet locations or in contact with concrete.
3. All raceways exposed to physical abuse and in all industrial pump, treatment plant locations shall be RGS, or IMC.

B. Raceways for conductors above 600 volts:

1. RGS or rigid aluminum. Do not use aluminum in wet locations.

2. Aluminum mixed indiscriminately with other types in the same system is prohibited.
- C. Align and run raceways parallel or perpendicular to the building lines.
 - D. Install horizontal runs close to the ceiling or beams and secure with raceway straps.
 - E. Surface metallic raceways:
 1. Surface metallic raceway shall only be used where shown on the drawings, and in remodels and modifications to existing where wall and ceiling voids do not permit concealed installation but shall not be used at any other location unless called for on the drawings.
 2. All surface raceway and outlets must be painted to match the surface it is attached to.
 3. Install a ground wire sized per NFPA 70 Section 250.122 for the largest circuit in the raceway if not already specified.

3.6 WET OR DAMP LOCATIONS:

- A. Unless otherwise shown, use raceways of RGS or IMC above grade. Use PVC conduit below grade, except RGS ells and risers shall be used.
- B. Provide sealing fittings, to prevent passage of water vapor, where raceways pass from warm to cold locations, i.e., (refrigerated spaces, constant temperature rooms, air-conditioned spaces) or similar spaces.
- C. When RGS ells and risers are used below grade or when RGS or IMC conduit or RGS ells and risers are used below concrete building slabs in contact with soil, gravel, or vapor barriers, conduit shall be PVC coated RGS or PVC coated IMC .
- D. Rooftops:
 1. Where raceways or cables are exposed to direct sunlight on or above rooftops, raceways or cables shall be installed a minimum of 7/8" above the roof to the bottom of the raceway or cable.
 2. The ampacity of conductors or cables shall be de-rated in accordance with N.E.C. Section 310.15(B)(3)(c).
 3. Raceways or cables shall be supported up off the surface of the roof with a polymeric rooftop support equal to Caddy Pyramid series. Supports shall be non-penetrating and shall be designed to prevent damage to the roofing materials. Wood supports are not allowed.

3.7 CORROSIVE LOCATIONS:

- A. Conduit shall be PVC coated RGS.

3.8 MOTORS AND VIBRATING EQUIPMENT:

- A. Use flexible metal conduit (Type FMC) for connections to motors and other electrical equipment subject to movement, vibration, misalignment, cramped quarters, or noise transmission. Provide liquid-tight flexible metal conduit Type (LFMC) for installation in exterior locations, kitchens, moisture or humidity laden atmosphere, corrosive atmosphere, water or spray wash-down operations, treatment plants, pump stations, and locations subject to seepage or dripping of oil, grease, or water. Provide a green ground wire with all flexible metal conduit.

3.9 EXPANSION JOINTS:

- A. Expansion fittings shall be used wherever the change in length of PVC conduit due to temperature variation exceeds 0.25-inches per NEC Section 352.44.
- B. All conduits routed outdoors or in non-conditioned spaces (i.e., attics, non-insulated plenums, etc.) shall have expansion fittings per the following:
 - 1. Steel: One expansion fitting in runs longer than 40 feet. Provide additional expansion fittings every 200 feet.
 - 2. Aluminum: One expansion fitting in runs longer than 20 feet. Provide additional expansion fittings every 100 feet.
 - 3. PVC: One expansion fitting in runs longer than 20 feet. Provide additional expansion fittings every 50 feet.
- C. Equip raceways 3-inches and larger, that are rigidly secured to the building structure on opposite sides of a building expansion joint, with expansion and deflection couplings. Install the couplings in accordance with the manufacturer's recommendations.
- D. Equip raceways smaller than 3-inches, that are rigidly secured to the building structure on opposite sides of a building expansion joint, with junction boxes located 12-inches either side of the expansion joint. Connect junction boxes with 24-inches of flexible conduit that is slack (to allow for movement). Flexible conduit shall have an insulated copper bonding jumper installed. In lieu of this flexible conduit, expansion and deflection couplings as specified above for 3-inches and larger conduits are acceptable.

3.10 RACEWAY SUPPORTS, INSTALLATION:

- A. All raceways shall have supports at maximum spacing of 10-feet and within 3-feet of a fitting, elbow, change of direction, box outlet or enclosure. Safe working load shall not exceed 1/4 of proof test load of fastening devices. This shall apply to both vertical and horizontal conduit runs.
- B. Use pipe straps or individual raceway hangers for supporting individual conduits.

- C. Support multiple raceway runs with trapeze hangers. Use trapeze hangers that are designed to support a load equal to or greater than the sum of the weights of the raceways, wires, hanger itself, and 200 pounds. Attach each raceway with U-bolts or other approved fasteners.
- D. Support raceways independently of junction boxes; pull boxes, fixtures, suspended ceiling T-bars, angle supports, and similar items.
- E. Fasteners and Supports in Solid Masonry and Concrete:
 - 1. New Construction: Use steel or malleable iron concrete inserts set in place prior to placing the concrete.
 - 2. Existing Construction:
 - a. Steel expansion anchors not less than 1/4-inch bolt size and not less than 1-1/8-inch embedment.
 - b. Power set fasteners not less than 1/4-inch diameter with depth of penetration not less than 3-inches.
 - c. Use vibration and shock resistant anchors and fasteners for attaching to concrete ceilings.
- F. Hollow Masonry: Toggle bolts are permitted. Bolts supported only by plaster are not acceptable.
- G. Metal Structures: Use machine screw fasteners or other devices specifically designed and approved for the application.
- H. Attachment by wood plugs, rawl plug, plastic, lead or soft metal anchors, or wood blocking and bolts supported only by plaster is prohibited.
- I. Chair, wire, or perforated strap shall not be used to support or fasten conduit.
- J. Spring steel type supports "caddy clips" that are listed for the intended use are acceptable in appropriate locations.
- K. Vertical Supports: Vertical raceway runs shall have riser clamps and supports in accordance with NFPA 70 and as shown. Provide supports for cable and wire with fittings that include internal wedges and retaining collars.

3.11 BOX INSTALLATION:

- A. Boxes for Concealed Raceways:
 - 1. Mount flush. Boxes protruding from the finished wall surface or with more than 1/8-inch gap between the wall or outlet mounted in the box will be changed out with all wall reconstruction expense paid by the Electrical Contractor.

2. Provide raised covers for boxes to suit the wall or ceiling, construction, and finish.
- B. In addition to boxes shown, install additional boxes where needed to prevent damage to cables and wires during pulling in operations.
 - C. Remove only knockouts as required and plug unused openings. Use threaded plugs for cast metal boxes and snap-in metal covers for sheet metal boxes.
 - D. Outlet boxes in the same wall mounted back-to-back are prohibited.
 - E. Minimum size of outlet boxes for ground fault interrupter (GFI) receptacles is 4-inches square by 2-1/8 inches deep, with device covers for the wall material and thickness involved.
 - F. Where lighting fixtures and appliance outlets are to be mounted in concrete or in plaster finish on concrete, outlet boxes shall be installed in forms at exact dimensions from benchmarks, columns, walls or floors.
 - G. Where lighting fixtures and appliances outlets are to be mounted on masonry walls and/or plastered furring or other finish, outlet boxes shall be roughed into general location before installation of wall and furring and shall be reset to exact dimensions before walls and furring are constructed.
 - H. All outlet boxes shall be set true to horizontal and vertical lines parallel to walls, floors, and ceilings and true to finish lines. All boxes shall be secured to ceilings or walls, so all installations are solidly mounted.
 - I. Boxes mounted to wall studs shall be secured to a horizontal box mounting bracket equal to B-Line Series #BB2 or Caddy Series #SGB. B-Line Series #BB4, Caddy Series #H23 or equal one-piece support brackets may be used for mounting light switch boxes only. However, metal stud clips with far side box supports are not acceptable.
 - J. Boxes for exterior exposed work (where approved by the engineer) shall be Appleton or Pyle National Type FS or FSC for shallow devices and Type FD or FDC for deep devices. Boxes for ceiling mounted light fixtures shall have approved no-bolt fixture studs. Boxes used as junction boxes shall have beveled edge flat steel blank cover.
 - K. Where outlet boxes are mounted exposed in unfinished areas, (where approved by the engineer) surface mounted boxes shall be 4-inches square, have rounded corners and 1/2-inch raised steel cover plates.
 - L. Location of outlets on small drawings is approximate and exact dimensions for locations of outlets shall be as taken from large scale plans and details on drawings or as directed by the Engineer.

1. Outlets shall be located generally from column centers and finished wall lines or to center of wall or joints between wall panels. Ceiling outlets shall be installed at elevation of suspended ceiling connected to outlets in ceiling or slab above. Where necessary to fit and center with panel or ceilings and wall spaces, the contractor must, at no expense the Owner, shift the lighting outlets or other outlets as required by the Architect.
- M. Mark all junction boxes and pull boxes and/or the conduit where it enters the box with panel designation and circuit number in permanent, black marker. Mark on the outside where located in unfinished spaces and mark on the inside in finished spaces.
- N. Verify exact location of floor boxes and poke-throughs with Architect prior to rough-in.
- 3.12 TELEPHONE, CABLE TV, COMMUNICATIONS, SECURITY AND OTHER SYSTEMS CONDUIT:
- A. These specifications include the furnishing of all labor and materials necessary for the complete installation of a system of conduits, outlets, and boards for use by the system suppliers.
 - B. This installation must be done according to the requirements of the system suppliers and the general specifications covering "Light and Power" herewith.
 - C. Provide and install pull boxes at all locations as required by the system suppliers. Mark all pull boxes and/or the conduit where it enters the box with type of system in permanent, black marker. Mark on the outside where located in unfinished spaces and mark on the inside in finished spaces.
 - D. Provide and install conduit sleeves through floors and walls as required by the system suppliers.
 - E. The systems shall be provided with main service conduit sized as indicated on drawings. Each phone, data or TV location requires a 1-inch empty conduit with pull rope unless noted otherwise. Conduits shall be routed to nearest associated telephone or data terminal board or above lay-in ceiling. If ceiling is an air return plenum, cables shall be routed completely in conduit or must be rated for use in air return plenum. Verify conditions of job prior to rough-in.
 - F. Outlets:
 1. All wall outlets shall be installed with standard square box, plates furnished by system suppliers, or as directed. All outlets to be located as directed. Outlet boxes not used shall be provided with blank covers.
 - G. Install the raceway system as shown on drawings.

- H. All conduit ends shall be equipped with non-metallic insulated bushings.
- I. All 2, 3 and 4-inch conduits within buildings shall include pull boxes after every two 90-degree bends. Size per NFPA 70 Article 370.
- J. Vertical conduits/sleeves through closets floors shall terminate not less than 3-inches above the floor and not less than 3-inches below the ceiling of the floor below.
- K. Terminate conduit runs to/from the associated telephone or data backboard in a closet or designated space at the top or bottom of the backboard. Conduits shall enter closets next to the wall and be flush with the backboard.
- L. Where drilling is necessary for vertical conduits, locate holes so as not to affect structural sections such as ribs or beams.
- M. All empty conduits located in equipment closets or on backboards shall be sealed with a standard non-hardening duct seal compound to prevent the entrance of moisture and gases and to meet fire resistance requirements.
- N. Conduit runs shall contain no more than four quarter turns (90-degree bends) between pull boxes/backboards.
- O. Furnish and install nylon pull rope in all empty conduits. (Sleeves through floor/wall are exceptions).

3.13 COLOR CODING OF BOXES, ENCLOSURES, CONDUIT AND RACEWAYS:

- A. All boxes, enclosures, conduit, and raceways, shall be color coded as follows:
 - 1. Other Systems:
 - a. Building Automation and Controls: Blue

END OF SECTION

SECTION 26 24 16
PANELBOARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Section.

1.2 SUMMARY:

- A. Section includes:
 - 1. Lighting and appliance branch-circuit panelboards.

1.3 SUBMITTALS:

- A. Product Data: For each type of panelboard, switching and overcurrent protective device, transient voltage surge suppressor, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.
- B. Shop Drawings: For each panelboard and related equipment, include the following information:
 - 1. Dimensional data.
 - 2. Enclosure type, per NEMA 250.
 - 3. Detailed bus configuration, including current and voltage ratings.
 - 4. Short-circuit current rating of panelboard and overcurrent protective devices.
 - a. Where series ratings are permitted and utilized, submit evidence of series ratings for each selected combination of fuses and/or circuit breakers.
 - 5. Evidence of NRTL listing for series rating of installed devices.
 - 6. Detailed features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
 - 7. Layout or elevation of each panelboard showing the relative locations of all specified breakers, lugs, accessories, and features.
 - 8. Wiring diagrams for power, signal, and control wiring.

- C. Operation and Maintenance Data: Include operation and maintenance data for all panelboards and components in the operation and maintenance manuals. Data shall include, but not be limited to:
 - 1. Manufacturer's written instructions for testing and adjusting overcurrent protective devices.
 - 2. Summary of final settings for all adjustable overcurrent protective devices.
 - 3. Print or copy of all final panel schedules in 8.5" x 11" format.
- D. Test Records: Submit the following test records to the Engineer for review and approval, and include in the operation and maintenance manuals:
 - 1. Load Balancing: Submit records of load readings before and after load balancing, per paragraph ADJUSTING in Part 3 of this Section.

1.4 QUALITY ASSURANCE:

- A. Source Limitations: Obtain panelboards, overcurrent protective devices, components, and accessories through one source from a single manufacturer.
- B. Product Selection for Restricted Space: Drawings may indicate maximum dimensions for panelboards including clearances between panelboards and adjacent surfaces and other items. Comply with any indicated maximum dimensions.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- D. Comply with NEMA PB 1 and NFPA 70.

1.5 COORDINATION:

- A. Coordinate layout and installation of panelboards and components with other construction that penetrates wall or is supported by them, including electrical and other types of equipment, raceways, piping, encumbrances to workspace clearance requirements, and adjacent surfaces. Maintain required workspace clearances and requires clearances for equipment access doors and panels.
- B. Coordinate sizes and locations of any concrete bases with actual equipment provided.

1.6 PROJECT CONDITIONS:

- A. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by Owner or others unless permitted under the following conditions:

1. Notify Owner in writing, not fewer than two days in advance of proposed interruption of service.
2. Do not proceed with interruption of electric service without Owner’s written permission.
3. Comply with NFPA 70E.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PANELBOARDS:

- A. All panelboard components shall be the product and assembly of the same manufacturer. All similar units of all panelboards shall be of the same manufacturer.
- B. All panelboards shall be completely factory assembled with molded case circuit breakers or switches.
- C. Panelboards shall have main breaker, main switch, or main lugs, voltage, bus sizing, and flush or surface mounting as indicated on the Drawings.
- D. Enclosures: Flush or surface mounted as indicated on the Drawings
 1. Rated for environmental conditions at installed location:
 - a. Outdoor Locations: NEMA 250, Type 3R.
 2. Cabinets:
 - a. Finish shall be galvanized steel.
 - b. Shall not have ventilation openings for panels with bus ratings of 225 amperes or less.
 - c. Back and sides shall be fabricated from one piece of formed steel for lighting and appliance branch-circuit panelboards.
 - d. Shall contain a minimum of four interior mounted studs and necessary hardware for “in” and “out” adjustment of panel interior.
 - e. Gutter sizes for cabinets containing through-feeders shall be increased by the amount required for auxiliary gutters in the NEC.
 - f. For multi-section flush-mounted panelboards, all cabinets shall be the same height.
 3. Front Trim:
 - a. Shall include frame and door with concealed hinges.
 - b. Shall be secured to cabinet with screws. Trim clamps are not allowed.

- c. Shall be galvanized steel, factory finished immediately after cleaning and pretreating with manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat.
 - d. Shall be same width and height as cabinet for surface-mounted panels. Shall overlap cabinet by at least 0.75 inches for flush-mounted panels.
 - e. Shall not have ventilation openings for panels with bus ratings of 225 amperes or less.
 - f. Shall include a welded angle on the rear to support and align trim to cabinet.
 - g. Shall be separate for each section of multi-section panelboards. For flush installations, trims and doors of all sections shall be the same height.
4. Doors:
- a. Shall be galvanized steel, factory finished immediately after cleaning and pretreating with manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat.
 - b. Shall be provided with concealed butt hinges welded to the doors and trim.
 - c. In making switching devices accessible, doors shall not uncover any live parts.
 - d. Shall have directory card holder with transparent protective cover for card, permanently mounted to inside of door.
 - e. Shall have the manufacturer's standard flush lock. All panels shall use the same key.
- E. Phase, Neutral, and Ground Buses:
- 1. Material shall be plated copper, with copper connection straps bolted together and rigidly supported on molded insulators.
 - 2. Phase bus bars for panels with single pole branches shall be arranged for sequential phasing of branch circuit devices.
 - 3. Phase bus bar connections for breakers with trip settings of 100 amperes and less shall be arranged so that a two-pole breaker may be substituted for two single-pole breakers, and a three-pole breaker may be substituted for three single-pole breakers, without any modifications to the bus bars or connecting straps.
 - 4. Protective devices shall be able to be replaced without removing adjacent units or main bus connectors, and without drilling or tapping. Panel phase bus connections to protective devices shall be field removable by means of a screwdriver.

5. Neutral bus shall be full sized. Neutral bus shall be rated for 200 percent of phase bus ampacity for panels fed from K-Factor Rated transformers and as indicated on the Drawings.
 6. Equipment ground bus shall be bonded to cabinet and shall have adequate terminals and lugs for all branch circuit and feeder equipment grounding conductors.
 7. Isolated ground bus shall be provided when indicated on the Drawings. It shall be insulated from the cabinet and shall have adequate terminals and lugs for all branch circuit and feeder isolated grounding conductors.
 8. In multi-section panelboards, the bussing in each section shall be full size. In all except the final section, provide sub-feed line-side lugs or feed-through load-side lugs for cable connections to the other sections. Sections with tapped bus or cross-over bus shall not be accepted.
 9. Coordinate lug quantities and sizes with the feeders serving the panel, as scheduled on the Drawings.
- F. Future Devices: Where designated on panel schedule or one-line diagram as “space” or “future”, include all mounting brackets, bus connections, filler plates, and necessary appurtenances necessary for installation of devices.
- G. Panelboard Short-Circuit Current Rating:
1. Refer to the Drawings for required A.I.C. ratings for each panelboard.
 2. Panelboards shall bear a UL label indicating the integrated equipment rating.
 3. Rating Options:
 - a. Fully rated panelboards and circuit breakers.

2.2 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS:

- A. Shall comply with the GENERAL REQUIREMENTS FOR PANELBOARDS listed above.
- B. 240 Volt Panelboards: Subject to compliance with requirements, provide product from one of the following list of manufacturers and types:
1. Eaton Electrical Inc.; Cutler-Hammer Business Unit: PRL1A
 2. General Electric Company: AQ
 3. Siemens Infrastructure and Cities (Siemens IC): P1
 4. Square D by Schneider Electric: NQOD
- C. Shall comply with NEMA PB 1, lighting and appliance branch-circuit type.
- D. Branch Overcurrent Protective Devices: Shall be bolt-on circuit breakers, replaceable without disturbing adjacent units.

- E. Doors: Shall have flush latch. For doors over 36” in height, provide two latches.

2.3 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES:

A. Molded Case Circuit Breaker (MCCB):

1. Molded Case Circuit Breakers shall comply with the requirements specified in Section “Overcurrent Protective Devices”.
2. Circuit breakers shall be factory-installed in the panelboards in the same numbered positions indicated on the Drawings.
3. Thermal-Magnetic or Non-Adjustable Electronic Trip Molded Case Circuit Breakers shall be provided for all panelboard circuit breakers less than 400 amperes, unless noted otherwise.
4. Adjustable Electronic Trip Molded Case Circuit Breakers shall be provided for all panelboard circuit breakers 400 amperes and larger, unless noted otherwise.
5. Where indicated on the drawing’s breaker shall be provided with a handle blocking clip, allowing the breaker to be blocked in the “ON” position.

PART 3 - EXECUTION

3.1 EXAMINATION:

- A. Examine panelboards before installation. Reject panelboards that are damaged or rusted or have been subjected to water saturation.
- B. Examine elements and surfaces to receive panelboards for compliance with installation tolerances and other conditions affecting performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION:

- A. Where indicated on the Drawings, install panelboards on concrete bases, in addition to attaching them to the vertical finished or structural surface behind the panelboard.
- B. Install wall-mounted panelboards so that the maximum height of the highest circuit breaker or switch above the finished floor does not exceed 78 inches. The bottom of the cabinet shall not be less than 6 inches above the finished floor.
- C. Mount panelboard cabinet plumb and rigid, without distortion of the box. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.

- D. Arrange panelboard sections for easy removal without disturbing other sections. Locate sections so that present and future conduits can be conveniently connected. Coordinate sizes of cabinets with the designated installation space.
- E. Where flush-mounted panelboards are specified, install one 3/4-inch empty conduit into an accessible ceiling space for every three single-pole spare breakers or breaker spaces, for future use.
- F. Multi-section panelboards shall be coupled together by conduit nipples appropriately sized for all feeder wiring installed between the sections.
- G. Where multi-section panelboards are flush-mounted, sections shall be arranged side by side and shall be 1.5 inches apart.
- H. Arrange conductors in gutters into neat groups and bundle and wrap with nylon cable ties.
- I. At the direction of the Architect or Engineer, where panelboards are installed in public areas, paint the exposed surfaces of the trims, doors, and cabinets to match surrounding wall finishes after the panelboards are installed.

3.3 IDENTIFICATION

- A. Identify all field-installed conductors, interconnect wiring, and components.
- B. Panelboard Nameplates: Label each panelboard with a nameplate as indicated on the Drawings and as specified elsewhere.
- C. Create a type-written schedule of circuits in each panelboard, after approval of the Engineer, and install in the directory holder in each panelboard.
 - 1. Circuit descriptions shall include final room numbers, room descriptions, and items or equipment served.
 - 2. Spare breakers and breaker spaces shall be neatly marked in pencil, to allow for future updates of the schedule.
 - 3. Schedules shall be typed on paper directory cards or printed on card stock appropriately sized for the directory sleeves provided on the panel door.

END OF SECTION

SECTION 26 27 26
WIRING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY:

- A. This section includes the furnishing, installation, and connection of wiring devices.
 - 1. Receptacles, receptacles with integral GFCI, and associated device plates.
 - 2. Weather-resistant receptacles.

1.3 DEFINITIONS:

- A. EMI: Electromagnetic interference.
- B. GFCI: Ground-fault circuit interrupter.
- C. Pigtail: Short lead used to connect a device to a branch-circuit conductor.
- D. RFI: Radio-frequency interference.
- E. SPD: Surge Protective Device.

1.4 ADMINISTRATIVE REQUIREMENTS:

- A. Coordination:
 - 1. Receptacles for Owner Furnished Equipment: Match plug configurations.
 - 2. Cord and Plug Sets: Match equipment requirements.

1.5 ACTION SUBMITTALS:

- A. Product Data (Where indicated in Section “Common Work Results for Electrical”, provide the following information): For each type of product.
- B. Shop Drawings (Where indicated in Section “Common Work Results for Electrical”, provide the following information): List of legends and description of materials and process used for premarking wall plates.

1.6 CLOSEOUT SUBMITTALS:

- A. Operational and Maintenance Data: For wiring devices to include all manufacturers’ packing label warnings and instruction manuals that include labeling conditions.

PART 2 - PRODUCTS

2.1 GENERAL WIRING DEVICE REQUIREMENTS:

- A. Source Limitations: Obtain each type of wiring device and associated wall plate from single source from single manufacturer.
- B. Wiring Devices, Components, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. Comply with NFPA 70.

2.2 RECEPTACLES:

- A. Comply with NEMA WD 1, NEMA WD 6, and UL 498.
- B. LIST OF ACCEPTABLE RECEPTACLE MANUFACTURERS

Manufacturer	Volt	Hubbell / Kellems	Leviton	P&S	Bryant	Cooper Wiring Devices
2. Industrial Specification Grade:						
Duplex:	20 A. 125 V.	HBL5362	5352	5362A	BRY5362	AH5352
Ground Fault:	20 A. 125 V.	GFR5362TR	G5362	---	---	VGf20
Isolated Ground:	20 A. 125 V.	IG5362	5362-IG	IG5362	BRY5362IG	IG5362
Weather Resistant:	20 A. 125 V.	HBL5362WR	---	---	BRY5362WR	---
Weather Resistant Isolated Fault:	20 A. 125 V.	IG5362WR	---	---	BRY5362IGWR	---
Controlled Receptacle:	20 A. 125 V.	---	5362-2P	---	---	---

- C. Weatherproof duplex receptacles shall be weather resistant GFCI grounded duplex receptacles.
 - 1. All receptacles shall be mounted with the same orientation (horizontal or vertical). When a different orientation is required or desired, obtain permission from the Architect/Engineer prior to rough-in.
 - 2. Damp Locations: Provide with a single weatherproof coverplate.
 - 3. Wet Locations: Provide “In-Use” extra-duty metallic weatherproof cover.

- a. Hubbell #WP26E (vertical) or #WP26EH (horizontal)
 - b. Red Dot #CKMUV (vertical) or #CKMU (horizontal)
 - c. Taymac #MX3200(vertical) or #MX3300 (horizontal)
 - d. Intermatic #WP1010MXD (vertical) or #WP1010HMXD (horizontal)
- D. See plans for Special Outlet Schedule.
- E. Receptacle body shall be formed of high-impact nylon faced thermoplastic or urea and receptacle contacts shall be Bronze. Hard use industrial specification grade receptacles shall have a one-piece brass bridge with integral ground contacts.
- F. When only one receptacle is connected to a 20-amp circuit by itself, that receptacle must be rated 20 Amp.
- G. All receptacles shall be self-grounding with ground lug.
- H. Install receptacles to clear all cabinets, equipment, etc.
- I. Color of receptacles:
- J. All 120V, 15 or 20A receptacles located, within kitchens, within 6 feet of a sink, exterior locations, elevator machine rooms, elevator pits, garages, per NFPA 70 and as located on the plans shall be ground fault circuit interrupters (GFCI) for personnel protection (Class A) with 5ma trip. Feed through GFCI receptacles or GFCI breakers may be used to protect other receptacles in the same room and on the same circuit if wired per the manufacturer's recommendations. Prior to final inspection, perform ground fault test on each protected receptacle and submit list of all receptacles tested with results to the Engineer. Label receptacles that are GFCI protected by another feed through GFCI receptacle or by GFCI breaker "GFCI protected".
- K. Provide duplex receptacle on separate circuit beside each telephone terminal board location and other communications equipment requiring 120V, power.
- L. All 15 and 20 amp, 125- or 250-volt non-locking receptacles in damp or wet locations should be listed as "weather resistant".
- 2.3 WALL PLATES:
- A. Wall plates shall be .
 - B. Wall plates in industrial areas, gymnasiums, maintenance areas, warehouses and other high abuse areas shall be stainless steel.
 - C. For receptacles or switches mounted adjacent to each other, wall plates shall be common for each group of receptacles or switches.
 - D. Provide plates for all telephone, cable TV, communication outlets.

PART 3 - EXECUTION

3.1 INSTALLATION:

- A. Installation shall be in accordance with NFPA 70, and as shown on the drawings.
- B. Comply with NECA 1.
- C. Switches shall be located on the latch side of all doors. If switches must be located on the hinge side of a door, they shall be located so that they are not behind the door when it is open. All questionable locations shall be brought to the Engineers/Architects' attention.
- D. Verify all outlet locations on the job prior to rough-in. Locations may be altered up to 6'-0" in any direction without additional cost to the Owner.
- E. When conductors larger than #12 AWG are used on 15A or 20A circuits, splice #12 AWG pigtails for device connections.
- F. Install ground pin up on vertically mounted receptacles and install ground pin to the right on horizontally mounted receptacles.
- G. Dimmers: Do not remove cooling fins from dimmers. Space boxes as required.

3.2 FIELD QUALITY CONTROL:

- A. Convenience Receptacles:
 - 1. Verify ground continuity.
 - 2. Verify correct polarity of hot and neutral conductors.

END OF SECTION

SECTION 26 28 10
OVERCURRENT PROTECTIVE DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY:

- A. Section includes:
 - 1. Cartridge fuses rated 600 VAC and less for use in control circuits, enclosed switches, panelboards, switchboards, enclosed controllers, and motor control centers.
 - 2. Plug fuses rated 125 VAC and less for use in enclosed switches and fuseholders.
 - 3. Molded Case Circuit Breakers (MCCBs)
 - 4. Molded Case Switches

1.3 DEFINITIONS:

- A. MCCB: Molded Case Circuit Breaker

1.4 SUBMITTALS:

- A. Product Data: For each type of product indicated. Include construction details, material, dimensions, and descriptions of individual components.
 - 1. Dimensions and manufacturer's technical data on features, performance, and electrical characteristics.
 - 2. Current and voltage ratings.
 - 3. Short-circuit current ratings (both interrupting and withstand, as appropriate).
 - 4. Evidence of UL listing for series rating of installed devices.
- B. Operation and Maintenance Data:
 - 1. Manufacturer's written instructions for testing, operating, and adjusting overcurrent protective devices.

2. Summary of final settings for all adjustable overcurrent protective devices.
- C. Performance Testing: For each system requiring performance testing, submit a written record of the test results and include with the associated system's Operations and Maintenance Data.

1.5 QUALITY ASSURANCE:

- A. Source Limitations: Obtain overcurrent protective devices, components, and accessories, within same product category, through one source from a single manufacturer.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for the intended locations and application.
- C. Comply with NFPA 70.
- D. Comply with NEMA FU 1 for cartridge fuses.
- E. Comply with UL 248-11 for plug fuses.
- F. Comply with UL 489 for circuit breakers.

1.6 COORDINATION:

- A. Coordinate overcurrent protective device ratings with utilization equipment nameplate limitations of maximum fuse and/or breaker size and with system short-circuit current levels.
- B. Final fuse sizes for mechanical and other motor loads shall be selected by the fuse manufacturer to provide Type-2 "no damage" protection for equipment served. Contractor shall provide and install the selected fuses.

1.7 EXTRA MATERIALS:

- A. Furnish extra materials that match products installed and that are packaged in protective covering for storage and identified with labels describing contents.
 1. Fuses: Equal to 10 percent of quantity of installed fuses for each size and type but no fewer than three for each size and type.

PART 2 - PRODUCTS

2.1 FUSES:

- A. Manufacturers: Subject to compliance with requirements, provide product from one of the following list of manufacturers:
 - 1. Cooper Bussmann, Inc.
 - 2. Edison Fuse, Inc.
 - 3. Mersen Electrical Power
 - 4. Littelfuse, Inc.

- B. Cartridge Fuses:
 - 1. Characteristics: NEMA FU 1, nonrenewable cartridge fuses with voltage ratings consistent with circuit voltages.
 - 2. Fuse Classes:
 - a. Class-CC: UL 248-4, time-delay, rejection type
 - b. Class-J: UL 248-8, dual-element, time-delay
 - c. Class-L: UL 248-10, dual-element, time-delay

- C. Plug Fuses:
 - 1. Characteristics: UL 248-11, dual-element, time-delay, Edison base.

2.2 MOLDED-CASE CIRCUIT BREAKERS:

- A. Shall be provided as factory installed components of panelboards or switchboards, or as separately enclosed units, as specified in other Sections or on the Drawings.

- B. Manufacturers: Subject to compliance with requirements, provide product from one of the following list of manufacturers:
 - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit
 - 2. General Electric Company
 - 3. Siemens Infrastructure and Cities (Siemens IC)
 - 4. Square D by Schneider Electric

- C. General Requirements: Comply with UL 489, NEMA AB 1, and NEMA AB 3, with interrupting capacity to comply with available fault currents.

- D. Standard Features and Accessories:
 - 1. Standard frame sizes, trip ratings, and number of poles.
 - 2. Line connections shall be bolt-on.
 - 3. Lugs: Mechanical type, suitable for the trip rating, number and size of conductors, and conductor material.

4. Multi-pole units shall be enclosed in a single housing or be factory-assembled to operate as a single unit. They shall have a trip element for each pole, a common trip bar for all poles, and a single operator.
 5. Operating handle shall indicate ON, TRIPPED, and OFF positions.
 6. Shall be 80% rated, unless 100% rating is shown on the Drawings or is otherwise specified.
 7. Application Listing: Appropriate for application:
 - a. Type SWD for switching fluorescent lighting loads.
 - b. Type HID for feeding fluorescent and high-intensity discharge (HID) lighting circuits.
 - c. Type HACR for feeding heating, air conditioning, and refrigeration equipment.
- E. Thermal-Magnetic (or Non-Adjustable Electronic Trip) Circuit Breakers:
1. Shall have inverse time element for low-level overloads.
 2. Shall have instantaneous magnetic trip element for short circuits.
 3. Shall have front-mounted, field-adjustable magnetic trip setting for circuit-breaker frame sizes 250 amperes and larger. Factory setting shall be LO, unless otherwise noted.
- F. Current-Limiting Circuit Breakers: Frame sizes 400 amperes and smaller; shall have let-through ratings less than NEMA FU 1, RK-5.
- G. Ground-Fault Circuit Interrupter (GFCI) Circuit Breakers: Single- and two-pole configurations with Class A ground-fault protection (5-mA trip) with self-test circuitry.
- H. Ground-Fault Equipment Protection (GFEP) Circuit Breakers: Class B ground-fault protection (30-mA trip).
- I. Arc-Fault Circuit Interrupter (AFCI) Circuit Breakers: Comply with UL 1699; 120/240-Volt, single pole configuration.
- J. Circuit Breakers and/or Trip Units Rated 1200 Amp and Larger: Provide an energy-reducing maintenance switching system to temporarily reduce the instantaneous pickup setting of the circuit breaker. Provide all components as required for a fully functional system. All components shall be clearly labeled. The energy-reducing maintenance switching system shall consist of the following:
1. Energy reduction maintenance setting switch.
 2. Blue status light to indicate energy-reducing maintenance system is active.

2.3 MOLDED-CASE SWITCHES:

35-210602-002-0045

Overcurrent Protective Devices

- A. Manufacturers: Subject to compliance with requirements, provide product from one of the following list of manufacturers:
 - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit
 - 2. General Electric Company
 - 3. Siemens Infrastructure and Cities (Siemens IC)
 - 4. Square D by Schneider Electric
- B. General Requirements: MCCB with fixed, high-set instantaneous trip only, and short-circuit withstand rating equal to equivalent breaker frame interrupting rating.
- C. Features and Accessories:
 - 1. Standard frame sizes and number of poles.
 - 2. Lugs: Suitable for the trip rating, number and size of conductors, and conductor material.
 - 3. Provide the following options or accessories where indicated on the Drawings or otherwise specified:

PART 3 - EXECUTION

3.1 EXAMINATION:

- A. Examine overcurrent protective devices before installation. Reject units that are moisture damaged or physically damaged.
- B. Examine holders to receive fuses for compliance with installation tolerances and other conditions affecting performance, such as rejection features.
- C. Examine utilization equipment nameplates and installation instructions. Install overcurrent protective devices of sizes and with characteristics appropriate for each piece of equipment.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 FUSE APPLICATIONS:

- A. Cartridge Fuses:
 - 1. Service Entrance: Class-J for up to 600 A; Class-L for over 600 A
 - 2. Feeders: Class-J for up to 600 A; Class-L for over 600 A
 - 3. Motor branch circuits: Class-J for up to 600 A; Class-L for over 600 A

4. Single-phase motor and other branch circuits where appropriate fuse holders are specified in other Sections: Class-CC

B. Plug Fuses:

1. Motor and other branch circuits: Edison-base type.

3.3 CIRCUIT BREAKER APPLICATIONS:

- A. Refer to applicable Drawings and Specification Sections for information on types of circuit breakers to be installed in particular applications. Applicable Sections may include, but not be limited to, "Panelboards", and "Enclosed Switches and Circuit Breakers".

3.4 INSTALLATION:

- A. Install fuses in fusible devices. Arrange fuses so rating information is readable without removing fuse.

3.5 IDENTIFICATION:

- A. Install labels complying with requirements found on the Drawings and elsewhere in this Specification. Install labels at every fused switch and each fuse block, socket, or holder which indicate fuse replacement information.

END OF SECTION

SECTION 26 28 16
ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY:

- A. Section includes:
 - 1. Fusible Switches
 - 2. Nonfusible Switches
 - 3. Fustats
 - 4. Enclosed Circuit Breakers
 - 5. Enclosures

1.3 DEFINITIONS:

- A. NC: Normally closed
- B. NO: Normally open

1.4 SUBMITTALS:

- A. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, factory setting, accessories, and finishes.
 - 1. Enclosure types and details for types other than NEMA 250, Type 1.
 - 2. Current and voltage ratings.
- B. Shop Drawings: For enclosed switches and circuit breakers. Include plans, elevations, sections, details, and attachments to other work. Include wiring diagrams for power, signal, and control wiring.

- C. Operation and Maintenance Data: Include operation and maintenance data for all enclosed switches and circuit breakers in the operation and maintenance manuals. Data shall include, but not be limited to:
 - 1. Manufacturer's written instructions for testing and adjusting enclosed switches and circuit breakers.

1.5 QUALITY ASSURANCE:

- A. Source Limitations: Obtain enclosed switches and circuit breakers, components, and accessories, within same product category, through one source from a single manufacturer.
- B. Product Selection for Restricted Space: Drawings may indicate maximum dimensions for enclosed switches and circuit breakers, including clearances between enclosures and adjacent surfaces and other items. Comply with indicated maximum dimensions.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for the intended locations and application.
- D. Comply with NFPA 70.

1.6 COORDINATION:

- A. Coordinate layout and installation of switches, circuit breakers, and components with equipment served and adjacent surfaces. Maintain required workspace clearances and requires clearances for equipment access doors and panels.

1.7 PROJECT CONDITIONS:

- A. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by Owner or others unless permitted under the following conditions:
 - 1. Notify Owner in writing, not fewer than two days in advance of proposed interruption of service.
 - 2. Do not proceed with interruption of electric service without Owner's written permission.
 - 3. Comply with NFPA 70E.

PART 2 - PRODUCTS

2.1 FUSIBLE SWITCHES:

- A. Manufacturers: Subject to compliance with requirements, provide product from one of the following list of manufacturers:
1. Allen-Bradley; Rockwell Automation
 2. Eaton Electrical Inc.; Cutler-Hammer Business Unit
 3. Eaton Electrical Inc.; Pringle Business Unit
 4. General Electric Company
 5. Siemens Infrastructure and Cities (Siemens IC)
 6. Square D by Schneider Electric
- B. Type GD General Duty switches are not allowed, unless specifically noted otherwise.
- C. Type HD, Heavy Duty, Single Throw, 1200A and smaller: UL 98 and NEMA KS 1.
1. Shall horsepower be rated for the load served.
 2. Shall have clips or bolt pads to accommodate the specified fuses, with rejection features to reject fuses other than those specified.
 - a. Refer to Section "Overcurrent Protective Devices" for specified fuse types.
 3. Shall have an external operating handle indicating ON and OFF positions, with provisions to padlock the switch in the OFF position.
 4. Shall have a mechanical interlock to prevent the opening of the cover unless the handle is in the OFF position. This interlock shall be defeatable with a special tool to permit inspection.
 5. Shall have an equipment ground kit. Equipment ground shall be internally mounted and labeled for copper and aluminum ground conductors.
 6. Accessories: Provide where indicated on the Drawings or required to complete the intended design.
 - a. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
 - b. Isolated Ground Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
 - c. Auxiliary Contact Kit: One NO/NC (Form "C") auxiliary contact arranged to activate before switch blades open.
 - d. Hookstick Handle: Allows use of a hookstick to operate the handle.

- e. Service Entrance Rating: Labeled for use as service entrance equipment.
- D. Other specialty switch types, such as Six Pole or Double Throw, shall be provided where indicated on the Drawings or as necessary for the equipment served, and shall meet the requirements for Type HD single throw switches above.

2.2 NONFUSIBLE SWITCHES:

- A. Shall meet all requirements for FUSIBLE SWITCHES above, except that they shall not accept fuses.

2.3 FUSTATS:

- A. 120V motor loads up to 0.5 horsepower: Shall be horsepower rated and include an Edison-base fuse holder and integral toggle switch. Where located in damp or wet locations, provide weatherproof unit equal to Bussman #SSN.
- B. 120V motor loads, 0.75 horsepower: Shall consist of a horsepower rated Edison-base fuse holder, with a separate horsepower rated toggle switch mounted adjacent to fuse holder.
- C. 120V motor loads, 1 horsepower, or 277V motor loads: Shall consist of a horsepower and voltage rated manual motor starter switch and a horsepower and voltage rated fuse holder designed to hold a time-delay Class CC rejection-type fuse.
 - 1. Manual motor starter switch: NEMA ICS 2, general purpose, Class A, with quick-make, quick-break toggle action, marked to indicate ON, OFF, and TRIPPED. Shall include an ambient-compensated type overload relay with inverse-time characteristics and NEMA ICS 2, Class 10 tripping characteristics. Shall have heaters and sensors in each phase, matched to nameplate full-load current of specific motor it protects and appropriately adjusted for duty cycle.
- D. 120V motor loads up to 1 horsepower: Shall be Siemens “LF111N” 30A, 120V disconnect switch with Edison-base fuse holder, NEMA1 rated.

2.4 ENCLOSED CIRCUIT BREAKERS:

- A. Circuit breakers shall comply with Section “Overcurrent Protective Devices”.
 - 1. Shall be Thermal-Magnetic or Non-adjustable Electronic Trip Molded-Case for breakers less than 400 amperes, unless noted otherwise.

2. Shall be adjustable Electronic Trip Molded-Case for breakers 400 amperes and larger, unless noted otherwise.

2.5 ENCLOSURES:

- A. Comply with NEMA AB 1, NEMA KS 1, NEMA 250, and UL 50.
- B. Enclosure Types: Shall be compatible with environmental conditions at installed locations unless more stringent requirements are specified on the Drawings or elsewhere in the Specifications.
 1. Outdoor Locations: NEMA 250, Type 3R.
- C. Finished Spaces: In finished spaces, enclosures shall be flush mounted unless otherwise noted.

PART 3 - EXECUTION

3.1 EXAMINATION:

- A. Examine elements and surfaces to receive enclosed switches and circuit breakers for compliance with installation tolerances and other conditions affecting performance of the work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION:

- A. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated. Maximum mounting height and required working clearances shall comply with NFPA 70.
- B. Install fuses in fusible devices.
 1. Where fuses serve utilization equipment or motors, coordinate final fuse sizes with equipment nameplates and comply with listed minimum and maximum sizes.
 2. Plug fuses installed in fustats shall be sized for 125 percent of the nameplate full load amps or running load amps.
- C. Comply with NECA 1.

3.3 IDENTIFICATION:

- A. Identify field-installed conductors, interconnecting wiring, and components.

- B. Label each enclosure with engraved nameplate.

END OF SECTION

SECTION 26 29 00
MOTORS

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. This section applies to all motors that are not directly specified or when referenced by other sections.

PART 2 - PRODUCTS

2.1 MOTORS:

- A. For alternating current, fractional and integral horsepower motors. Fed. Spec. CC-M-1807, NEMA Publications MG1 and MG2 shall apply.
- B. Voltage ratings shall be as follows:
 - 1. Three phases:
 - a. Motors connected to 208-volt systems: 200 volts.
 - b. Motors, less than 100 HP, connected to 240 volt or 480-volt systems: 230/460 volts, dual connection.
 - c. Motors, 100 HP or larger, connected to 480-volt systems: 460 volts.
- C. Number of phases shall be as follows:
 - 1. Motors, 1/2 HP and less: Single phase, 120-volts.
 - 2. Motors, larger than 1/2 HP: 3 phase, 480 volt (208 or 240 volt when 480-volt distribution not used).
 - 3. Exceptions:
 - a. Hermetically sealed motors.
 - b. Motors for equipment assemblies, less than one HP, may be single phase provided the manufacturer of the proposed assemblies cannot supply the assemblies with three phase motors.

- D. Horsepower ratings shall be adequate for operating the connected loads continuously in the prevailing ambient temperatures in areas where the motors are installed, without exceeding the NEMA standard temperature for the motor insulations.
- E. Motor designs, as indicated by the NEMA code letters, shall be coordinated with the connected loads to assure adequate starting and running torques.
- F. Motor Enclosures:
 - 1. Shall be the NEMA types shown on the drawings for the motors.
 - 2. Where the types of motor enclosures are not shown on the drawings, they shall be the NEMA types which are most suitable for the environmental conditions where the motors are being installed.
 - 3. Thoroughly clean and paint the enclosures at the factory with manufacturer's prime coat and standard finish.
- G. Additional requirements for specific motors, as indicated in other sections, shall also apply.
- H. Energy-Efficient Motors: When higher than standard efficiency motors are specified or indicated, they shall be rated using the IEEE Standard No. 112, Method B, test procedures, as detailed in NEMA MG1, 12.53.a. The nameplate shall identify the NEMA Nominal Efficiency indicated on the drawings.
- I. Motor Connected and Controlled by Variable Frequency Drives.
 - 1. Motors shall be NEMA Design "B", and U.L. Listed inverter duty rated motors for "PWM" drives with motor winding heater overloads.
 - 2. Motors shall comply with NEMA MG1, Part 31 and can withstand the stress of 1600V peak with a 0.1 m second rise time.
 - 3. Connect cooling fans as required via the variable frequency drive. Provide controls, contactors, and wiring as required.
 - 4. Motors shall be provided with a shaft grounding ring, except for motors located in a hazardous environment.
 - a. A maintenance free, circumferential, conductive microfiber shaft grounding ring (SGR) to discharge shaft currents to ground. The conductive microfibers shall redirect shaft currents and provide a reliable, very low impedance path from shaft to motor frame by-passing motor bearings entirely.

- b. Vertical turbine pump motor, the upper shaft shall be provided with a coating to isolate the shaft from the bearings. The shaft grounding ring shall be installed within the motor casing. This information shall be provided with the shop drawings submittal for verification of method of installation and to ensure they are to be supplied.
 - c. Each motor shall be provided with SGR by the motor manufacturer or equipment manufacturer and shall not be field installed.
 - d. All motors sizes up to 100 h.p. (75kW) shall be guaranteed not to fail due to electrical bearing fluting damage, during the motor warranty period.
 - e. Each motor equipped with this device shall be provided with an externally mounted tag stating that a SGR is installed.
 - f. Method of installation shall be as recommended by manufacturer however, epoxy mounted SGR's shall not be used.
 - g. Device shall have the following features:
 - 1) Protect motor and attached equipment.
 - 2) Provide long-term effectiveness.
 - 3) Easy to install.
 - 4) Contamination proof.
 - 5) Effective at any R.P.M.
 - 6) Maintenance free operation.
 - h. After each motor is installed, the contractor shall have a 3rd party test the installation to ensure no VFD induced shaft voltages are present and provide written documentation of the successful test results. If the testing is not successful, the installation shall be corrected prior to putting the motor into service. The testing must be performed with a Fluke 199C Scope Meter and the appropriate accessories for testing while the motor is in operation.
- J. E Frame Energy Efficient Motors: All equipment provided with E frame motors shall have a performance controller as manufactured by "Performance Control" provided and installed in addition to the across the line starter in all cases except when motor is controlled by a variable frequency drive.

2.2 POWER FACTOR:

- A. Each motor as indicated in Section POWER FACTOR CORRECTION shall be supplied at 95% power factor by the equipment supplier or power factor correction, meeting the requirements of Section POWER FACTOR CORRECTION - shall be provided by the power factor to 95%. (Exception: this does not apply to motors controlled by frequency drives.)

PART 3 - EXECUTION

3.1 INSTALLATION:

- A. Installation shall be in accordance with the NEC, as shown on the drawings, and as required by other sections of these specifications.

END OF SECTION

SECTION 26 29 23
MOTOR CONTROLLERS

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. This section includes all motor starters and motor control stations, either stand alone in NEMA enclosures, combination type with disconnect, or in panelboards or motor control centers.
- B. All starters shall be protected by a time delay 'J' fuse providing Type '2'. No damage protection. Submit specific fuse to be used on this project and manufacturing information to indicate required protection.

PART 2 - PRODUCTS

2.1 NEMA RATED MOTOR STARTERS:

- A. Approved manufacturers: Square D by Schneider Electric, Cutler Hammer, Siemens Infrastructure and Cities (Siemens IC), General Electric, and Allen Bradley. NEMA and NEC shall apply.
- B. All starters shall be fully NEMA rated, shall have all components made by one manufacturer, and shall have the following features:
 - 1. Enclosed type as shown on the drawings.
 - 2. Safety switches within the motor controller enclosures shall have external operating handles with lock-open padlocking provisions and shall indicate the ON and OFF positions.
 - 3. Motor control circuits:
 - a. Shall operate at not more than 120 volts.
 - b. Shall be grounded except as follows:
 - 1) Where isolated control circuits are shown.
 - 2) Where manufacturers of equipment assemblies recommend that the control circuits be isolated.
 - c. Incorporate a separate, heavy duty, control transformer within each motor controller enclosure to provide the control voltage for each motor operating over 120 volts.

- d. Incorporate two primary and one secondary time delay fuses for control power transformers sized in accordance with NEC and UL requirements.
4. Overload current protective devices:
 - a. Electronic type Class 10 or Class 20 selectable, set to Class 20 trip.
 - b. Shall be 3 pole.
 - c. Manual reset on the door of each motor controller enclosure.
 - d. Overloads shall be field adjusted and set for the associated motor's rated full load current.
 - e. Check every motor controller after installation and verify that correct sizes of protective devices have been installed.
 5. H-O-A selector switch, Red "on" pilot light and a minimum of One N.O. auxiliary contact (field convertible to N.C.).
 6. Other devices and accessories as shown on the drawings or otherwise required by control drawings and approved shop drawings.
 7. Enclosures:
 - a. Shall be NEMA 1 for interior, NEMA 3R for exterior and other types as shown on the drawings for the motor controllers.
 - b. Where the types of motor controller enclosures are not indicated, they shall be the NEMA types which are the most suitable for the environmental conditions where the motor controllers are being installed.
 - c. Doors shall be mechanically interlocked to prevent opening unless the breaker or switch within the enclosure is open.
 - d. Thoroughly clean and paint the enclosures at the factory with manufacturer's prime coat and standard finish.
 8. Each controller for motors 10 HP and larger shall be equipped with a 3-phase sensing loss of phase relay with automatic reset. Equal to Time Mark model 258.
- C. Motor controllers incorporated with equipment assemblies shall also be designed for the specific requirements of the assemblies.
- D. Additional requirements for specific motor controllers, as indicated in other sections, shall also apply.
- E. Install a disconnect safety switch near and within sight of each motor. Combination type switch/starter in one enclosure is acceptable if listed as one piece. Switches shall comply with Section 262816.
- F. E Frame Energy Efficient Motors: All equipment provided with E frame motors shall have a performance controller as manufactured by "Performance Control"

provided and installed in addition to the across the line starter in all cases except when motor is controlled by a variable frequency drive.

G. Reduced Voltage Motor Controllers:

1. Shall be installed for all motors larger than 10 HP and where shown on the drawings.
2. Shall be auto transformer as indicated on the drawings or included in the temperature control section of these specifications.
3. Shall have closed circuit transition for the types which can incorporate such transition.
4. Shall limit inrush currents to not more than 70 percent of the locked rotor currents.

H. Two speed starters shall be of the type as required for the actual motor installed. Verify in the field.

I. If motor is dual winding, provide three additional phase conductors of the same size and type as specified to the starter, and provide the proper type of starter for the motor supplied. Increase conduit as required.

2.2 TRANSISTORIZED VARIABLE FREQUENCY DRIVE:

A. The Variable Frequency Drive (VFD) shall be for use with a standard NEMA B induction motor. All units are to be started up at the jobsite by a factory trained authorized representative and a one-year parts and labor warranty. Manufacturer shall be Eaton, AC Tech, Allen-Bradley, Square D by Schneider Electric, Siemens Infrastructure and Cities (Siemens IC), General Electric, Danfoss, Yaskawa, ABB and must include the following:

1. Individual or simultaneous operation of the VFD's shall not add more than 5% total harmonic voltage distortion to the normal bus, nor more than 10% while operating from standby generator (if applicable) per IEEE 519, 1992. The main service disconnect shall be the point of common coupling. The available fault current at point of common coupling under utility operation shall be verified with the Utility Co. or as shown on one-line diagram.
 - a. Maximum allowable total and individual harmonic current distortion limits for each odd harmonic shall not exceed limits as set forth by IEEE 519, 1992. If harmonic filters are required to meet these requirements, the VFD manufacturer must provide the filter, and is responsible for the design and manufacturing of the filter.
2. Input displacement power factor of .95 or higher at all operating speeds and loads.

3. The VFD shall be a microprocessor based digital Pulse Width Modulated (PWM) design. Current source designs and SCR-type units are not acceptable.
 4. The VFD shall be supplied with an input AC line reactor of 5% impedance. Line reactor shall be designed to address performance issues of NEMA MG1-20.55 and to provide proper transient protection of the VFD input power devices. Line reactor is to be factory mounted and wired within the VFD enclosure.
 5. The VFD shall be equipped with a load AC line reactor of 5% impedance built-in or motor termination filter to prevent voltage rate of rise, reflective voltage amplitude damage, and other potential damage to motor windings and bearings. The manufacturer shall review the drawings for motor types and cable distances and provide all protection required for the specific application.
- B. The PWM VFD shall provide the following design features as standard.
1. Microprocessor logic. The VFD shall be microprocessor based and utilize digital input for all parameter adjustments. Use of potentiometers for parameter adjustment is not acceptable. Provide digital communications interface with the building automation system and include all required programming coordination with the controls subcontractor.
 2. Auto restart. The VFD shall automatically attempt to restart after a malfunction or an interruption of power. The number of attempted restarts shall be customer selectable (0 to 5). If the drive reaches the limit of restarts without successfully restarting and running for a customer selectable length of time (60 to 600 seconds), the restart circuit shall lockout and shall provide contact annunciation. Delay between attempts to restart shall be customer selectable from 3 to 300 seconds.
 3. Current limit. A current limit circuit shall be provided to limit motor current to a present adjustable maximum level by reducing the drive operating speed or acceleration rate when the limit is reached. Range of adjustment shall be from 50 to 100 percent.
 4. Digital output displays and input parameter programming. The VFD shall include a digital display and digital input programming capability on the main logic board. The display shall be programmable for indication of output speed in rpm, frequency, and percent of base speed, motor amps, output motor volts, and output load. The display shall also function as a first fault indicator.
 5. The VFD shall provide terminals for connecting normally closed remote safety devices. This emergency shutdown shall operate in any mode of operation.
 6. Critical frequency avoidance (Frequency jump points). The VFD shall provide a minimum of two (2) selectable frequency jump points, in 1.5 Hz increments, to be used to avoid critical resonance frequencies of the mechanical system.

7. Input signal follower. The input signal follower circuit shall have selectable differential inputs and accept an electrical speed command from an external source rated at 0-5, 4-20 or 10-50 mA or voltage signals of 0-5 or 0-10 VDC. The input follower circuit shall be capable of operating directly or inversely proportional to the listed speed commands.
8. Motor overload protection. Electronic motor protection shall be provided which is capable of predicting motor winding temperature based on inputting specific parameters including motor design type (TEFC, ODP, or other) and speed range. The protection shall provide an orderly shutdown should the motor's thermal capabilities be exceeded. This protection also eliminates the requirement for motor overload relays on single motor applications when a bypass is not used.
9. Open collector outputs. The VFD shall include three (3) open collector outputs to indicate drive run, drive fault, and drive ready.
10. Output signals. The VFD shall include analog output signals for output load, output speed, and motor voltage. The signals shall be 0 to 10 Vdc @ 1 mA.
11. Stop mode functions. The VFD stopping mode functions shall be selectable for coast-to-rest or stopping at programmed decel rate.
12. V/Hz profiles. The VFD shall provide up to eight (8) selectable V/Hz profiles.
13. Loss of control signal. The VFD shall revert to the last speed on loss of input control signal. Owner shall be able to field select a preset speed for the VFD to run when control signal is lost, if preferred. In either case, an open collector output shall be selected to indicate loss of control signal for remote indication purposes.

C. The PWM VFD design shall provide the following:

1. Input section. Full wave rectification shall be achieved with input diodes in a conventional bridge configuration and shall be used to supply voltage to the DC bus.
2. DC bus. The DC shall be filtered by a series choke between the input section and one or more capacitors to provide ripple free dc current. An additional series choke shall be located between the bus capacitors and the inverter to provide enhanced output short circuit and ground fault protection. VFDs which use only bus capacitors require that input isolation transformers or input line filters be supplied.
3. Output section. The inverter shall use IGBT transistors to provide three phase output power to the motor.
4. All printed circuit boards shall be manufactured using surface mount technology. They shall be conformal coated.

D. The VFD supplier shall provide the same design/technology to cover the HP range for all VFDs. VFD supplier to provide the following documentation:

1. Documentation showing that the VFD is the same basic design.

2. One Instruction Manual to cover the full HP range for all VFDs.
 3. Explanation of commonality of spare parts for all VFDs.
- E. Output ratings. The VFD shall operate within the following ratings:
1. Frequency range, 1-120 Hz
 2. Frequency resolution, .1 percent of base speed with analog input .025 percent with digital input
 3. Frequency accuracy within .05 percent of set point
 4. Overload rating, 110 percent for one minute
- F. Motor performance.
1. The VFD shall provide 3 percent speed regulation.
 2. Input power. The VFD shall operate within the following parameters:
 - a. 208V (+5%/-10%), or 230V (+5%/-10%), or 480V (+5%/-10%)
- G. Set-up adjustments. Standard setup adjustments shall include:
1. Minimum speed, 0 to 100 percent
 2. Maximum speed, 0 to 100 percent
 3. Linear accel, .5 to 600 seconds
 4. Linear decel, .5 to 600 seconds
 5. Maximum output voltage, adjustable
 6. V/Hz, adjustable with selectable profiles
 7. Current limit, 50 to 110 percent
- H. Environmental ratings. The VFD shall operate within the following parameters without the requirement for derating:
1. Operating temperature, 0 degree C to 50 degrees C
 2. Altitude to 100m (3300 ft.)
 3. Humidity, 95 percent non-condensing
- I. Enclosure. The drive shall be furnished in a NEMA enclosure most suitable for the installed environment. Finned heatsinks and/or cooling fans shall be provided as necessary for proper heat dissipation. Inlet filters are required on all cooling fans, unless they are outside the drive enclosure and no circulated air passes circuit boards, transistors, or other electrical components.
- J. Codes and standards. The VFD shall meet the following standards.
1. CSA
 2. ETL (UL 508)
 3. NEMA
 4. NEC

- K. Protective features. The VFD shall be designed to meet the following specifications and operate within the following parameters:
1. AC input fuses. The VFDs power circuit shall be fused and isolated internally with respect to ground. Fuses shall provide a minimum of 100,000 A interrupting capacity and shall provide complete Type 2 protection, not allowing any damage to the VFD upon overload or short circuit.
 2. Logic common. The power unit's logic common shall be at ground potential.
 3. Phase loss protection. Phase loss protection shall be provided to prevent single phasing.
 4. Phase loss ride-through. The VFD shall be capable of continued operation during an intermittent loss of power for 0.1 seconds (6 cycles). Opening of the VFDs input and/or output line switches while operating shall not result in damage to the power circuit components.
 5. Short circuit and ground fault protection. The VFD shall have an instantaneous electronic trip circuit to protect the VFD from output line-to-line and line-to-ground short circuits. The VFD must be capable of withstanding short circuits at 480V plus 10 percent (528V). The VFD supplier must demonstrate ground fault and short circuit protection at time of startup or plant witness test. The VFD shall be capable of providing 110 percent motor current intermittently. The VFD shall include an instantaneous overcurrent trip and shall not restart after electronic overcurrent trip until reset through the run/stop circuit, or unless the auto restart function has been enabled.
 6. Transient and surge voltage protection. Transient and surge voltage protection shall be provided through the use of Metal Oxide Varistors (MOVs). The VFD shall withstand a 6000-volt, 80 joule surge voltage when tested in accordance with ANSI/IEEE C62.41-1980 with the test circuit adjusted for a 2100-amp peak 8x20 microseconds short circuit discharge current pulse.
 7. Rotating Motor Start. The VFD shall be able to start into a motor rotating in either direction and at any speed, and accelerate to set speed without any time delay, tripping, or component loss.
 8. Load side disconnects. A disconnect switch may be used on the load side of the VFD near the motor for ease of service and safety. Operating the switch with the VFD running shall not cause any component failure. In dual motor applications, VFD shall be able to operate either motor with the other motor disconnected without requiring jumpers, parameter modifications, or other adjustments. As part of start-up, VFD supplier shall certify all load side disconnects can be opened or closed with drive running at full speed without damage to the drive.
- L. Reliability: A complete description of supplier's Quality Assurance and Testing program shall be provided.

1. Component testing. All power semiconductors and integrated circuits shall be 100 percent tested.
2. Computerized ATE testing. Computerized Automated Testing Equipment (ATE) testing shall be used to evaluate functional performance of printed circuit boards. Printed circuit boards shall receive a thermal stress test where temperatures are cycled between 0 degree C and 65 degrees C and receive electrical power-on and power-off cycle tests.
3. Burn in. All VFDs shall be tested/run in the equivalent of a NEMA 1 enclosure and burned in at rated ambient (40°C) with a fully loaded motor.

M. Maintainability.

1. All control circuit voltages (12VAC, 24VDC, 160VDC and 120VAC) shall be physically and electrically isolated from power circuit voltages (200 to 600VAC, 600VDC) to ensure safety to maintenance personnel.
2. The VFD shall be furnished with an alphanumeric diagnostic display with fault indications to include the following: bus overvoltage, bus undervoltage, overcurrent, over temperature, ground fault, and timed overload.
3. All printed circuit boards shall utilize quick disconnect plugs and/or pull apart terminal blocks to facilitate maintenance by providing quick change-out without disconnecting terminal strip connections thereby reducing wiring errors.
4. VFD shall be capable of starting and operating without a motor connected for ease of service.
5. All setup and operating parameters shall be stored in nonvolatile memory. The static memory module shall be to be removed and installed in replacement logic boards with all setup and operating parameters intact requiring no adjustment of replacement boards.

N. Additional features.

1. Operator panel.
 - a. A door-mounted Soft touch Operator Panel shall be included with the following features:
 - b. Shall digitally display motor speed, load, amps, and output volts (and controller setpoint and system pressure when setpoint controller is included).
 - c. Shall indicate drive run, drive ready, drive fault, plus operator function/status indication such as auto speed reference, and auto restart.
 - d. Shall provide selection for Hand/Off/Auto control. In Hand mode, the VFD shall be started and stopped from the operator's panel. In the Auto mode, the VFD shall be started and stopped by remote contact closure. In the Off mode, the VFD shall be locked out.

- e. Shall provide selection for Manual/Auto Speed Reference. In the Manual Reference mode, the VFD speed reference shall be set from the operator's panel. In the Auto Reference mode, the VFD speed reference shall be set by the external source instrument signal. Selecting between Manual and Auto speed reference shall have no bearing on the Hand/Off/Auto start/stop selector, or vice versa.
 - f. Shall name all parameters in English, not codes or numbers.
 - g. Keypad shall include electronic lock-out feature to prevent unauthorized personnel from parameter access.
 - h. Shall store up to six drive faults in a history batch file in the order they occur to simplify trouble-shooting. This file will automatically be updated should new faults occur.
2. Automatic Bypass control circuitry. Bypass control circuitry shall be mounted integrally to the VFD enclosure. The bypass shall utilize an input switch to feed the VFD and isolate the VFD for trouble shooting. An output contactor which is electrically and mechanically interlocked with the bypass starter shall be utilized on the VFD to provide a positive disconnect between the VFD and the motor. Separate Hand/Off/Auto and Inverter/Bypass switches shall be included to allow manual or automatic transfer to across-the-line operation. If the VFD trips on a fault, power will automatically transfer across the line to run the motor at full speed. If the VFD auto restart function has been enabled, the drive will first attempt to restart itself after a fault. If it is unable to do so within the number of times programmed, power will then automatically transfer across the line. A 120V control circuit transformer (fused on both the primary and secondary), auxiliary contacts, and overload relay with adjustable heater settings shall also be included. Any protective shutdown circuits shall function in all modes (hand, auto, or bypass).
 3. A 120 V. control transformer fused on both the primary and the secondary.
 4. Disconnect switch. The operating mechanism shall be designed so that the door can be padlocked in the "OFF" position. The switch shall have an interrupting capacity of 65,000 symmetrical amperes.
 5. Communications port. A communications port for RS 232C or RS 422 communications.
 6. Provide factory start up, adjustment, and initialization.
 7. On-site owner training of at least 4 hours shall be provided and must include a complete description on Theory of Operation, Operating Procedures, Functional and Operating Characteristics of Specific Logic Boards, Troubleshooting, Repair, and Preventative Maintenance. A simulated failure shall be diagnosed. All costs for instructor's time, travel, meals, lodging, etc. shall be included.
 8. Provide controls, contactors, and wiring as required for motor cooling fans.

2.3 SOLID STATE REDUCED VOLTAGE STARTER:

35-210602-002-0045

Motor Controllers
26 29 23 - 9

- A. Solid-state motor starters shall provide voltage ramp with current limit and reduced voltage soft starting of any standard NEMA design a.c. induction motor of the appropriate horsepower. The starter must be self-contained and house the solid-state controller, motor overload protection, and disconnect means, in one enclosure.
- B. Manufacturers:
1. Unit(s) must be manufactured by Eaton, Allen Bradley, Square D by Schneider Electric, General Electric, or Siemens Infrastructure and Cities (Siemens IC).
 2. Unit(s) must be approved or certified by the following agencies:
 - a. UL
 - b. CSA
- C. Product Construction:
1. Units must be in NEMA enclosures suitable for the environment they are installed or as shown on the drawings and house the solid-state reduced voltage controller, motor overload protection, disconnect device, properly sized bypass contractor as required in one enclosure.
 2. Cooling fans shall be ball bearing type with internal impedance protection for the motor. If cooling fan(s) are used, an over temperature sensor shall be supplied with a normally closed contact which opens at or below 85 degrees C.
 3. Units smaller than 450 Amps shall be sized such that they will fit inside of a 20-inches wide, 20-inches deep motor control center section. Larger units shall fit inside of a 30-inches wide, 20-inches deep motor control center section.
 4. Line and load terminals shall be mountable for wire termination from the top or bottom.
 5. All set-up adjustments must be conveniently located on the front cover of the controller (not enclosure). These adjustments must be clearly marked on the cover of the controller to show function and direction of adjustment. LED indicators shall be provided to indicate Control Power On, Motor On, Motor Starting, and Shorted SCR.
 6. Power poles and logic assemblies to be removable as one-piece assemblies. One logic assembly shall work in any size unit of a given line voltage. The logic assembly and SCRs shall be noise immune per NEMA showering arc test for solid-state contactors.
- D. Electrical:
1. Voltage Ratings
 - a. 200 volts, 60 Hz
 - b. 230 volts, 60 Hz

- c. 460 volts, 60 Hz
- d. Input voltage variations
 - 1) ± 15 percent of nominal motor voltage, at a frequency of 58 to 62 Hz
- 2. Power Requirements provide 120-volt control transformer.
- 3. Provide a properly sized bypass/shorting contactor.
- 4. Operating Temperature:
 - a. 0 to 50 degrees C (32° to 122°F) without derating
 - b. 0 to 70 degrees C (32° to 158°F) derating 33 percent for every 10 degrees C over 50 degrees C to a maximum of 70 degrees C
- 5. Humidity:
 - a. 5 to 95 percent relative humidity, non-condensing
- 6. Overload Ratings @ 50 degrees C:

<u>%FLA</u>	<u>Duration (sec)</u>
600	10
450	30
300	120
200	480
115	Continuous

- 7. UL Short Circuit Withstand Ratings: 600 V. 100 KVA
 - a. With Fusible Disconnect: Starter shall be protected by time delay 'J' fuses providing Type 2 no damage protection.
- 8. Duty Cycle:
 - a. Twenty (20) times in any 60-minute period. Control rating to be 133 percent of motor rating.
 - b. Five (5) times in any 60 second period. Control rating to be 200 percent of motor rating.
 - c. Ten (10) times in any 60 second period. Control rating to be 300 percent of motor rating.
- 9. Phase Rotation:
 - a. Unit shall not be phase rotation sensitive
- 10. Power Devices:

- a. Power semiconductors shall be SCRs connected in inverse parallel configuration in each phase.
- b. PIV Ratings shall be 2.5 times nominal line voltage rating of units:
 - 1) 200V units : 600V PIV
 - 2) 230V units : 600V PIV
 - 3) 460V units : 1200V PIV
- c. Firing circuitry must utilize op to isolated gate circuitry for hard firing of SCRs. Pulse transformers and "picket fence" firing are not acceptable. The gate drive circuit shall be optically coupled for noise immunity and long life.

11. Voltage Transient Suppression:

- a. MOVs (Metal Oxide Varistors) shall be supplied as standard across the power devices to protect them from line transients. The MOVs shall clamp transient voltages to 10 percent below the PIV of the power devices. Voltage transient suppression shall not cause the power devices to turn on.
- b. Resistor-capacitor snubbed networks shall be supplied as standard to prevent the power devices from misfiring due to the dv/dt characteristics of the SCRs.

12. Noise Immunity:

- a. Units shall be noise immune per NEMA ICS 2-230 Showering Arc Test at 2000V peak.

13. I/O Ratings:

- a. Output contacts shall have NEMA B300 ratings
 - 1) Auxiliary contact
 - 2) Over temperature switch
 - 3) Shorted SCR contact
- b. Inputs:
 - 1) Logic board: 120V, 40VA max.
 - 2) Coil: 120V, 10VA max.
 - 3) Ramp Selects: Dry contact closure only - no input power required.

E. Functionality:

1. Unit shall provide a reduced voltage start of the closed loop voltage ramp type adjustable over a range of 30 to 90 percent of nominal line voltage at turn-on and with a ramp time range of 1/2 to 30 seconds.
2. Two (2) separately adjustable voltage ramps and a ramp down on decel function shall be supplied as standard. Each selectable ramp shall have an Initial Torque and a Start Time adjustment. "Light duty" controllers are not acceptable.
3. An energy saving circuit shall be supplied as standard to optimize energy efficiency of lightly loaded motors and shall be based on the NASA/Nola principle.
4. A motor voltage regulator (line voltage limiter) adjustment shall be supplied as standard to prevent higher than motor nameplate voltage from being applied to the motor when the incoming line voltage rises above the motor nameplate voltage.
5. A shorted SCR detector shall be supplied with an interlock contact that will prevent starting of a device with shorted SCRs when wired into the control circuit in the appropriate position or may be used as an alarm driver.

F. Adjustments:

1. Initial Torque 1 Adjustment Range - 30 - 90 percent of nominal voltage
2. Start Time 1 Adjustment Range - 0.5 - seconds
3. Initial Torque 2 Adjustment Range - 30 - 90 percent of nominal voltage
4. Start Time 2 Adjustment Range - 0.5 - 30 seconds
5. Line Voltage Limiter Adjustment Range - 80 - 120 percent of nominal voltage
6. PFC Circuit Adjustment Range - 60 - 100 percent of nominal voltage

G. I/O Points:

1. Inputs:
 - a. Motor Run Coil
 - b. Ramp 1, Ramp 2, Common, and Decel - selection is made as a connection of a dry contact between the desired input and Common
2. Outputs:
 - a. N.O. Auxiliary Contact
 - b. N.C. Over temperature Switch
 - c. N.C. Shorted SCR Detected
3. Diagnostics:
 - a. Control Power On LED
 - b. Motor Power On LED

- c. Motor Starting LED
- d. Shorted SCR LED

PART 3 - EXECUTION

3.1 INSTALLATION:

- A. Installation shall be in accordance with the NEC, and as shown on the drawings.

END OF SECTION

SECTION 27 05 02
COMMON WORK RESULTS FOR LOW VOLTAGE SYSTEMS CABLING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. Refer to section "COMMON WORK RESULTS FOR LOW VOLTAGE SYSTEMS" for additional information.

1.2 SUMMARY:

- A. The extent of the communications system work is indicated by drawings and details, and is hereby defined to include, but not be limited to the installation of voice, data, fiber, video, CATV, and CCTV.
- B. All cabling materials, cabling, jacks, patch panels, racks, etc. are specified in other sections and shall be provided by the Contractor. The Contractor shall be responsible for all testing as specified in individual specifications sections.
- C. It is the intent of the Drawings and Specifications to provide a complete workable telecommunication cabling system ready for the Owner's use. Any item not specifically shown on the Drawings or called for in the Specification, but normally required for a complete system, are to be considered a part of the contract.

1.3 SUBMITTALS:

- A. Installer's qualifications (including references).
- B. Statement of Warranty
- C. Manuals and Technical Documents
- D. Record Drawings

1.4 QUALITY ASSURANCE:

- A. Codes and Standards: Refer to section "COMMON WORK RESULTS FOR LOW VOLTAGE SYSTEMS" in addition to the following:

1. Rural Utilities Service (RUS): Comply with Rural Utilities Service specifications pertaining to construction and installation of telephone cabling.
- B. System Manufacturers Application Warranty: The system manufacturer shall provide a total application assurance warranty per Part 3 of this section. Contractors shall be certified by the manufacturer to be an approved system installer. The manufacturer and the certified installer shall take full responsibility for a quality installation complying with all applicable standards.
- C. Contractor Qualifications and Training:
 1. The Contractor shall be fully conversant and capable in the cabling of low voltage applications such as, but not limited to data, voice and imaging network systems. The Contractor shall at a minimum possess the following qualifications:
 - a. Licenses/permits required performing telecommunications installations in the specified jurisdiction.
 - b. Personnel trained and certified by the proposed Cabling System Manufacturer.
 - c. All installation Personnel on site must be under the supervision of an individual trained and certified to install the approved manufacturers cabling System.
 - d. The Designer and Installers shall show proof of current certification of the proposed Cabling System Manufacturer via a current card given after attending a minimum 5- day course or a re-certification class. This card must be current and be in the possession at all times they are on the project.
 - e. Provide (3) previous references of the type of installation provided in this specification.
 - f. Personnel trained and certified in fiber optic cabling, splicing, termination, and testing techniques. Personnel must have experience using a light meter and OTDR.
 - g. Personnel trained in the installation of pathways and support for housing horizontal and backbone cabling.
 - h. Personnel knowledgeable in local, state, province and national codes, and regulations. All work shall comply with the latest revision of the codes or regulations. When conflict exists between local or national codes or regulations, the most stringent codes or regulations shall be followed.
 - i. Have at least (5) years successful installation experience with projects utilizing telephone, data, video, and other low voltage systems and wiring similar to that required for this project to ensure system is compliant with standards.

- j. Must be a Building Industry Consulting Service International (BICSI) member and have an RCDD or BICSI certified ITS Technician on staff.
- k. Must possess current liability insurance certificates.

1.5 EQUIPMENT AND MATERIALS:

- A. Refer to section "COMMON WORK RESULTS FOR LOW VOLTAGE SYSTEMS".
- B. All products installed will meet or exceed the minimum performance requirement as listed in the technical specification of this document and its corresponding addendums.

1.6 WORKMANSHIP AND SUBSTITUTIONS:

- A. Refer to section "COMMON WORK RESULTS FOR LOW VOLTAGE SYSTEMS".
- B. All work shall be done in a workman like fashion of the highest standards in the telecommunications industry. All equipment and materials are to be installed in a neat and secure manner, while cables are to be properly dressed.
- C. No substitution of product or services will be accepted without prior approval from both the Owner and the Manufacturer providing the Application warranty.

1.7 AS-BUILT DRAWINGS:

- A. See Section "COMMON WORK RESULTS FOR LOW VOLTAGE SYSTEMS".

1.8 SUPPORT AND WARRANTY:

- A. Applications Supported:
 - 1. Existing and future applications supported for a channel model warranty include those approved by the Institute of Electronic and Electrical Engineers (IEEE), the Asynchronous Transfer Mode (ATM) Forum, the American National Standards Institute (ANSI) or the International Organization of Standards (ISO) that specify compatibility with the cable referenced herein. Additional applications that are covered by this warranty include all future applications developed for the specified structured cabling system.
- B. Basic Warranty:

1. Either a basic link or channel model configuration may be applied to the horizontal and/or backbone sub-systems of the structured cabling system. Applications assurance is only applied to a channel model configuration.
- C. Applications Assurance Warranty:
1. A twenty (20) year warranty shall be provided for an end-to-end channel model installation which covers applications assurance, cable, connecting hardware and the labor cost for the repair or replacement.
- D. Product Warranty:
1. The manufacturer of passive telecommunications equipment used in a manner not associated with the Systems Warranty must have a minimum five (5) year Component Warranty on its entire product. The Products Warranty covers the components against defects in material or workmanship under normal and proper use.

PART 2 - PRODUCTS

2.1 RACEWAYS

- A. Refer to section "COMMON WORK RESULTS FOR LOW VOLTAGE SYSTEMS" Execution and section "RACEWAY SYSTEMS".

2.2 REQUIREMENTS FOR COMMUNICATIONS INSTALLATION:

- A. General: Examine areas and conditions under which systems are to be installed. Notify the Engineer in writing of conditions detrimental to proper completion of the work. Do not proceed with work until unsatisfactory conditions have been corrected in an acceptable manner.
- B. Interbuilding Backbone Cable Routing:
1. The backbone subsystem shall include cable installed between buildings via underground ducts from the main cross-connect to an intermediate, or horizontal cross-connect, in a multi-building campus.
 2. Unless otherwise recommended by the manufacturer, all interbuilding backbone fiber cables shall be run in fabric innerduct (MaxCell or equal). Fibers shall be terminated in telecommunications rooms/closets using connectors in wall mounted interconnect centers or rack mounted panels equipped with sufficient ports, slack storage space and splice trays if required to terminate and secure all fibers.

3. In an underground system, adequate underground conduit space shall be available and accessible at each building. The conduits shall not exceed a fill factor of 53% for one cable, 31% for two cables or 40% for three or more cables.
4. All underground systems shall be installed to prevent water runoff from entering the building.
5. Optical fiber cable shall be run for all Interbuilding backbone segments, unless otherwise noted.
6. Each copper cable run must include a #3/0 cu. ground/counterpoise run along with cable and grounded/bonded on both ends to telecommunications grounding system. Each fiber cable run must include trace wire or tape for locating purposes.

C. Horizontal Cable Routing:

1. All horizontal cables, regardless of media type, shall not exceed 295 ft (90 m) in total length from the telecommunications outlets in the work area to the horizontal cross connect. This does not include the allowable distances for equipment cords and patch cords as listed below.
2. The length of patch cords in the telecommunications room/closet shall not exceed 16 ft (4.9 m) and equipment cords in the work area shall not exceed 16 ft (4.9 m) unless used in conjunction with a multi-user telecommunications outlet assembly (MUTOA).
3. Horizontal pathways shall be installed or selected such that the minimum bend radius of horizontal cables is kept within manufacturer specifications both during and after installation.
 - a. Minimum conduit bend radius shall not be less than 6 times the diameter for 2" conduit and smaller.
 - b. Minimum conduit bend radius shall not be less than 10 times the diameter for conduits larger than 2".
4. Cables shall be supported by means that are structurally independent of the suspended ceiling, its framework, or supports. These supports shall be spaced no more than 4 ft apart.
5. The installation of telecommunications cabling installed in grounded metallic conduit shall maintain a 12-inch minimum distance from all sources of Electrical Magnetic Interference (EMI), such as; fans, motors, fluorescent fixtures, transformers, etc. Cabling installed in cable tray or j-hooks shall maintain a 24-inch minimum distance from all sources of EMI. All cables shall maintain a 48-inch minimum distance from transformers. Engineer shall be notified in advance if these clearances cannot be met.

6. The installation of telecommunications cabling shall maintain a minimum clearance of 10 ft from power cables in excess of 480 Vrms. No telecommunications cross-connects shall be physically located within 20 ft (6 m) of electrical distribution panels, step down devices, or transformers, which carry voltages in excess of 480 Vrms. Engineer shall be notified in advance if these clearances cannot be met.
7. Cables shall be run using a star topology from the telecommunications room serving that floor to every individual telecommunications outlet.
8. The Contractor shall observe the bending radius and pulling strength requirements of the 4-pair UTP and fiber optic cable during handling and installation.
 - a. Pulling force on 4-pair UTP cable shall not exceed 25lb/f.
 - b. Pulling force on 2 or 4-strand optical fiber shall not exceed 50lb/f.
9. Each run of UTP cable shall not contain splices between the horizontal portion of the cross-connect in the telecommunication room and the telecommunications outlet.
10. In the telecommunications room where cable trays or cable racking are used, the contractor shall provide appropriate means of cable management such as hook and loop cable managers to create a neat appearance and practical installation.
11. Continuous conduit runs installed by the contractor should not exceed 100 ft (30.5 m) or contain more than two (2) 90-degree bends without utilizing appropriately sized pull boxes.
12. All horizontal pathways shall be installed and grounded to meet applicable local and national building and electrical codes.
13. The number of horizontal cables placed in a cable support or pathway shall not exceed manufacturer's recommendations and shall not cause a change in the geometric shape of the cables.
14. Maximum conduit pathway capacity shall not exceed a 40% fill. Perimeter and furniture fill shall be limited to 60% fill for moves, adds, and changes.
15. Horizontal distribution cables shall not be exposed in the work area or other locations with public access.
16. Cables routed in a suspended ceiling shall not be draped across the ceiling tiles. Cable supports shall be mounted as close as possible to 6 in (15 cm) above the ceiling grid supporting the tiles.

D. Work Area Termination:

1. All UTP cables wired to the telecommunications outlet/connector shall have 4-pairs terminated in eight-position eight conductor (8P8C) modular outlets in the work area. All pairs shall be terminated.
2. The telecommunications outlet/connector shall be securely mounted.

3. The height of the telecommunications faceplates shall be to applicable codes and regulations, and/or the same height of nearby electrical faceplates.
 4. Provide specialized outlets for the specific systems furniture manufacturer. Outlets must be fully compatible. Verify systems furniture manufacturer with Architect or Owner.
- E. Tightening: Tighten electrical connectors and terminals, including screws and bolts, in accordance with equipment manufacturer's published torque tightening values for equipment connectors.
- F. Bend Radius:
1. The maximum cable bend radii shall not exceed manufacturer's specifications.
 2. In spaces with UTP cable terminations, the maximum bend radius for 4-pair cables shall not exceed four times the outside diameter of the cable. The maximum bend radius for multi-pair cables shall not exceed ten times the outside diameter of the cable. Manufacturer specifications shall be followed if more stringent.
 3. During the actual installation, bend radius on 4-pair cables shall not exceed eight times the outside diameter of the cable and multi-pair cables shall not exceed ten times the outside diameter of the cable. Manufacturer specifications shall be followed if more stringent.
 4. The bend radius of 2 or 4-strand optical fiber cable shall be 1" (2.5 cm) minimum under no load and 2" (5 cm) minimum under load. Manufacturer specifications shall be followed if more stringent.
- G. Slack:
1. In the work area, a minimum of 12 in (30 cm) shall be left for UTP cables. A minimum of 3 ft (1 m) shall be left for fiber cables.
 2. In telecommunications room/closets a minimum of 10 ft (3 m) of slack shall be left for all fiber cables and a minimum of 3 ft (1 m) of slack shall be left for all UTP cables. This slack must be neatly managed on trays or other support types.
- 2.3 LABELS:
- A. See Section "COMMON WORK RESULTS FOR LOW VOLTAGE SYSTEMS".
- 2.4 GROUNDING:
- A. See Section "GROUNDING AND BONDING FOR COMMUNICATIONS SYSTEMS".

PART 3 - EXECUTION

3.1 TESTING PROCEDURES:

- A. Testing of each system shall be performed in accordance with the manufacturer's specifications and as outlined in the other individual low sections of this specification.
- B. All installed channels shall perform equal to or better than the minimum standards.

3.2 LABELING

- A. SEE SECTION "COMMON WORK RESULTS FOR LOW VOLTAGE SYSTEMS".
- B. Cables:
 - 1. Horizontal and backbone cables shall be marked within 12" of each endpoint using laminated labels with identifier repeating itself a minimum of four times on label for easy identification from all viewing angles. Marking directly on the cable is not permitted.
 - 2. Any cable installed in conduit shall be labeled at all intermediate pull or junction boxes.
 - 3. Label cables using the appropriate horizontal line identifier.
 - 4. No cabling identifier will duplicate any previous, active cable identifier.
- C. Faceplates:
 - 1. A unique identifier shall be marked on each faceplate to identify it as connecting hardware.
 - 2. Each port in the faceplate shall be labeled with its identifier.
 - 3. For faceplates that use clear plastic cover strips, insert an 'unpeeled' label with backing intact.
 - 4. For faceplates without clear plastic cover strips, laminated adhesive type labels shall be affixed to the faceplate. Marking directly on the faceplates is not permitted.
- D. Racks, Panels, Blocks:
 - 1. A unique identifier shall be marked on each piece of connecting hardware to identify it as connecting hardware.
 - 2. Patch panels shall be labeled with an identifier and all individual ports shall be labeled with an identifier.
 - 3. Patch panels ports may be labeled with adhesive type laminated labels or 'unpeeled' labels with backing intact if the panel has a clear label strip.

4. Each cable termination position on blocks shall be labeled with number designators.
5. Use adhesive laminated type labels for all block labels. Marking directly on the block is not permitted.
6. For 110-style blocks where a clear plastic cover is used, insert an 'unpeeled' label with backing intact.

3.3 RECORDS:

- A. All records shall be created by the installation contractor and turned over at the completion of work. The format shall be computer based. Both soft copies and hard copies shall be included as part of the As-Built package. The minimum requirements include:
 1. Cable records must contain the identifier, cable type, and termination positions at both ends, splice information as well as any damaged pairs/conductors.
 2. Connecting hardware and connecting hardware position records must contain the identifier, type, damaged position numbers, and references to the cable identifier attached to it.
 3. Test documentation on all cable types shall be included as part of the As-built package.

3.4 DOCUMENTATION/AS-BUILTS/RECORDS:

- A. All cables shall be labeled in accordance with the Owner's labeling standards.
- B. All cables shall be labeled at minimum within 12-inches of each end of the cable jacket, ((to include each end in the telecom space, at the work area, and at the consolidation point (CP) if present) per the latest edition of the ANSI/TIA-606 Standard. Prior to bidding, Contractor shall verify with Designer of Record whether a higher class of labeling is required for the project, per the latest edition of the ANSI/TIA-606 Standard.
- C. No cabling identifiers shall duplicate any previous active cable identifier.
- D. All documentation, such as, As-Builts and records shall be kept on file by the Certified Installer for the entire term of the warranty.
- E. As-built drawings shall be supplied by the contractor showing the locations of and identifiers for all components.

END OF SECTION

SECTION 27 40 00
SUPERVISORY CONTROL SYSTEM (GENERAL)

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. This Section covers, in general, the overall purchase, installation, startup and warranty of the combined hardware and software to operate, control, monitor and report on the status of the equipment in the City of Facility. Deviations from this specification shall be listed upon pre-submittal.

1.2 CONTROL SYSTEM DESCRIPTION:

- A. The system shall consist of a network of programmable logic controllers (PLC's) located in the supervisory control panels networked with Supervisory Computers and Laptops. The supervisory computers are shown on the floor plans and in the control schematic. Each control panel shall be a "smart remote" composed of an Ethernet capable PLC and supervisory computer communicating via a local Ethernet network that shall monitor and respond to a number of discrete and analog input/output conditions. Each control panel shall consist of an enclosure with a computer terminal, PLC, surge protection, uninterruptable power supply, wireways, terminal blocks, I/O rack and relays all necessary to control the equipment. Provide fusible terminal blocks for all discrete and analog I/O points. Separate fusible terminal strips shall be provided for discrete I/O and analog I/O i.e., analog I/O shall be separated from discrete I/O.
- B. Failure of any Supervisory Computer shall not affect operation of the plant. The Personal Computers at the PLC panels will be able to function during failure of the Central Supervisory Control Computer. Performance of the system shall be updated in real time.
- C. The Ethernet network (Local Area Network – LAN) shall be connected to each computer that may exert supervisory control for set point modification and enabling/disabling pumps and other control points.
- D. Each Supervisory Computer shall contain the control functions for each screen and have the ability to store and transmit data on the Ethernet network. The networks shall use "twisted pair" Cat 5E switched Ethernet 100 Base TX communication wiring and if there are failures in the communications links the operation of the plant shall not be affected nor shall the integrity of the control panel cabinet be compromised.

- E. In the event of failure of any of the Supervisory Computers, any other supervisory computers and the network shall continue control of the systems until the Central Supervisory Computer is placed back into service. Upon placement of the Central Supervisory Computer back into service, the analog data accumulated shall be able to be acquired for updating the data banks so as to have a continuous record of the preceding events and alarms. The alarm function shall not be placed out of service in the event of failure of any of the Computers but shall be announced via the network recognized at the PLC showing the alarm condition. In the event of failure of any PLC or personal computer, an alarm shall be given.

1.3 SCOPE:

- A. The Contractor shall furnish and install the SCADA system and all wiring, cables, and conduit required to have an operational and functional system. A System Integrator will be required for actual SCADA system installation and programming. All testing, programming and check out must be performed by the Systems Integrator.

1.4 SYSTEMS INTEGRATOR:

- A. Systems Integrator Qualifications: The system specified herein shall be the product of a Systems Integrator who can demonstrate at least five (5) years of satisfactory experience in furnishing and installing comparable systems. The systems integrator shall have an office within 50 miles of the facility and be able to provide the onsite service required by these specifications. The qualifications of Systems Integrators shall be submitted to the Engineer prior to being included in the final bid.
- B. The Systems Integrator and/or system manufacturer shall make available on a 24-hour delivery of any replaceable modules and/or program development. This is to ensure that the Owner will receive prompt maintenance service and a single source of responsibility. The Systems integrator and/or system manufacturer shall certify this to the Consulting Engineer in writing at the time of bidder pre-approval.

1.5 PREBID SUBMITTAL:

- A. Pre-approved systems integrators and/or system manufacturers shall provide submittals for pre-approval prior to bidding. This submittal requires general electrical and dimensional drawings and a list of comparable installations fifteen (15) days prior to the bid. The installation list shall include the names and phone numbers for the Owner's and Consulting Engineer's for projects of similar size and complexity. The Consulting Engineer shall be the sole judge as to whether the alternate equipment is considered approved for bidding. Approval of an alternate system by the Consulting Engineer will not relieve the alternate system of strict adherence to these specifications. Approval of the control system and systems integrator will be written and published as an addendum.

1.6 REFERENCE STANDARDS:

- A. Reference to the standards of any technical society, organization, or association, or to codes of local and state authorities, shall mean the latest standard, code, specification, or tentative specification adopted and published at the date of taking bids, unless specifically stated otherwise.

1.7 PERMITS, EASEMENTS, CODES, FEES, AND NOTICES:

- A. All work shall be installed in strict accordance with all local and state codes and ordinances. Should any change in, or addition to, the plans and specifications be required to make them conform to these codes and ordinances, the system integrator shall so state when submitting his pre-bid qualification.
- B. The control system and its components shall comply with all applicable requirements of the following:
 - 1. Electrical Code Compliance (National & Local)
 - 2. National Fire Protection Agency Compliance
 - 3. UL Compliance
 - 4. NEMA Compliance
 - 5. IEEE Compliance
 - 6. EIA Compliance
 - 7. FCC Compliance

1.8 RESPONSIBILITIES:

- A. **Manufacturer:** The manufacturer shall provide the computer system, programmable logic controller(s), power supply, I/O modules, chassis, operator interface, communication wiring, uninterruptible power supplies, warranty, programming guides, and system support. The manufacturer must be listed in the pre-bid submittal and must be approved prior to bidding.
- B. **Systems Integrator:** The Systems Integrator shall obtain the necessary equipment containing microprocessors from an approved manufacturer and shall assemble the control system. The Systems Integrator shall provide the control, monitoring, and reporting programs to operate the facilities as indicated. The Systems Integrator shall direct the contractor as to the support needs, i.e., power requirements, control wiring, panel installation and specials.
- C. **Start Up and Field Service:**
 - 1. The systems integrator shall be responsible for verifying all control connections and the system is “debugged” prior to placing the system into service. Startup shall include operator interface, reports, O & E manuals, and the Management Program.

2. The system integrator shall include in his price the services of a competent field technician for a period of not less than 4 trips and 10 days. This service shall be for the purpose of commissioning the system, initial startup, certification, and instruction of treatment plant personnel.
3. A follow-up trip and two days' training shall be completed at three months.
4. A follow-up trip and two days' training shall be completed at six months.
5. A follow-up trip and two days' training shall be completed at one year.
6. Start-up Report
 - a. A written report covering the Systems integrator's field service technician's findings and installation approval shall be submitted to the engineer covering all inspections, and outlining in detail all deficiencies that were noted.
 - b. The deficiencies noted in the report shall be corrected by the systems integrator or to the systems integrator's satisfaction and so noted.

D. Warranty:

1. The warranty shall cover all parts, materials, labor, programming, O&M manual documentation revisions, and site visits for the duration of the warranty.
2. Lightning damage shall be included as part of the warranty.
3. The Systems Integrator shall provide start up services plus a minimum of six (6) days and four (4) trips support service.
4. The warranty period for the SCADA system shall be for 2 years for the date of acceptance. The warranty shall ensure that the system work as it is specified.

1.9 SUBMITTALS:

- A. Complete electrical and dimensional drawings (including front panel and sub-panel layouts) shall be provided prior to fabrication for approval by the Consulting Engineer. The submittal data shall include the following:
- B. Product Data: Provide product data sheets for each component supplied in the system. The data sheets shall show the component name as used on reference drawings, manufacturer's model number or other product designator, electrical or mechanical requirements, and materials compatibilities.
- C. Shop Drawings: Drawings for the SCADA system shall include wiring diagrams for control circuits and interconnections of all components including wiring diagrams for all remote devices, and instruments connected to the system.

- D. Connection and interconnection wiring diagrams furnished by the Contractor shall meet the requirements of ANSI Y 14.5a1971. The wiring diagrams shall be drawn with all devices indicated in their relative physical locations. Wiring diagrams shall be rear view. Each device connection shall have near each termination, indicated in separate breaks, the opposite end destination.
- E. Wiring diagrams shall be prepared on appropriately sized sheets. Where interconnecting wiring from different items of equipment or sectional wiring diagrams of the same item of equipment appear on different wiring diagram sheets, all interconnections shall be clearly identified. Where sectional wiring diagrams are required for a single item of equipment such as a relay panel or control panel, that section of the panel which is represented by each individual wiring diagram sheet shall be keyed on that sheet in a manner acceptable to the Consulting Engineer.
- F. Information indicated on the Systems Integrator's drawings shall include wiring of the individual panel items, as they actually will appear in the panel, contact arrangements of switches and internal wiring of relays and instruments.
- G. Elementary diagrams shall be cross-referenced to terminal markings on the connection and interconnection diagrams but need not indicate complete details of circuits external to the panel. Each item of panel mounted equipment indicated on the diagrams shall be identified by item number and name.
- H. Sufficient space shall be left on the outgoing terminal blocks for adding cable color codes and circuit numbers.
- I. Ladder type diagrams with English description of operation shall also be acceptable for wiring diagrams.
- J. Panel Layout Drawings: A front panel and sub-panel layout shall be included as part of each control panel drawing. Components shall be clearly labeled on the drawing.
- K. Test Reports: Submit test reports of factory "burn-in".
 - 1. The submittal shall include full color printouts of screens including icons, animation and navigation between the levels and screens and present an example for review by the engineer and owner.
- L. Other Items: Other items and additional information and details of submittals as required providing complete clarity of the submittal.
- M. The documentation shall be approved by the engineer and owner. The review submittal shall be completed on computers provided by the systems integrator for this project.

N. Refer to Specification section SUBMITTALS for additional requirements.

1.10 DELIVERY, STORAGE, AND HANDLING:

A. All items shall be stored in a dry, sheltered place, not exposed to the outside elements, until ready for installation these items shall be the responsibility of the subcontractor until installation. All items shall be handled with appropriate care to avoid damage during transport and installation.

1.11 FACTORY TESTS:

A. The PLC's and all electronic equipment shall be tested at the factory (place of assembly and debugging) prior to being shipped to the job site for connection into the Control system. This test shall be a minimum of ten (10) days of equipment "burn in". The Owner reserves the right to witness the testing.

B. A minimum of one week's notice to the Owner shall precede all tests. In addition, all supplied equipment shall have been factory tested at the operational temperatures listed in this specification. Submit with shop drawings a copy of these test reports.

PART 2 - PRODUCTS

2.1 CONDUCTORS AND CONDUIT – MATERIALS:

A. Low Voltage Wire (600V): See Section LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES.

B. Control and Monitor Conductors: All control/monitor conductors shall be copper, 19-strand, #16 gauge or larger. 7-strand wire will not be permitted. Insulation type shall be for 90 degrees C. Provide spade type insulated copper connectors for all wire terminations. See Drawings. All wiring shall be color coded from terminal to terminal. Multiple conductor cables will be acceptable.

C. Paired Shielded Cable: All paired shielded cables shall be #18-gauge 16/30 stranded copper conductors with .018 polyethylene insulation, twisted into pairs, stranded into a core and enclosed in a non-hydroscopic core tape, 100% coverage helically wound aluminum foil shield, drain wire, and .028" minimum extruded PVC jacket. Pairs shall be black/red. Cables shall be rated at 300 volts to meet NEC-725 and IEEE 383, and shall be Belden #8760, or approved equal. See Drawings.

D. Plastic Conduit: See Section RACEWAY SYSTEMS. To be used only for buried service.

- E. Rigid Steel Conduit: See Section RACEWAY SYSTEMS.
- F. Liquid Tight Flexible Conduit: See Section RACEWAY SYSTEMS.

2.2 EQUIPMENT:

- A. Surge Protection: Provide L.E.A. Dynatech Series TE-B transient surge protection device for all communication lines to/from the PLC that terminate external to the building. Additional surge protection shall be provided on the source of power to protect the electronic equipment from lightning induced surges and shall also be effective in rejecting switching line transients produced by other equipment.
- B. Control Interposing Relay: Control relays shall be industrial plug-in type 600 volt with N.O/N.C. contacts rated 10 amps at 120 VAC continuous duty, General Electric CR 120 Line, Square D by Schneider Electric Class 8501, or approved equal. Provide in NEMA 1 enclosure. Verify all requirements in field per site.
- C. Control Switches: Control switches shall be oil tight pushbutton type; Cutler Hammer Series E-30 or approved equal. Auxiliary contact blocks shall be provided as required.
- D. Alarm Horn Exterior: The alarm horn shall be weatherproof suitable for exterior mounting. The unit shall be a heavy-duty model with a megaphone that can be rotated 180° horizontally and 90° vertically. The unit shall be solid-state with a high decibel sound output (112-114 dB 10 feet) and shall operate on 120VAC. The electrical contractor shall provide 120V. 1P. contactor with a coil (voltage compatible with the control system) for operation of this device. This contactor shall be used to operate all alarm horns and beacon lights shown on the plans.
- E. Flashing Beacon Light Exterior: The flashing beacon light shall be weatherproof suitable for exterior mounting. The unit shall have a red lens and shall flash approximately 60 flashes per minute. The unit shall be UL listed and operate on 120 volts. Two (2) replacement bulbs shall be provided with the unit. The electrical contractor shall provide 120V. 1P. contactor with a coil (voltage compatible with the control system) for operation of this device. This contactor shall be used to operate all alarm horns and beacon lights shown on the plans.
- F. Mandown Alarm Contact: The mandown alarm shall be a Type T oil tight momentary contact pushbutton with a red jumbo mushroom head (2-inches dia.) with the word "Emergency" engraved on the operator. The unit shall be similar to a Cutler Hammer Series E-20.

- G. Phase Failure Relay: The Phase Failure relay is a three-phase voltage sensing device that will trip on phase loss, phase reversal, voltage unbalance or undervoltage. Voltage unbalance shall trip the device when any voltage drops 10% below the average. Undervoltage is externally adjustable from 75% to 100% of the rated voltage. The relay shall be a plug-in type relay.
- H. Load Relay Detector: The load detector monitors the motor load and has two separate output relays to indicate when a trip point has been exceeded. The two output relays correspond to a maximum and minimum trip point. Relays correspond to two maximum trip points. Separate pushbutton switches, located on the face of the device, are used to select the trip points. Standard Features shall include:
 - 1. Two SPDT relay outputs to indicate maximum or minimum trip.
 - 2. Adjustments for startup delay, response delay and compensation of motor losses.
 - 3. LEDs to indicate power on, maximum trip or minimum trip.
- I. Provide current transformers to match design voltage and motor draw.

PART 3 - EXECUTION

3.1 MATERIALS:

- A. The Systems Integrator shall furnish all components necessary, including communication wiring, jacks, cables, hardware, and software to make the SCADA system operational.

3.2 WORKMANSHIP:

- A. These specifications contain detailed instructions and descriptions covering the major items of construction and workmanship necessary for building and completing the various units or elements of the project. The specifications require first class workmanship and the furnishing of the best grade and quality of materials. These specifications may fail to include all details, but this will not relieve the system integrator of full responsibility for providing a completed project of high-quality, first-class finish and appearance, and satisfactory operation, all within the apparent intent of the plans and specifications.

3.3 SERVICE FOR PANELS, INSTRUMENTS AND CONTROLS:

- A. The Systems Integrator shall furnish qualified, experienced, and competent service personnel for inspection, calibration and checking of all equipment prior to initial operation. The systems integrator shall furnish all special tools and equipment required for calibration purposes such as hand loaders, manometers, test gauges, etc. The special tools that will be required for owner maintenance shall be provided to the owner upon acceptance of the project and the owner shall be instructed on the proper use of these special tools.
- B. The Systems Integrator shall be responsible for all time spent by service personnel to correct system design or equipment defects. This time spent shall not be considered as service to place equipment in service.
- C. Service personnel who lack technical competence and experience or who are unacceptable to the Engineer shall be removed from the job site and replaced with acceptable personnel. Service personnel who visit the site who are new employees of the Systems Integrator or who are classified as trainees shall be accompanied by a service engineer who has had startup experience on equipment of this type.
- D. All costs of time, traveling and living expenses, etc. shall be included for instrument and control startup service. The Systems Integrator shall include in his Proposal all time required to start up panels, instruments, and controls.

3.4 INSTRUCTION FOR PANELS, INSTRUMENTS AND CONTROLS:

- A. The instruction of plant operating personnel shall be considered a part of this Contract. The explanation of how and what the instrument measures, and its application to plant process; explanation of the several control loops and the actual operation of the system should be included. This explanation shall be conducted as a five (5) day, 8 hrs/day school for the City of operators, and written documentation shall be provided.
- B. The training shall provide instruction and experience such that maintenance personnel with no previous programming or configuring experience shall be capable of operation of the control system with no guidance or with only minimum supervision on unusually complex problems.
- C. All class time shall be recorded in video Format. Two (2) copies shall be provided to the owner for his use.

The training shall cover the following subjects, as a minimum:

1. PLC and personal computer overview in which the basic system design, configuration, and purpose is covered.
2. PLC hardware in which the specific hardware elements and specific configurations provided are covered.
3. How the actual PLC programs operate.

4. Specific application program instruction covering the overall design and philosophy of the applications as provided under this Contract. The intent shall be to make the student fully knowledgeable in all aspects of the provided system along with the methods for making additions, modifications, and deletions to the PLC program.
 5. Supervisory Computer System overview of operation report generation, data storage and retrieval, and access and execution of the control, monitoring, and reporting programs.
 6. General review of the use of the computer system including the monitor and printer.
 7. Complete controls and computer system backup and reload procedures.
 8. Diagnostic software details including capabilities, usage, and interpretation of results.
- D. In addition to the operator instruction, and after final acceptance of the SCADA system by the owner and engineer, the Systems Integrator shall complete an operations and maintenance manual that reflects the "As Constructed" system and provide six (6) copies to the owner. Each manual shall be properly labeled, indexed, and tabbed for quick reference. This manual shall include a copy of the program with documentation, all equipment manuals, a troubleshooting guide, a maintenance schedule, wiring and piping diagrams, and a spare parts listing with supplier addresses and phone numbers. The Systems Integrator shall update each copy of the O&M manuals to reflect any changes made to the system during installation, start-up, or warranty period. The final O& M Manual shall also be provided on Compact Disc.
1. Upon job close out, Manuals shall be submitted also to comply with the requirements as outlined in Section 01700 Contract Closeout, OPERATIONS AND MAINTENANCE MANUALS.
 2. Copies of the operations and maintenance manuals shall be on site for equipment startup and initial operations.

3.5 CONDUCTORS – INSTALLATION:

- A. General: See Section COMMON WORK RESULTS FOR ELECTRICAL. All electrical wiring systems shall be color coded in accordance with the National Electrical Code. In conduits or runs containing from two to seven conductors, no two conductors shall be of the same color. In conduits or runs containing from eight to fourteen conductors, the same color shall not appear more than twice. For runs of more than fourteen conductors, the same color shall not appear more than three times. Unless necessary for pulling purposes, conductors shall be continuous from terminal block to terminal block without splice. Under no condition shall conductors of a different color be spliced together. All circuits shall be tagged at terminals.

- B. Low Voltage: All conductors shall be continuous from outlet to outlet and no splices shall be made except at outlets. Sufficient wire shall be left at all outlets to make connections to equipment without straining.
- C. All splices and taps shall be made with mechanical type, compression type or spring connectors. Splices and taps shall be reinsulated with Scotch Tape No. 33, half-lapped to a thickness of 1-1/2 times the conductors and insulation thickness.
- D. Paired Shielded Cable: Paired shielded cables shall be grounded at the PLC end only and shall be insulated from ground elsewhere. The shield shall be made continuous for the entire run. The 300-volt cable shall not be laced with or in the same conduit with cable rated at 600 volts or greater.
- E. Grounding: Provide full size separate green ground conductors in all conduit containing 120 volts or above. Do not install control/monitor conductors and/or shielded cable in the same conduit with conductors of 120 volts and above.
- F. All conduits, cabinets, outlets, and other equipment shall be properly grounded in accordance with National Electrical Code requirements. Where ground wire is exposed to mechanical damage, it shall be installed in thick wall conduit. Connections shall be made to equipment with solderless connections. Wire connections to the ground conductor shall be of the exothermic type equal to the Cadweld process.
- G. The metal surface under the grounding lug shall be cleaned to bright metal. Equipment not specifically shown connected to a grounding conductor shall be grounded by means of a conduit supplying the equipment. Where direct metallic connections cannot be made, bonding jumpers shall be used.

3.6 CONDUIT – INSTALLATION:

- A. General: See Section RACEWAY SYSTEMS.

END OF SECTION

SECTION 27 41 15
SUPERVISORY CONTROL SYSTEM (PLC)

PART 1 - GENERAL

- 1.1 This section covers specific requirements for the programmable logic controllers (PLCs) referenced in section SUPERVISORY CONTROL SYSTEM (GENERAL).

PART 2 - PROGRAMMABLE LOGIC CONTROLLER (PLC)

2.1 I/O CHASSIS:

- A. A plug-in chassis assembly shall be used that provides universal mounting and terminal blocks for a compatible power supply, PLC, and I/O blocks. The I/O chassis shall be of suitable size to accommodate the necessary modules plus 25% spare. Remote chassis shall be equipped with a remote I/O adapter module to facilitate communication with the processor.

2.2 PROGRAMMABLE LOGIC CONTROLLER PLC:

- A. The Programmable Controller shall be a solid-state digital device using a real time programmable memory capable of performing logic sequencing, timing, and counting. The controller shall be capable of performing continuous process control, with the capability of handling analog input and output signals. By design, the PLC shall be capable of operating in an industrial environment without specific requirements for heating, cooling, or electrical filtering. The PLC shall be designed to operate in an ambient temperature range of 0° to 60° C and in an environment with humidity ranging from 0% to 95% (noncondensing). PLC construction shall be modular to allow for easy maintenance, serviceability, and expansion. The PLC shall consist of three major components: The processor (CPU), the power supply, and the I/O section. These components shall be configured to form an integral unit. The PLC shall be designed with an automatic fault detection system that compares outputted processor data to I/O bus line status. Should a discrepancy exist from this comparison, the processor shall stop PLC and an alarm contact shall be provided for remote annunciation.

- B. The processor shall be a state-of-the-art microprocessor-based computer sized to perform all outlined functions. The CPU shall have the ability of being programmed in ladder logic for normal process sequencing and interlocking. The CPU shall also have the ability of being programmed in statement list (STL) for advanced functions as necessary. The STL programs shall be capable of being called from ladder logic as subroutines for easy maintenance and debug of the overall control program.
- C. The internal memory for this processor shall be battery backed RAM. The memory shall have the capability of being divided into program, data storage, and retentive memory by the programmer in any manner. The internal memory, in addition to being battery backed, must have the capability of being backed up by EPROM and EEPROM. The back up should reside on the processor so during an overall reset, the user program can be loaded from the EPROM or EEPROM into RAM. A spare EPROM or EEPROM with the control program shall be provided for each PLC so that in the event of catastrophe failure a new CPU can be programmed from the spare EPROM. The user RAM and dynamic RAM storage areas shall be automatically tested once per memory scan. The process shall provide automatic detection and indication of a fault in the proper operation of the processor. If the processor cannot complete the function, an indicator mounted on the process shall be energized. Upon sensing this condition, the fault detection alarm contact shall be picked up. The processor shall operate on DC power supplied through the power supply. The processor shall directly accept relay ladder diagram symbology and shall output memory/program contents in ladder diagram format.
- D. The CPU memory shall be backed by EEPROM and capable of transferring the EEPROM program by executing a switch sequence on the CPU. The programmable controller system shall have the capability of installing intelligent communication processors and special purpose processors I/O racks. These cards will run independently and/or in conjunction with the CPU. The communication to these cards must be through a bus separate from the bus the CPU communicates to its standard I/O with.
- E. The programmable controller system must have the capability to provide local, remote and distributed I/O. Local I/O is I/O that resides within 100 feet of the CPU and is communicated to at bus speed. Remote I/O is I/O that can be located up to 9000 feet away from the processor and is communicated to by the CPU over twisted pairs at no less than 19.2K baud. Distributed I/O is I/O that is located within 1800 feet from the CPU and is communicated to by the CPU at bus speed.
- F. Each PLC in the system shall be a node on the Ethernet LAN and shall communicate via the Ethernet with other PLC's and PC's.

2.3 POWER SUPPLY:

- A. The power supply shall operate on 115 VAC (plus or minus 10 percent) 60 Hz (plus or minus 5 percent). The power supply shall convert this power to the required DC voltage level for the processor and I/O sections. The power supply shall be sized to operate the PLC, computer, video monitor, alarm horn, and flashing beacon light (including 25 percent spare capacity load) for a minimum of two hours in the event of primary power loss. To protect against a loss of memory due to a power failure, a backup battery system shall be provided. Alkaline or lithium batteries shall provide power to protect a fully loaded memory for 1 year without return of the normal power supply. The battery system shall maintain the CPU's memory and the RAM memory in any intelligent cards. Under normal power conditions, the batteries shall not support the memory contents. A battery monitoring circuit shall be provided to monitor the conditions of the batteries. A local status light shall be provided for this function on the front of the station logic control panel.

2.4 DISCRETE INPUT/OUTPUT:

- A. Input/Output devices shall be modular allowing for interchangeability of modules without de-energizing power to the I/O section or without de-energizing field wiring power. Modules shall be designed to convert from field voltage levels to controller voltage to field voltage levels. An identification system designed to prevent connecting an I/O module to the wrong voltage level shall be provided. A fault detection system shall be provided to identify I/O signal status. All I/O module edge connectors shall be, at a minimum, gold flashed.
- B. Each I/O circuit that leaves the building in which the control panel is located shall be optically isolated to protect internal logic from field wiring transients. All circuits shall demonstrate the capability of serving IEEE Surge Withstand Capability Test to 1500 volts. The total number of I/O circuits shall be as required by this specification. A minimum of 10 percent spare INPUT circuit capacity and a 20 percent spare Output circuit capacity shall be provided. Inductive and resistive contact rating (both AC and DC) shall not be reached or exceeded in any circuit. All contact ratings both induction and resistive shall be identified by the PLC manufacturer.

2.5 ANALOG INPUT:

- A. Analog input devices shall be modular allowing interchangeability of modules. The modules shall be capable of converting (8) analog 4-20 mA DC signals into (8) 12-bit binary words for use in the application programs. The (8) channels shall be input selectable in groups of four. The signal on each input shall be updated twice per second and stored in the buffer memory on the module. In addition, the card should provide to the CPU Status bits indicating open circuit, module fault and overflow of each 12-bit word. Each analog input shall be optically isolated to protect internal logic from field wiring transients. All circuits shall demonstrate the capability of serving IEEE Surge Withstand Capability Test to 1500 volts. A minimum of 10% spare circuits shall be provided.

2.6 ANALOG OUTPUT:

- A. Analog output modules shall be modular, allowing interchangeability of modules. The modules shall be capable of converting (8) 12-bit binary words into (8) analog 4-20 mA DC signals. Each analog output shall be optically isolated to protect internal logic from field wiring transients. All circuits shall demonstrate the capability of serving IEEE Surge Withstand Capability Test to 1500 volts. A minimum of 20% spare circuits shall be provided.

PART 3 - EXECUTION

3.1 INSTALLATION:

- A. The contractor shall make all electrical connections to equipment as specified. Installation shall be made in compliance with manufacturer's recommendations. If recommendations are not available from the manufacturer of the specific equipment, installation shall be according to the best electrical industry and trade practices. Refer to specification section SUPERVISORY CONTROL SYSTEM (GENERAL) for additional requirements.

3.2 TESTING:

- A. Refer to section SUPERVISORY CONTROL SYSTEM (GENERAL) for requirements associated with testing of the system and its components.

3.3 WARRANTY:

- A. Refer to section SUPERVISORY CONTROL SYSTEM (GENERAL) for warranty requirements.

END OF SECTION

SECTION 27 41 18
SUPERVISORY CONTROL SYSTEM (CONTROL PANEL CONSTRUCTION)

PART 1 - GENERAL

- 1.1 This section covers the specific construction requirements for the supervisory control panels as discussed in section SUPERVISORY CONTROL SYSTEM (GENERAL).

PART 2 - PRODUCTS

2.1 CONTROL PANEL CONSTRUCTION:

- A. Panels shall be completely shop fabricated, piped, wired, and tested. The work shall conform to the latest applicable requirements of the National Electrical Code, the National Board of Fire Underwriters, and the American Standard Code for Pressure Piping, and NEMA WCI standards.
- B. The panels shall be fabricated, all cutouts made, and finish painted in the shop of the supplier. All recorders, indicators, and control switches shall be installed, piped, and wired in the System Integrator's shop. Low voltage systems, piping, telephone, and control switches shall be isolated from the high voltage items.
- C. All panels shall be constructed of specially leveled steel plate with rolled edges. Panels shall have internal reinforcement as required to maintain flat surfaces and to provide adequate support of all instruments and controls to be mounted thereon. Each panel shall be of unit construction. Extra bracing, if required, shall be bolted in place for shipping purposes.
- D. The Control Panels shall be constructed of a minimum of 14-gauge thick steel. The panel interiors shall incorporate all bracing and necessary brackets required for mounting of auxiliary equipment such as pneumatic controls, electric relays, switches, contactors, pressure switches, piping, and terminal blocks.
- E. Engraved nameplates shall be provided to properly identify each piece of equipment mounted in and on each piece of equipment represented on the external surface of the panel. All equipment mounted inside the panel that cannot be labeled shall be tagged. These identifications need not be duplicated if other permanent visible means of identifications exist.

- F. Instrument and controllers shall be provided with all necessary mounting hardware, cables, signal resistor units, power supplies, etc., for mounting in the panels complete and readied for operation.
- G. The supplier shall mount all specified instruments on the panel providing all necessary cutouts, electrical and mechanical service connections.
- H. Control panels shall be provided with a viewing window in the door so that the supervisory computer monitor can be viewed without opening the control panel door. The glass shall be low glare type and large enough for the monitor used on the project.
- I. Panel and Indicating Lights: The indicating lights shall be heavy duty 120 VAC lights with engraved lenses of the color specified. A box of spare light bulbs shall be supplied with the panel. The lamp removal tool shall also be supplied. The unit shall be Cutler Hammer Series E-30 or approved equal.

PART 3 - EXECUTION

- 3.1 Refer to section SUPERVISORY CONTROL SYSTEM (GENERAL) for installation, testing, and warranty requirements for the supervisory control panels.

END OF SECTION

SECTION 33 12 16
VALVES AND APPURTENANCES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Gate Valves
2. Air Release Valves
3. Valve Boxes, Lids and Covers

B. Related Sections:

1. Section 33 34 00 – Sanitary Sewer Force Mains

1.2 DEFINITIONS

- A. AWWA: American Water Works Association
- B. CWP: Cold working pressure.
- C. EPDM: Ethylene propylene copolymer rubber.
- D. NBR: Acrylonitrile-butadiene, Buna-N, or nitrile rubber.
- E. NPS: Nominal Pipe Size
- F. NRS: Non-rising stem.
- G. NSF: NSF International
- H. OS&Y: Outside screw and yoke.
- I. PSI: Pounds per Square Inch
- J. RS: Rising stem.
- K. SWP: Steam working pressure.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of valve indicated.

- B. American Iron and Steel (AIS) Certifications.

1.4 QUALITY ASSURANCE

- A. General: Submittals shall be made by the Contractor in accordance with the procedures set forth in Division 01.
- B. Contractor shall provide manufacturer's catalog cuts, technical data, and/or shop drawings for all the following components (shop drawings shall be drawn to a scale sufficiently large to show all pertinent aspects of the item and its method of connection to the work):
 - 1. Gate Valves
 - 2. Air Release Valves
 - 3. Valve Boxes, Lids, and Covers

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Prepare valves for shipping as follows:
 - 1. Protect internal parts against rust and corrosion.
 - 2. Protect threads, flange faces, grooves, and weld ends.
 - 3. Gate valves shall be closed to prevent rattling.
- B. Use the following precautions during storage:
 - 1. Maintain valve end protection.
 - 2. Store valves indoors and maintain at higher than ambient dew point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.
- C. Use sling to handle large valves; rig sling to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

- A. Refer to valve schedule articles for applications of valves.
- B. Valves and appurtenances shall be installed in compliance with the latest versions of the ASTM and AWWA standards listed as references.
- C. Valve Pressure and Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.

- D. Valve Sizes: Same as upstream piping unless otherwise indicated.
- E. Valve Actuator Types:
 - 1. Gear Actuator: For quarter-turn valves NPS 8 and larger.
 - 2. Handwheel: For valves other than quarter-turn types.
 - 3. Handlever: For quarter-turn valves NPS 6 and smaller.
 - 4. Wrench: For valves with square heads. Furnish Owner with 1 wrench for every 5 valves, for each size square valve head.
 - 5. Chainwheel: Device for attachment to valve handwheel, stem, or other actuator; of size and with chain for mounting height, as indicated in the "Valve Installation" Article.
- F. Valve-End Connections:
 - 1. Valve end connections shall be as shown in the drawings.
- G. Valves and appurtenances shall meet American Iron and Steel (AIS) requirements.

2.2 GATE VALVE

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following or pre-approved equal:
 - 1. Clow - M&H - Kennedy
 - 2. Mueller
 - 3. American Flow Control
 - 4. Pratt
- B. Valve Requirements:
 - 1. Furnish and install solid wedge gate valves, including all operators and appurtenances for use in solid/wastewater application.
 - 2. Valve body and bonnet shall be ductile iron.
 - 3. Valves shall be rated for working pressures of not less than 150 psi.
 - 4. The full diameter of the valve shall be smooth and unobstructed with internal parts being accessible without removing the body from the line.
 - 5. All exposed interior and exterior iron surfaces shall be protected with a fusion bonded epoxy coating.
 - 6. Valves shall be non-rising stem.
 - 7. Wedge shall be ductile iron, solid wedge with self-cleaning disc faces.
 - 8. All bolts and nuts shall be 316 stainless steel unless otherwise specified.
 - 9. Valves shall have a minimum of two (2) O-ring seals above the thrust collar area, both of which shall be field replaceable without removing the valve from service.
 - 10. Valves shall be supplied with anti-friction thrust bearings at the collar area to reduce operating torque in both the opening and closing directions.

11. Valves shall have joints as required for the piping in which they are installed.

C. Operating Nuts or Handwheel Requirements:

1. Valves shall be provided with either a 2" square operating nut and/or a handwheel, as shown on the Drawings, with the word OPEN and an ARROW cast in the metal to indicate direction to open.
2. All buried valves shall be provided with a 2" square operating nut.
3. Valve shall open by turning the nut or handwheel counterclockwise clockwise.

2.3 AIR RELEASE VALVE AND COMBINATION AIR/VACUUM RELEASE VALVES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following or pre-approved equal:

1. ARI
2. Vent-O-Mat
3. Engineer Approved Equal

B. Valve Requirements:

1. Furnish and install the air release valve for use in wastewater application.
2. Valve shall be as specified on the City of Wichita Approved Materials list or approved equal.
3. Valve body shall be stainless steel.
4. Valves shall be rated for working pressures of not less than 150 psi.
5. Orifice shall be sized to accommodate the air/flow expected through the valve.

2.4 VALVE BOXES, LIDS, AND COVERS

A. Valve boxes, lids, and covers shall be per City of Wichita Standard Specifications and meet AIS requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.
- B. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.

- C. Examine threads on valve and mating pipe for form and cleanliness.
- D. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.
- E. Do not attempt to repair defective valves; replace with new valves.

3.2 ADJUSTING

- A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

END OF SECTION

SECTION 33 32 13
WASTEWATER PUMPING STATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pumps

1.2 SUBMITTALS

A. Product Data:

1. Pumps.
2. Manufacturer information for slide rail assembly, discharge piping, valves, level controls.
3. Manufacturer information for pumps, including performance curve, breakaway fittings data, and access frame data.
4. American Iron and Steel (AIS) Certifications.

B. Shop Drawings:

1. Indicate size, materials, and components of system.
2. Indicate basin size, inlet and discharge locations, cover dimensions, vent location, lifting chain location, check valve locations, ball valve locations, pump locations, discharge piping location, wiring diagrams, junction box locations, guide rail assembly location, level control locations, and ballast support flange dimensions.

C. Source Quality: Control Reports: For pumps.

D. Field Quality: Control Reports: For pumps.

E. Qualifications Statements: For manufacturer.

1.3 CLOSEOUT SUBMITTALS

- A. Submit certification of pumping stations after performance testing.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Extra Stock Materials: Furnish two pump rebuild kits.

1.5 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Company specializing in manufacturing products specified in this Section with minimum three years' experience.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
- B. Handling: Support basin with nylon slings connected to structural lift points when moving.
- C. Store materials according to manufacturer instructions.
- D. Protection:
 - 1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
 - 2. Provide temporary end caps and closures on piping and fittings and maintain in place until installation.
 - 3. Provide additional protection according to manufacturer instructions.

1.7 WARRANTY

- A. Furnish five-year prorated manufacturer's warranty for pump seals.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Pumps and all materials shall meet American Iron and Steel (AIS) requirements.

2.2 PUMPING STATION

- A. Pump Type: Grinder
- B. Controls:
 - 1. Single pressure transducer.
 - 2. Two Float Switches
 - 3. Operation: Automatic.

2.3 PERFORMANCE AND DESIGN REQUIREMENTS

A. Pumps:

1. Capable of continuous submergence underwater without loss of watertight integrity to depth of 65 feet.
2. Design Flow Rate: 55 gpm.
3. Design Flow Total Dynamic Head: 116 feet.
4. Minimum Flow Rate: 15 gpm.
5. Minimum Flow Total Dynamic Head: 129 feet.
6. Maximum Flow Rate: 70 gpm.
7. Maximum Flow Total Dynamic Head: 104 feet.
8. NPSH Available: 17.5 inches.
9. Service Liquid: Municipal sewage.
10. Discharge Connection Elbow: Permanently installed in chamber with discharge piping.
11. Connection: Automatic to discharge connection elbows when lowered into place, and easily removed for inspection or service.
12. Guide Bracket:
 - a. Integral part of pump unit.
 - b. Entire weight of pump unit guided by not less than two guide bars and pressed tightly against discharge connection elbow with metal-to-metal contact.
13. Discharge Interface Seal: Diaphragm.
14. Do not permit any portion of pump to bear directly on floor of sump.

B. Operation:

1. Pumps are to be operated using a pressure transducer as specified on the plans. The pumps shall utilize VFDs to operate at 75% speed and then increase to 100% speed as the wastewater level increases. Float switches shall be utilized for alarm conditions.

2.4 BASINS

A. Rail System:

1. Description: Slide rail assembly, consisting of Type 304 stainless-steel upper and lower rail brackets and pump guide brackets.
2. Material: Type 304 stainless steel.

B. Ball Valves:

1. Description: Type 1 Schedule 80 PVC, Cell Classification 1254-B, with full-flow bore.
2. O-Rings: EPDM.

3. Pressure Rating: 150 psig, non-shock, at 73 degrees F.
4. End Connections: Union "quick disconnect" design.
5. Operation:
 - a. Extension Handle: Stainless steel.
 - b. OPEN-CLOSE: One-quarter turn.
 - c. Shutoff: Leak-tight.

C. Level Controls:

1. Description: Mechanical float-type or mercury-type, pilot-duty liquid-level controls. Pressure transducer as indicated on plans.
2. Quantity: Two float levels. One pressure transducer.
3. Electrical Cable:
 - a. Description: As indicated on plans.
 - b. Mounting: As indicated on plans.

D. Float Pole:

1. Comply with ASTM D1785.
2. Material: PVC, Schedule 40.
3. Diameter: 1/2 inch.

2.5 PUMPS

A. Manufacturers:

1. Flygt Pumps; Xylem.
2. KSB, Inc.
3. Goulds Pumps; ITT Corporation.
4. Grundfos Pumps Corp.
5. Or Engineer-Approved Equal.

B. Description:

1. Submersible grinder type with horizontal discharge, fittings, piping, check valve, and pump brackets.
2. Discharge Size: as indicated on drawings.
3. All pump materials to comply with AIS requirements.

C. Volute, Motor Housing, and Seal Plate:

1. Material: Cast iron.
2. Comply with ASTM A48.

D. Impeller:

1. Cast iron.
 2. Nonclog design.
 3. Secured to shaft with key and self-locking device to prevent slipping in either direction.
 4. Balanced statically and dynamically to eliminate vibration and minimize hydraulic end thrust.
 5. Castings shall not have been repaired by plugging, welding, or other means.
 6. Provide renewable bronze or stainless-steel casing wearing ring for efficient sealing between volute and impeller.
- E. Shaft: Type Stainless Steel
1. Ample diameter to assure first critical speed will occur at not less than 150 percent of rated pump speed.
- F. Rings: Buna-N-Rubber
- G. Hardware: 304 Stainless steel.
- H. Finish:
1. Air-dry enamel.
- I. Seal:
1. Design: Tandem mechanical, oil-filled reservoir.
 2. Materials:
 - a. Rotating Faces: Carbon.
 - b. Stationary Faces: Ceramic.
 - c. Elastomer: Buna-N.
 - d. Hardware: Type 304 stainless steel.
 3. Moisture detector shall be installed in oil seal chamber and connected to pump controls.
- J. Electrical Cable:
1. Length: 30 feet.
 2. Furnish pressure grommet for sealing and strain relief.
- K. Bearing:
1. Minimum L10 life of 50,000 hours.
 2. Pump shaft to rotate on two upper and lower permanently lubricated bearings without end movement.
- L. Breakaway Fittings Movable Subassembly:

1. Antisyphon Ball Check Valves, 1-1/4, 1-1/2, and 2 Inches (32, 38, and 51 mm):
 - a. Housing: PVC.
 - b. Ball: Nitrile
 - c. Plug: PVC.
 - d. Rated Temperature: 176- and 212-degree F peak.
 - e. Pressure Rating: 150 psig.
2. Pump Brackets: Type 304 stainless steel.
3. Movable Components: Cast iron.
4. Discharge Piping: Stainless steel, Schedule 40.

M. Lifting Device:

1. Description: Stainless Steel Chain
2. Provide one stainless steel chain for each pump.
3. Design to raise and lower pump with additional safety factor for overcoming force of pump hangups.
4. Provide hook for chain when not in use.

2.6 ACCESSORIES

- A. Sealant: Industrial silicon sealant for pipe penetrations in basin.
- B. Anchor Bolts, Nuts, and Washers:
 1. Type 304 Stainless Steel

2.7 SOURCE QUALITY CONTROL

- A. Provide shop inspection and testing of completed assembly.
- B. Inspection:
 1. Verify that motor voltage and frequency is as shown on nameplate.
 2. Verify that motor and cable insulation test for moisture content or insulation defects comply with UL 83.
- C. Testing:
 1. Submerged Pump Run: Test to determine that pump meets hydraulic performance requirements.
 2. Document and certify testing results in written report.
- D. Owner Witnessing:
 1. Allow witnessing of factory inspections and tests at manufacturer's test facility.

2. Notify Owner at least seven days before inspections and tests are scheduled.

E. Certificate of Compliance:

1. If manufacturer is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at manufacturer's facility conforms to Contract Documents.
2. Specified shop tests are not required for Work performed by approved manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that inlet and discharge piping connections are size, location, and elevation as indicated on Drawings.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Protect piping system from entry of foreign materials and water by using temporary covers, by completing sections of Work, and by isolating parts of completed system.

3.3 INSTALLATION OF PUMPING STATIONS

- A. Pumps:
 1. Install pumps, including fittings, brackets, discharge piping, check valve to basin rail assembly, lifting device, and discharge.
 2. Wire pump to junction box.

3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Inspection:
 1. Check pump and motor for high bearing temperature and excessive vibration.
 2. Check for motor overload by taking ampere readings.
- C. Preoperational Inspection:
 1. Check pump and motor alignment.

2. Check for proper motor rotation.
3. Check pump and drive units for proper lubrication.

D. Startup and Performance Testing:

1. Notify Engineer and Owner prior to startup and performance testing.
2. Operate pump using clean water at design point for continuous period of two hours, under supervision of manufacturer's representative and in presence of Engineer.
3. Verify pump performance by performing time/draw-down test or time/fill test.
4. Coordinate and operate pumps in conjunction with other Work of sewer.

E. Prepare test and inspection reports.

3.5 ADJUSTING

- A. Adjust basin, pump, and control panel systems such that station operates to performance requirements and according to Specifications.

3.6 DEMONSTRATION

- A. Demonstrate equipment startup, shutdown, routine maintenance, and emergency repair procedures to Owner's personnel.
- B. Manufacturer Services: Furnish services of manufacturer's representative experienced in installation of products furnished under this Section for not less than One day on Site for installation, inspection, startup, field testing, and instructing Owner's personnel in maintenance of equipment.
- C. Equipment Acceptance:
1. Adjust, repair, modify, or replace components failing to perform as specified and rerun tests.
 2. Make final adjustments to equipment under direction of manufacturer's representative.
- D. Furnish installation certificate from equipment manufacturer's representative attesting equipment has been properly installed and is ready for startup and testing.

END OF SECTION

SECTION 33 34 00
SANITARY SEWER FORCE MAINS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes force main piping and related components for sanitary sewer force main piping.
- B. The Contractor shall provide all labor, supervision, materials, equipment, supplies, incidentals, and services; and shall perform all Work necessary for the installation and testing of the force main system.
- C. The force main system shall be constructed in accordance with the Contract Documents and the applicable laws, rules, ordinances, standards, and regulatory agencies.

1.2 DEFINITIONS

- A. ANSI: American National Standards Institute
- B. ASTM: American Society for Testing and Materials
- C. AWWA: American Water Works Association
- D. CCS: Copper Clad Steel
- E. CI: Cast Iron
- F. CICL: Cast Iron Cement Lined
- G. DI: Ductile Iron
- H. DICL: Ductile Iron Cement Lined
- I. DIPS: Ductile Iron Pipe Size
- J. DR: Dimension Ration
- K. EPA: Environmental Protection Agency
- L. HDPE: High Density Polyethylene

- M. IPS: Iron Pipe Size
- N. KDHE: Kansas Department of Health & Environment
- O. MJ: Mechanical Joint
- P. NPDES: National Pollutant Discharge Elimination System
- Q. O&M: Operation and Maintenance
- R. OSHA: Occupational Safety and Health Administration
- S. PSI: Pounds per Square Inch
- T. PVC: Polyvinyl Chloride
- U. RJ: Restrained Joint
- V. SJ: Slip Joint

1.3 ACTION SUBMITTALS

- A. General: Submittals shall be made by the Contractor in accordance with the procedures set forth in City of Wichita standard specifications.
- B. Contractor shall provide manufacturer's catalog cuts, technical data, and/or shop drawings for the following system components (shop drawings shall be drawn to a scale sufficiently large to show all pertinent aspects of the item and its method of connection to the work):
 - 1. Pipe
 - 2. Tracer wire and marking tape.
 - 3. Fittings, sleeves, and couplings
 - 4. Pipe restraints
 - 5. Bedding Material
- C. Provide pipe certifications and cut sheets for pipe and fittings.
- D. Provide pipe laying schedule for pipe and fittings on large diameter piping (24 inches and greater), including laying lengths and corresponding pipeline stationing.
- E. American Iron and Steel (AIS) Certifications.

1.4 INFORMATIONAL SUBMITTALS

- A. Field quality-control test reports.

1.5 CLOSEOUT SUBMITTALS AND RECORD DRAWINGS

- A. Operation and Maintenance Data: For force main appurtenances to include in emergency, operation, and maintenance manuals.
 - 1. Submit complete Installation, Operation and Maintenance Manuals, including, test reports, maintenance data and schedules, description of operation, and spare parts information.
 - 2. Furnish Operation and Maintenance Manuals in conformance with the requirements of Division 01.
 - 3. Manufacturer's qualifications including list of existing installations with contact names and telephone numbers.
- B. Record Drawings/Information:
 - 1. Maintain accurate and up to date record documents showing field and Shop Drawing modifications. Record documents for buried piping shall show actual location of all piping, existing utilities that are exposed as part of construction activities, and appurtenances at same scale as the Contract Drawings.
 - 2. Record documents shall show piping with elevations referenced to the project datum and dimensions from permanent structures. For each horizontal bend, include dimensions to at least three permanent landmarks or structures, when possible. For straight runs of pipe provide offset dimensions as required to document pipe location.
 - 3. Include profile drawings with buried piping record documents when the Contract Documents include pipe profile drawings.

1.6 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Comply with the requirements including proof of insurance, and other permit requirements for construction across or along railroads, highways, local or county roads, or drainage ways.
 - 2. Comply with the requirements for NPDES permitting, including best management practices for storm water discharges from the construction site.
 - 3. Comply with requirements of utility company supplying water. Includes tapping of water mains and backflow prevention.
 - 4. Comply with standards of authorities having jurisdiction for potable-water-service piping, including materials, installation, testing, and disinfection.

5. Comply with standards of authorities having jurisdiction for fire-suppression water-service piping, including materials, hose threads, installation, and testing.
6. Comply with all local, state, and federal regulations.

- B. Piping materials shall bear label, stamp, or other markings of specified herein.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined by a testing agency acceptable to authorities having jurisdiction and marked for intended use.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Delivery:

1. Deliver materials to the Site to ensure uninterrupted progress of the Work.
2. Upon delivery inspect pipe and appurtenances for cracking, gouging, chipping, denting, and other damage and immediately remove from Site and replace with acceptable material.
3. No other pipe or material of any kind shall be placed inside of any pipe or fitting.
4. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.

B. Storage:

1. Use precautions for pipe according to the following:
 - a. Do not remove end protectors unless necessary for inspection; then reinstall for storage.
 - b. Protect from weather. Store indoors and maintain temperature higher than ambient dew-point temperature. Support off the ground or pavement in watertight enclosures when outdoor storage is necessary.
2. Store materials to allow convenient access for inspection and identification.
3. Store material off ground using pallets, platforms, or other supports. Protect packaged materials from corrosion and deterioration.
4. Do not remove end protectors or supports unless necessary for inspection; these should be reinstalled for storage.
5. Pipe and fittings other than PVC may be stored outdoors without cover. Cover PVC pipe and fittings stored outdoors.
6. Protect stored piping from moisture and dirt. Elevate above grade. Do not exceed structural capacity of floor when storing inside.
7. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.
8. Protect flanges, fittings, and specialties from moisture and dirt.

C. Handling:

1. Handle pipe, fittings, and appurtenances carefully in accordance with pipe manufacturer's recommendations. Do not drop or roll material off trucks. Do not drop, roll, or skid piping.
2. Avoid unnecessary handling of pipe.
3. The interior of all pipes shall be thoroughly cleaned of all foreign matter before being lowered into the trench and shall be kept clean during laying operations by means of plugs or other approved methods. In all cases water shall be kept out of the trench until the material in the joints has hardened. At all times when work is not in progress, all open ends of pipes and fittings shall be securely closed so that no trench water, earth, or other substances will enter the pipe or fittings.
4. Protect interior linings and exterior coatings of pipe and fittings from damage. Before lowering and while suspended, pipe shall be inspected for defects and cracks. Defective, damaged, or unsound pipe shall be rejected.
5. If coating becomes damaged, Contractor shall notify pipe and coating manufacturer to determine if repair of damaged area or re-coating is required. Perform repairs using recommended procedures and materials provided by manufacturer, as accepted by Project Manager. Pipe and fittings requiring re-coating shall be removed from Site and returned to manufacturer's facility. Repaired or re-coated pipe and fittings shall meet all requirements of this section.

1.8 COORDINATION

- A. Review installation procedures under other Sections and coordinate the installation of items that must be installed with or before the force main construction.
- B. When it is necessary to take any sanitary sewer mains out of service due to construction of the project, the Contractor shall notify the Utility Company at least 72 hours prior to initiation of construction. Notification must be made when those same mains are returned to service.
- C. Coordinate connections to existing sanitary sewer mains with the utility company. Connections shall be made to minimize disruptions to utility customers.

1.9 WARRANTY

- A. In addition to the requirements of the General Conditions and the Supplemental Conditions, the Contractor shall require the manufacturer to furnish a warranty valid through the warranty period to assure that any equipment specified herein which does not meet the performance requirements for the specifications, is repaired to the Owner's satisfaction or replaced with equipment that does meet the performance requirements of the specification.

- B. The Contractor and/or equipment manufacturer shall be responsible for all costs of warranty repair work including removal, shipping, reinstallation and restart-up during the warranty period.
- C. The Contractor will be required to fill any areas of settlement and re-seed/sod/mulch. Also, all erosion protection measures shall be removed within the warranty period after an acceptable stand of grass is achieved.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Proprietary products: Whenever materials or equipment are described using a certain brand, make, supplier, manufacturer or by specification, such naming shall be regarded as a standard and be intended to convey function, design features, general style, type, materials of construction, character and quality of material or equipment, serviceability, and other described essential characteristics.
- B. Other materials may be considered by the Project Manager in accordance with the General Conditions of this project manual.
- C. All pipe and fittings shall be new material unless otherwise specified. Nuts and bolts shall be stainless steel unless otherwise specified.
- D. All pipes installed by directional drilling shall be restrained joint pipe.
- E. All fittings and appurtenances shall meet American Iron and Steel (AIS) requirements.

2.2 PIPE AND FITTINGS

A. Ductile Iron Pipe:

1. General:

- a. DI pipe shall be furnished in 18- or 20-foot laying lengths.
- b. DI pipe shall conform to the requirements of ANSI/AWWA A21.51/C151.
- c. The manufacturer's mark, country where cast, year the pipe was produced, and the letters "DI" or words "Ductile Iron" shall be cast or stamped on the pipe.
- d. Unless otherwise specified, the following pressure classes are required as a minimum:
 - 1) Pipe 3 inches through 24 inches: Pressure Class 350
 - 2) Pipe 30 inches through 48 inches: Pressure Class 250

- 3) Pipe 54 inches and greater: Pressure Class 150
 - e. Lining and coating:
 - 1) Pipe and fittings shall be Epoxy lined with Protecto 401 or approved equal at a minimum thickness of 40 mils installed per the Manufacturer's recommendations.
 - 2) Pipe and fittings to be buried shall be seal coated with an approved bituminous seal coat in accordance with ANSI/AWWA A21.4/C104.
 - 3) Pipe and fittings to be installed inside structures shall be provided without exterior bituminous coating and shall be coated with 100 percent solids, thermosetting, dry powder epoxy, such as Tnemec Series 66 High Build Epoxy or approved equal, in conformance with AWWA C116.
 - f. Encasement: All buried DI pipe, fittings, and appurtenances shall be encased in a minimum 8 mil low density polyethylene tube encasement in accordance with AWWA C105.
2. Joints:
 - a. Buried joints:
 - 1) Unless otherwise specified, buried DI pipe may be bell and spigot or mechanical joint.
 - 2) Mechanical joints shall conform to ANSI/AWWA A21.11/C111.
 - 3) Restrained joints shall include the use of a pre-tensioned lock ring and shall be American Flex Ring, US Pipe TR Flex, or approved equal.
 - b. Exposed joints:
 - 1) Unless otherwise specified, all exposed DI pipe shall be flanged. All flanges shall be American Standard B 16.1, Class 125, ASA flanges with full face red rubber gaskets.
 3. Fittings:
 - a. Fittings shall be cast iron or ductile iron conforming to AWWA C110 or AWWA C153 unless otherwise specified. PVC fittings are not allowed.
 - b. Fittings shall have interior and exterior coatings as specified for DI pipe.
 - c. For pipe 4 inches to 48 inches in diameter, compact mechanical fittings with a minimum pressure class of 350 and conforming to AWWA C153 may be used.

- d. Where approved or specified, grooved end fittings shall conform to ANSI/AWWA A21.10/C110 for center-to-end dimensions and ANSI/AWWA A21.1/C110 for wall thickness. Couplings shall be equipped with flush seal gaskets per ASTM D2000.

B. PVC Pipe:

1. General:

- a. PVC pipe shall be furnished in 13-to-20-foot laying lengths.
- b. The PVC pipe laying condition is for flexible pipe.
- c. PVC pipe, couplings and fabricated fittings shall be made from clean, virgin, grade 1 polyvinyl chlorine resin conforming to ASTM D 1784-65T.
- d. Pipe shall bear identification markings that will remain legible during normal handling, storage, and installation. The markings shall be applied in a manner that will not reduce the strength of the pipe or coupling or otherwise damage either. Pipe markings shall be applied at intervals not to exceed 5 feet and shall include the nominal size and outside diameter, PVC, DR-18, AWWA Pressure Class, manufacturer's name or trademark and production record code, and the seal of the testing agency that verified the suitability of the pipe material for potable water service.
- e. Unless otherwise specified, pipe must conform to the following requirements:
 - 1) Pipe 2 inches and smaller: ASTM D1785, Schedule 40.
 - 2) Pipe 2 inches to 3 inches in diameter: ASTM D-1784 and D-2241, and pressure class 250 (DR-17).
 - 3) Pipe 4 inches to 12 inches in diameter: AWWA C900, pressure class 235 (DR-18).

2. Joints:

- a. Unless otherwise specified, joints shall be push-on type with a flexible factory-assembled elastomeric ring in the integral bell end. Schedule 40 pipes 2-inches and smaller shall be solvent welded.
- b. Joint material including gaskets and lubricants shall conform to AWWA C900.
- c. Joint designs shall be submitted to the Project Manager for approval.
- d. Where PVC restrained joint pipe is required, Certa-Lok restrained joint couplers as manufactured by North American Pipe, or approved equal, shall be used.
- e. Joint adaptors will be provided for all valves, fittings, or changes in pipe material.

3. Fittings:

- a. For pipes 3 inches and smaller, fittings shall conform to ASTM D2467.
- b. For pipes 4 inches and larger, fittings shall be Ductile Iron or Cast Iron as specified in this section.
- c. Fittings shall have the same pressure ratings as specified for the PVC pipe.
- d. Fittings shall have the same coatings as specified for the Ductile Iron pipe.
- e. The dry fit of fitting sockets must be snug. If the fit is loose, the pipe and/or fittings will be rejected as faulty because of improper size. Building up the joint to overcome a loose fit will not be permitted.

C. Bolts:

1. Mechanical joint bolts and nuts shall be stainless steel conforming to ASTM F593 for bolts and ASTM F594 for nuts. All T-Bolts and Nuts shall be threaded in accordance with ANSI/ASME B1.1, Class 2A fit, with coarse-thread series. Heavy hex nuts shall be used. Bolt heads shall be in accordance with the dimensions of ANSI/AWWA C111/A21.11-95. Nuts shall be finished with fluoropolymer coating system to minimize galling and ensure proper torque. Anti-seize compound shall not be utilized with fluoropolymer coated nuts. Identification on the head of the bolt shall be T-304, 304, F593C or F593D.
2. Flange joint bolts and nuts shall be stainless steel conforming to ASTM A193 Grade B8 for bolts and ASTM A194 Grade 8 for nuts. All bolts and nuts shall be threaded in accordance with ANSI/ASME B1.1, Class 2A fit, with course-thread series. Bolt heads and nuts shall be heavy hexagonal. Nuts shall be finished with fluoropolymer coating system to minimize galling and ensure proper torque. Anti-seize compound shall not be utilized with the fluoropolymer coated nuts. Identification on the head of the bolts shall be B8.

D. Fusible Polyvinylchloride Pipe:

1. General:

- a. Unless otherwise specified, fusible polyvinylchloride pipe shall conform to the following requirements:
 - 1) Pipe smaller than 2 inches: ASTM D2241
 - 2) Pipe 2 inches to 3 inches in diameter: ASTM D1785 and D2241
 - 3) Pipe 4 inches to 60 inches in diameter: AWWA C900
- b. Testing shall be in accordance with the referenced AWWA standards for all pipe types.
- c. Fusible polyvinylchloride pipe for non-potable water or pressurized wastewater shall conform to AWWA C900, ASTM D2241 or ASTM D1785 for standard dimensionality, as applicable. Testing shall be in accordance with the referenced AWWA standards.

- d. Fusible polyvinylchloride pipe shall be extruded with plain ends. The ends shall be square to the pipe and free of any bevel or chamfer. There shall be no bell or gasket of any kind incorporated into the pipe.
 - e. Fusible polyvinylchloride pipe shall be manufactured in a standard 40-foot nominal length or custom lengths as specified.
 - f. Fusible polyvinylchloride pipe shall be green in color for wastewater use.
2. Joints: Unless otherwise specified, fusible polyvinylchloride pipe lengths shall be assembled in the field with butt-fused joints. The fusion technician shall follow the pipe supplier's guidelines for this procedure. All fusion joints shall be completed as described in this specification.
 3. Sweeps or Bends:
 - a. Fusible polyvinyl chloride sweeps or bends shall conform to the same sizing convention, diameter, dimensional tolerances, and pressure class of the pipe being joined by the sweep or bend.
 - b. Fusible polyvinyl chloride sweeps or bends shall be manufactured from the same fusible polyvinyl chloride pipe being used for the installation and shall have at least 2 feet of straight section on either end of the sweep or bend to allow for fusion of the sweep to the pipe installation. There shall be no gasketed connections utilized with a fusible polyvinyl chloride sweep.
 - c. Standard fusible polyvinyl chloride sweeps, or bend angles shall not be greater than 22.5 degrees and shall be used in nominal diameters ranging from 4 inches through 16 inches.

2.3 BURIED PIPE IDENTIFICATION

A. Underground warning tape:

1. Tracer tape shall be aluminum foil encased in an impervious mylar plastic coating on both sides.
2. Tracer tape shall be 5 mils thick and three inches in width.
3. The tape shall be green in color and the printed message shall be black in color.
4. Message shall read, "CAUTION - BURIED FORCE MAIN BELOW" with bold letters approximately two inches high. Message shall be printed at maximum intervals of two feet.
5. The color and printing shall be under the impervious mylar plastic coating.

B. Tracer wire for non-metallic pipe:

1. Tracer wire shall be installed to locate PVC or any nonmetallic force main pipes.
2. The wire shall extend the entire length of the proposed pipe and shall be taped to the pipe. Snake bite locking wire connectors as manufactured by Copperhead or approved equal shall be used at splice locations.
3. Electrical tape shall cover splice locations so that no bare wire is exposed.

4. Anodes shall also be attached to the tracer wire at both the beginning and end of the proposed force main. Anodes shall be buried at the same elevation as the force main at each test station. The anodes shall be connected to the CCS wire which shall be extended to the test station.
5. The tracer wire shall be Green No. 12 CCS wire with thermal plastic insulation as manufactured by Copperhead or approved equal. The insulation shall be heat, oil and gasoline resistant as manufactured by Temple Electric or approved equal.
6. To allow for grade adjustment, a minimum of 12 inches of excess wire shall be coiled at the bottom of the test station for all wires. The insulation sheathing shall be removed such that 1-inch bare copper wire is exposed at the connection. Contractor shall attach wire being installed with proposed force main to any tracer wire installed with adjacent force main projects.
7. Test stations:
 - a. Test stations shall be a galvanized “condulet” style test station as manufactured by AGRA Industries, Snake bite magnetized tracer box as manufactured by Copperhead or approved equal with a removable solid cover having two leads extending from the face or approved equal.
 - b. The “condulet” style test station shall be attached to a 1-inch rigid galvanized conduit with a minimum length of 36 inches and plastic end bushing. The flush style shall have the word “FORCE MAIN” stamped or molded into the lid. All test stations shall be molded using green tops or sufficiently coated with green enamel paint.
 - c. Tracer wire and anode wire shall be installed to allow 10 inches of wire within the test station. In concrete environments such as sidewalks, the contractor shall use flush style test stations.
 - d. The location of all test stations shall be approved by the Owner, recorded, and shown on the record drawings. A test station is required at all connections to existing pipes where existing tracer wire is not installed.

2.4 SLEEVES AND COUPLINGS

A. Sleeves:

1. Mechanical joint sleeves shall be solid type, long or short body pattern as approved by the Owner, manufactured in accordance with ANSI/AWWA A21.10/C110. Sleeves shall have a minimum pressure rating of 350 psi. Glands, gaskets, bolts, and nuts shall be in accordance with ANSI/AWWA A21.11/C111.
2. Sleeves shall not be machined in order to facilitate use with pipe of a class or type other than that for which the sleeve was manufactured.

B. Couplings:

1. The use of bolted stainless-steel couplings shall be restricted to joining pipes of different outside diameters and joining pipes of dissimilar materials.

2. Ferrous surfaces shall be coated with an epoxy coating; enamel coatings are not acceptable.
3. Bolted stainless steel couplings for joining pipes of the same outside diameter shall be Smith-Blair 411, Romac 400, JCM 201, or approved equal.
4. PVC Couplings for joining PVC pipe shall be Fluid-Tite by North American Pipe or approved equal.

PART 3 - EXECUTION

3.1 GENERAL

- A. Force mains shall be buried as shown on the plans, but also at a minimum depth of 7 feet below the streambed of a navigable stream and 5 feet below the streambed of all other streams.
- B. Installation of PVC pipe shall be in accordance with AWWA C605.
- C. Any section of pipe already laid and found to be defective shall be taken up and replaced without additional expense to the Owner.

3.2 EARTHWORK

- A. Refer to City of Wichita standard specifications for excavating, trenching, and backfilling.

3.3 PIPE INSTALLATION

- A. Preparation:
 1. Cutting of pipe shall be done in a neat and workmanlike manner by a method which will not damage the pipe. Unless otherwise authorized, all cutting shall be done by means of mechanical cutters of an approved type. Wheel cutters shall be used whenever practicable.
 2. Prior to laying, the pipe bedding material shall be placed by slicing with a shovel or mechanical tamping, according to the type of material.
 3. Before joining, all lumps, blisters, and excess coating materials shall be removed from the bell and spigot ends of the pipes. The outside of the spigot and the inside of the bell shall then be wire brushed and/or wiped clean and dry. All oil or grease shall be removed. Flanged joints shall be faced true and made up perfectly square and tight. Ductile iron wedges shall be used as needed to give proper slope or direction to the line.

B. Pipe Laying:

1. Any pipe that has its grade or joint disturbed after laying shall be taken up and re-laid.
2. Pipe shall be laid to a true, uniform line and grade. High points, other than those indicated on the Drawings where an air vent assembly is to be placed, shall be avoided.
3. Pipe laying shall be in accordance with the manufacturer's recommendations. Pipe laying shall proceed, bells ahead. Each section of pipe shall be laid to form a close concentric joint with the adjoining section and to prevent sudden offsets in the flow line. Each section of pipe, as it is laid, shall be backfilled as specified in the Contract Documents, at least up to the centerline, before the next joint is made.
4. As the work progresses, the interior of the pipe shall be cleared of dirt and superfluous material.
5. Trenches and other excavations shall be kept free of water until backfilled. Concrete or masonry work shall not be constructed in water, nor shall water be allowed to rise over the work until concrete or mortar has had ample time to set.
6. When work is not in progress, open ends of pipe and fittings shall be closed, to the satisfaction of the Owner, so that trench water, earth, and other substances will not enter the pipe or fittings.
7. Whenever a pipe requires cutting for the insertion of valves, fittings, closure pieces, or to bring it to the required location, the work shall be performed in a satisfactory manner so as to leave a beveled end in accordance with the manufacturer's instructions or recommendations. Cuts shall be made at 90 degrees with the centerline of the pipe so that a framing square placed against the side of the pipe will reveal not more than 1/4-inch variation across the diameter of the pipe in any direction. The pipe shall be cut with an abrasive wheel, rotary wheel cutter, guillotine pipe saw, milling wheel saw or other equipment specifically designed for that purpose. The Contractor shall grind smooth cut ends and rough edges and for push-on connections, the cut ends should be beveled slightly. Pipe damaged by the Contractor in cutting shall be replaced at the Contractor's expense.
8. Laying of the pipe shall commence immediately after the excavation is started, and every means must be used to keep pipe laying closely behind the trenching. No more than 300 feet of trench may be open ahead of the pipe laying operation, unless otherwise specified. Holes shall be scooped out where the bells occur leaving the entire barrel of the pipe bearing on the pipe bed.
9. Pipe joint assembly practices and joint assembly materials such as lubricants, primers and adhesives shall be in accordance with the manufacturer's recommendations and specifications, and in accordance with ANSI/AWWA A21.11/C111.
10. Pipe shall not be laid on frozen bedding.

C. Alignment and Grade:

1. The Contractor shall not deviate from the line and grade indicated on the Drawings, except with approval of the Owner.
2. Where it is necessary to deflect ductile iron pipelines to avoid obstructions, the amount of deflection shall not exceed 1/2 of that recommended by the manufacturer of the pipe. Where necessary to maintain the required line, short sections of pipe and fitting shall be provided.
3. The Contractor shall investigate the proposed location of the main far enough in advance of the work to determine where conflicts will occur and to determine joint deflections necessary to clear any obstructions.
4. Deflection of C-900 PVC pipe shall not be permitted except at couplings and fittings. Deflection at couplings and fittings shall be limited to 4 degrees for 12 inches in diameter or smaller, not to exceed the manufacturer's recommendations. To follow a curve, the C-900 PVC pipe may be cut to short lengths and additional couplings may be used. Short lengths shall be no shorter than 6 feet 6 inches unless approved by the RPR.

D. Thrust Restraint:

1. Reaction Backing (Thrust Blocks):
 - a. Plugs, caps, tees, hydrants, and bends deflecting 11-1/4 degrees or more on pipes 3 inches in diameter or larger shall be provided with reaction backing. The reaction backing shall be concrete Class I or II. Backing shall be placed between undisturbed earth and the fitting to be restrained. The blocking shall be in accordance with the drawings, or as directed, oriented to contain the resultant thrust force. Unless otherwise shown or directed, the backing shall be placed so that the fitting joints will be accessible for repair.
 - b. Reaction backing may only be excluded if alternatively, a restrained joint system is used or required as indicated on the drawings.
2. Restrained Joints System:
 - a. The Contractor may utilize restrained joint methods of pipe installation as a means of thrust restraint with review and approval by the Engineer or if indicated in the drawings.
 - b. Ductile iron pipe restrained joint systems shall utilize restraints integral to the pipe and fittings. No mechanical joint restraints shall be used unless required for closure connections as approved by engineer.
 - c. PVC pipe restrained joint systems shall utilize restraints integral to the pipe for all pipe joint connections. Mechanical joint restraints shall be utilized at fittings. Restraint harnesses are not allowed to be used to restrain pipe joints.

- d. All mechanical joint restraints shall be wrapped in polyethylene encasement as specified for ductile iron pipe.

E. Warning Tape and Tracer Wire Installation:

1. For protection and identification of force mains, the Contractor shall install a detectable metallic warning tape in the trench over the force main at the time of backfilling. The warning tape shall be placed in the trench at a depth of one foot, but not exceeding three feet below the proposed final grade of the ground over the centerline of the force main.
2. The tape shall be spread flat with message side up before backfilling.

F. Tracer wire installation:

1. Conductive type pipe locator/tracer wire shall be installed to locate non-metallic force main pipes. The wire shall extend the entire length of the proposed pipe.
2. The wire shall be attached every 10 feet to the piping system with plastic strapping and pulled with the pipe.
3. The wire shall terminate above ground at every valve box and air vent assembly.
4. Connectors shall be used at splice locations. Electrical tape shall cover all splices, so no bare wire is exposed. The wire shall be installed adjacent to all valves along the force main so as to provide an accessible location to the wire.
5. To allow for grade adjustment, a minimum of 12 inches of excess wire shall be coiled at the bottom of the valve boxes for all wires.
6. Contractor shall attach wire being installed with proposed force main to any tracer wire installed with adjacent force main projects.

G. Fusion process for fusible PVC:

1. Installation guidelines from the pipe supplier shall be followed for all installations.
2. The fusible polyvinylchloride pipe will be installed in a manner so as not to exceed the recommended bending radius guidelines.
3. Where fusible polyvinylchloride pipe is installed by pulling in tension, the recommended maximum safe pulling force, established by the pipe supplier, shall not be exceeded.
4. Fusible polyvinylchloride pipe will be handled in a safe and nondestructive manner before, during, and after the fusion process and in accordance with this specification and pipe supplier's guidelines.
5. Fusible polyvinylchloride pipe will be fused by qualified fusion technicians holding current qualification credentials for the pipe size being fused, as documented by the pipe supplier.
6. Pipe supplier's procedures shall be followed at all times during fusion operations.

7. Each fusion joint shall be recorded and logged by an approved electronic monitoring device (data logger) connected to the fusion machine, which utilizes a current version of the pipe supplier's recommended and compatible software.
8. Only appropriately sized and outfitted fusion machines that have been approved by the pipe supplier shall be used for the fusion process. This includes requirements for safety, maintenance, and operation with modifications made for PVC.

3.4 INSTALLATION OF FITTINGS AND OTHER APPURTENANCES

- A. All appurtenances shall be installed in accordance with the manufacturer's recommendations and as indicated on the Drawings and Standard Details.

3.5 RESTRAINTS

- A. Fittings and pipe joints shall be restrained as indicated on the Drawings. Alternate methods of thrust restraint other than those specified herein may be used only with the written approval of the Owner.
- B. Blocking shall be placed between undisturbed earth and the fitting to be restrained. The blocking shall be in accordance with the Drawings and Standard Details, oriented to contain the resultant thrust force and to leave the fitting joints accessible.
- C. All exposed piping, flanges, couplings, nuts, and bolts shall receive a minimum of two coats of an approved protective coating.

3.6 WATER MAINS PARALLELING AND CROSSING SEWER LINES

- A. Where pressure sewer lines (force mains) run parallel to water lines, the separation distance, measured edge to edge, shall be as far as practical maintaining a minimum horizontal separation distance of at least 10 feet. The laying of water pipes and sanitary sewers shall be in separate trenches with undisturbed earth between them. There shall be at least a 2 feet vertical separation at crossings with the water main always crossing above the sewer force main. Where it is not practical to maintain the required horizontal or vertical separation distance between a water line and sanitary sewer force main, KDHE will consider proposals providing equivalent protection by other methods on a case-by-case basis, if supported by data from the Project Manager.

3.7 FIELD QUALITY CONTROL AND TESTING

A. General:

1. The Contractor shall provide the Owner at least 72 hours' notice prior to scheduled testing and inspection.
2. Where any section of a force main is provided with concrete reaction backing for fittings, the pressure test shall not be made until at least five days after installation of the concrete reaction backing, unless otherwise approved.
3. Test shall be conducted in accordance with AWWA Standards or as required by KDHE. Simultaneous pressure and leakage tests may be performed if permitted by the Engineer.

B. Pressure Testing:

1. After the pipe is laid, the joints completed and the trench backfilled, the newly laid piping or any valved section of piping shall, unless otherwise specified, be filled with clean water, and subjected for two hours to a hydrostatic pressure test.
2. Testing shall be performed on each section of pipe between main line valves. The pressure test shall be conducted at 150 psi.
3. Care must be taken not to exceed the pressure ratings of the pipes, valves, fittings, and other appurtenances.
4. The Contractor shall furnish all pumps, fittings, and gauges as necessary to fill the line with potable water, dispel air from the system, and pressurize the pipeline for the tests.
5. The Contractor shall provide all necessary temporary restraint and support and will be responsible for providing proper safety measures during pressure testing operations.
6. Each valve shall be opened and closed several times during the test.
7. The pressure during the pressure test shall not vary by more than 5 psi from the designated test pressure during the testing period. If the pressure varies over 5 psi during the two-hour period, the test is considered failed, and the pipeline shall be retested.
8. Joints showing visible leakage shall be replaced or remade as necessary. Leaking rubber-gasketed joints shall be remade, using new gaskets if necessary. Cracked or defective pipes, mechanical joints, fittings, valves, or hydrants discovered in consequence of this pressure test shall be removed and replaced with sound material, and the test shall be repeated until the test results are satisfactory.

C. Leakage Testing:

1. The duration of each leakage test shall be at least 2 hours, and during the test the main shall be subjected to the same pressure as for the pressure test. Leakage is defined as the quantity of water to be supplied into the newly laid pipe, or any valved section thereof, necessary to maintain the specified leakage test pressure after the pipe has been filled with water and the air expelled. No piping installation will be accepted until the leakage is less than the number of gallons per hour as determined by the formula:

$$L = \frac{SD\sqrt{P}}{148,000}$$

In which L equals the allowable leakage in gallons per hour; D is the nominal diameter of the pipe, in inches; S is the length of pipe tested, in feet; and P is the average test pressure during the leakage test, in pounds per square inch. The pressure during the pressure or leakage test shall not vary by more than 5 psi from the designated test pressure.

END OF SECTION

SECTION 43 21 31
PRESSURE ELEMENTS

PART 1 - GENERAL

1.1 SCOPE

1.2 SUBMITTALS

- A. Product Data
- B. Manufacturer's Instructions
- C. Operation and Maintenance Data – Submit in accordance with Section 01 78 23.

1.3 WARRANTY

- A. A written supplier's warranty shall be provided for the equipment specified in this section. The warranty shall be for a minimum period of two (2) years from the date of project Substantial Completion. Such warranty shall cover all defects or failures of materials or workmanship which occur as the result of normal operation and service. The warranty shall include all parts, labor, and site visits necessary to repair or replace the equipment at no additional cost to the owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS AND MODELS

- A. The units shall be Siemens A1000 Transducer and ProVu Series PD6000 Transmitter, or Engineer approved equal.

2.2 DESCRIPTION

- A. The unit shall consist of a submersible transducer and a transmitter complete with programming keys and display.
- B. Transducer
 - 1. The transducer shall be of the solid-state head-pressure sensing type, suitable for continuous submergence in an industrial wastewater application and operation and shall be installed in accordance with manufacturer's instructions.

2. The loop-powered transducer shall produce a 4-20 mA DC, output signal directly proportional to the measured level. Transducers shall be powered by the transmitter.
3. The transducer housing shall be fabricated of type 316 stainless steel with a bottom diaphragm 2-5/8-inch diameter of heavy-duty, limp, foul-free, molded Teflon (TM) bonded to a synthetic rubber back/seal.
4. A hydraulic fill liquid behind the diaphragm shall transmit the sensed pressure to a solid-state variable-capacitance transducer element to convert the sensed pressure to a corresponding electrical value. The sensed media shall exert its pressure against the diaphragm that flexes minutely so as to vary the proximity between an internal ceramic diaphragm and a ceramic substrate to vary the capacitance of an electrical field created between the two surfaces. A stable, hybrid, operational amplifier assembly shall be incorporated in the transducer to excite and demodulate the sensing mechanism. In addition, the transducer element shall be electronically isolated from the sensed media. The transducer shall incorporate laser-trimmed, temperature compensated, high quality components and construction to provide a precise, reliable, stable output signal directly proportional to the sensed pressure over a factory-calibrated range.
5. The transducer element shall incorporate high over-pressure protection and be designed to withstand intermittent overpressures five times the full-scale range being sensed. Metallic diaphragms shall not be acceptable in that they are subject to damage or distortion. Sensing principles employing LVDTs, resistive or pneumatic elements shall not be acceptable.
6. The internal pressure of the lower transducer assembly shall be relieved to atmospheric pressure through a heavy-duty urethane jacketed hose/cable assembly and a slack PVC bellows mounted in a weatherproof, fiberglass upper assembly. The sealed breather system shall compensate for variations in barometric pressure and expansion and contraction of air due to temperature changes and altitude as well as prevent fouling from moisture and other corrosive elements.
7. Provide an intrinsically safe barrier. The barrier shall render the level sensing system suitable for use in Class 1, Division 1 Groups A, B, C and D, Class 2, Division 1, Groups E, F and G, and Class 3, Division 1 hazardous locations.
8. A weatherproof fiberglass junction box shall be provided to terminate the submersible transducer electronics/breather cable. The junction box shall include a corrosion resistant incoming strain relief connector, breather system PVC bellows and a terminal block.
9. Transducer shall have an accuracy (including linearity, hysteresis, and repeatability) of +/- 0.25 percent of range.
10. Transducer shall be fully operable within of temperature range from -40 to 185 degrees F.
11. Zero and span adjustments shall be standardized so that transducers are interchangeable without recalibration.

C. Transmitter

1. Shall output a 4-20 mA signal proportional to the liquid level.
2. Enclosure: NEMA 4X.

3. Transmitter shall include display for local indication.
 4. Power supply to transmitter shall be 120 VAC.
- D. Pressure gauges shall be 4-1/2-inch premium grade, glycerin filled units with bourdon tube element, 270-degree milled stainless steel movement, phenolic case, and shatterproof glass window. Accuracy shall be 1 percent of span or better. All exposed metal parts shall be stainless steel. Approved manufacturers include Ashcroft Duragauge Figure 1279, Ametek 1981 L, or equal.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Venting: Follow manufacturer's recommendation for venting to atmosphere.
- B. Wiring: Wiring between transmitter and transducer shall use cable type and procedures as per the manufacturers' recommendations.
- C. Transducer: The transducer shall be mounted using a stainless-steel cable system per the manufacturer's instructions.
- D. Electrical: System shall be provided with input power and output signal transient protection, associated control elements as specified herein and in accordance with manufacturer's instructions.

3.2 START-UP

- A. The manufacturer's field representative shall provide start-up services, including written verification that the equipment has been installed in accordance with manufacturer's requirements, and training to the treatment plant staff for the operations and maintenance of the equipment. The contractor shall include in his bid one (1) day for start-up and training. Start-up and training shall be in accordance with Section 01 79 00.

END OF SECTION

Appendix A

KDHE SRF Contract Provisions

KDHE SRF CONTRACT PROVISIONS

**KDHE SRF Forms and Certifications
(Must be submitted with Bids)**

STATE OF KANSAS
ACT AGAINST DISCRIMINATION
CONTRACT PROVISION CERTIFICATION FORM

During the performance of this contract, the contractor agrees as follows:

- (1) The contractor shall observe the provisions of the Kansas Act Against Discrimination and shall not discriminate against any person in the performance of work under the present contract because of race, religion, color, sex, disability, national origin, or ancestry;
- (2) In all solicitations or advertisements for employees, the contractor shall include the phrase “equal opportunity employer” or a similar phrase to be approved by the Commission;
- (3) If the contractor fails to comply with the manner in which the contractor reports to the Commission in accordance with the provisions of K.S.A.44-1031 and amendments thereto, the contractor shall be deemed to have breached the present contract and it may be cancelled, terminated, or suspended, in whole or in part, by the contracting agency;
- (4) If the contractor is found guilty of a violation of the Kansas Act Against Discrimination under a decision or order of the Commission which has become final, the contractor shall be deemed to have breached the present contract and it may be cancelled, terminated or suspended, in whole, or in part, by the contracting agency;
- (5) The contractor shall include the provisions of (1) through (4) in every applicable subcontract or purchase order so that such provisions will be binding upon such subcontractor or vendor.

PROJECT/CONTRACT NAME AND NO.

MUNICIPALITY _____

CONTRACTOR'S
SIGNATURE _____

TITLE _____

SRF PROJECT NO. _____

DATE _____

Demonstration of Compliance with DBE Good Faith Efforts Worksheet

Project Name _____

SRF Project No. _____

Prime Contract Bidder/Engineering Firm _____

Address _____

Contact Person: _____ Telephone No. _____

The following DBE firms were made aware of subcontracting/supplier opportunities related to the project listed above.

DBE Subcontractor/Supplier contacted _____

Address _____

Contact Person: _____ Telephone No. _____

Email _____ Method used to contact (circle one): Phone M a i l Fax

Is entity also a certified as a MBE _____ or WBE _____? (if no leave blank)

MBE/WBE status certified by (circle one) EPA SBA Other _____

DBE Subcontractor/Supplier contacted _____

Address _____

Contact Person: _____ Telephone No. _____

Email _____ Method used to contact (circle one): Phone M a i l Fax

Is entity also a certified as a MBE _____ or WBE _____? (if no leave blank)

MBE/WBE status certified by (circle one) EPA SBA Other _____

DBE Subcontractor/Supplier contacted _____

Address _____

Contact Person: _____ Telephone No. _____

Email _____ Method used to contact (circle one): Phone M a i l Fax

Is entity also a certified as a MBE _____ or WBE _____? (if no leave blank)

MBE/WBE status certified by (circle one) EPA SBA Other _____

DBE Subcontractor/Supplier contacted _____

Address _____

Contact Person: _____ Telephone No. _____

Email _____ Method used to contact (circle one): Phone M a i l Fax

Is entity also a certified as a MBE _____ or WBE _____? (if no leave blank)

MBE/WBE status certified by (circle one) EPA SBA Other _____

Comments _____

Prepared By: _____

Date: _____

(Use additional copies of this sheet if needed)

KDHE PROJECT #

CERTIFICATION REGARDING LOBBYING

CERTIFICATION FOR CONTRACTS, GRANTS, LOANS AND COOPERATIVE AGREEMENTS

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including sub-contracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31 U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Typed Name & Title of Authorized Representative

Signature and Date of Authorized Representative

American Iron and Steel Certification

1. Identification of American-made Iron and Steel Products: The Bidder certifies that this bid reflects the Bidder's best, good faith effort to identify domestic sources of iron and steel products for every component contained in the bid solicitation where such American-made components are required. 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.
2. Verification of U.S. Production: If this bid is accepted, the Bidder agrees that it will provide, to the Owner, reasonable, sufficient, and timely verification of the U.S. production of each Iron and Steel Product incorporated into the project.
3. Documentation Regarding Non-American-made Iron and Steel: The Bidder certifies that for any Iron or Steel Product that is not American-made but was incorporated in the development of this bid, is allowed by waiver of the U.S. Environmental Protection Agency and such waiver is attached to this certification.

Signature

Date

Name and Title of Signer (Please Print)

Q & A's, Waiver request instructions, and a list of approved waivers can be found at http://water.epa.gov/grants_funding/aisrequirement.cfm

KDHE SRF Provisions

Contract Provisions for Equal Opportunity

1. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, 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 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 or national origin.
3. 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.
4. 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.
5. 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.
6. 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.
7. The contractor will include the provisions of paragraphs (1) through (7) 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]

Equal Employment Opportunity

THE LAW

Private Employers, State and Local Governments, Educational Institutions, Employment Agencies and Labor Organizations

Applicants to and employees of most private employers, state and local governments, educational institutions, employment agencies and labor organizations are protected under Federal law from discrimination on the following bases:

RACE, COLOR, RELIGION, SEX, NATIONAL ORIGIN

Title VII of the Civil Rights Act of 1964, as amended, protects applicants and employees from discrimination in hiring, promotion, discharge, pay, fringe benefits, job training, classification, referral, and other aspects of employment, on the basis of race, color, religion, sex (including pregnancy), or national origin. Religious discrimination includes failing to reasonably accommodate an employee's religious practices where the accommodation does not impose undue hardship.

DISABILITY

Title I and Title V of the Americans with Disabilities Act of 1990, as amended, protect qualified individuals from discrimination on the basis of disability in hiring, promotion, discharge, pay, fringe benefits, job training, classification, referral, and other aspects of employment. Disability discrimination includes not making reasonable accommodation to the known physical or mental limitations of an otherwise qualified individual with a disability who is an applicant or employee, barring undue hardship.

AGE

The Age Discrimination in Employment Act of 1967, as amended, protects applicants and employees 40 years of age or older from discrimination based on age in hiring, promotion, discharge, pay, fringe benefits, job training, classification, referral, and other aspects of employment.

SEX (WAGES)

In addition to sex discrimination prohibited by Title VII of the Civil Rights Act, as amended, the Equal Pay Act of 1963, as amended, prohibits sex discrimination in the payment of wages to women and men performing substantially equal work, in jobs that require equal skill, effort, and responsibility, under similar working conditions, in the same establishment.

GENETICS

Title II of the Genetic Information Nondiscrimination Act of 2008 protects applicants and employees from discrimination based on genetic information in hiring, promotion, discharge, pay, fringe benefits, job training, classification, referral, and other aspects of employment. GINA also restricts employers' acquisition of genetic information and strictly limits disclosure of genetic information. Genetic information includes information about genetic tests of applicants, employees, or their family members; the manifestation of diseases or disorders in family members (family medical history); and requests for or receipt of genetic services by applicants, employees, or their family members.

RETALIATION

All of these Federal laws prohibit covered entities from retaliating against a person who files a charge of discrimination, participates in a discrimination proceeding, or otherwise opposes an unlawful employment practice.

WHAT TO DO IF YOU BELIEVE DISCRIMINATION HAS OCCURRED

There are strict time limits for filing charges of employment discrimination. To preserve the ability of EEOC to act on your behalf and to protect your right to file a private lawsuit, should you ultimately need to, you should contact EEOC promptly when discrimination is suspected:

The U.S. Equal Employment Opportunity Commission (EEOC), 1-800-669-4000 (toll-free) or 1-800-669-6820 (toll-free TTY number for individuals with hearing impairments). EEOC field office information is available at www.eeoc.gov or in most telephone directories in the U.S. Government or Federal Government section. Additional information about EEOC, including information about charge filing, is available at www.eeoc.gov.

Employers Holding Federal Contracts or Subcontracts

Applicants to and employees of companies with a Federal government contract or subcontract are protected under Federal law from discrimination on the following bases:

RACE, COLOR, RELIGION, SEX, NATIONAL ORIGIN

Executive Order 11246, as amended, prohibits job discrimination on the basis of race, color, religion, sex or national origin, and requires affirmative action to ensure equality of opportunity in all aspects of employment.

INDIVIDUALS WITH DISABILITIES

Section 503 of the Rehabilitation Act of 1973, as amended, protects qualified individuals from discrimination on the basis of disability in hiring, promotion, discharge, pay, fringe benefits, job training, classification, referral, and other aspects of employment. Disability discrimination includes not making reasonable accommodation to the known physical or mental limitations of an otherwise qualified individual with a disability who is an applicant or employee, barring undue hardship. Section 503 also requires that Federal contractors take affirmative action to employ and advance in employment qualified individuals with disabilities at all levels of employment, including the executive level.

DISABLED, RECENTLY SEPARATED, OTHER PROTECTED, AND ARMED FORCES SERVICE MEDAL VETERANS

The Vietnam Era Veterans' Readjustment Assistance Act of 1974, as amended, 38 U.S.C. 4212, prohibits job discrimination and requires affirmative action to employ and advance in employment disabled veterans, recently separated veterans (within

three years of discharge or release from active duty), other protected veterans (veterans who served during a war or in a campaign or expedition for which a campaign badge has been authorized), and Armed Forces service medal veterans (veterans who, while on active duty, participated in a U.S. military operation for which an Armed Forces service medal was awarded).

RETALIATION

Retaliation is prohibited against a person who files a complaint of discrimination, participates in an OFCCP proceeding, or otherwise opposes discrimination under these Federal laws.

Any person who believes a contractor has violated its nondiscrimination or affirmative action obligations under the authorities above should contact immediately:

The Office of Federal Contract Compliance Programs (OFCCP), U.S. Department of Labor, 200 Constitution Avenue, N.W., Washington, D.C. 20210, 1-800-397-6251 (toll-free) or (202) 693-1337 (TTY). OFCCP may also be contacted by e-mail at OFCCP-Public@dol.gov, or by calling an OFCCP regional or district office, listed in most telephone directories under U.S. Government, Department of Labor.

Programs or Activities Receiving Federal Financial Assistance

RACE, COLOR, NATIONAL ORIGIN, SEX

In addition to the protections of Title VII of the Civil Rights Act of 1964, as amended, Title VI of the Civil Rights Act of 1964, as amended, prohibits discrimination on the basis of race, color or national origin in programs or activities receiving Federal financial assistance. Employment discrimination is covered by Title VI if the primary objective of the financial assistance is provision of employment, or where employment discrimination causes or may cause discrimination in providing services under such programs. Title IX of the Education Amendments of 1972 prohibits employment discrimination on the basis of sex in educational programs or activities which receive Federal financial assistance.

INDIVIDUALS WITH DISABILITIES

Section 504 of the Rehabilitation Act of 1973, as amended, prohibits employment discrimination on the basis of disability in any program or activity which receives Federal financial assistance. Discrimination is prohibited in all aspects of employment against persons with disabilities who, with or without reasonable accommodation, can perform the essential functions of the job.

If you believe you have been discriminated against in a program of any institution which receives Federal financial assistance, you should immediately contact the Federal agency providing such assistance.

Contract Provisions for the Kansas Act Against Discrimination

(a) Except as provided by subsection (c), every contractor for or on behalf of the State and any county or municipality or other political subdivision of the State, or any agency of or authority created by any of the foregoing, for the construction, alteration, or repair of any public building or public work or for the acquisition of materials, equipment, supplies, or services shall contain provisions by which the contractor agrees that:

- (1) The contractor shall observe the provisions of the Kansas Act Against Discrimination and shall not discriminate against any person in the performance of work under the present contract because of race, religion, color, sex, disability, national origin, or ancestry;
- (2) In all solicitations or advertisements for employees, the contractor shall include the phrase “equal opportunity employer” or a similar phrase to be approved by the Commission;
- (3) If the contractor fails to comply with the manner in which the contractor reports to the Commission in accordance with the provisions of K.S.A.44-1031 and amendments thereto, the contractor shall be deemed to have breached the present contract and it may be cancelled, terminated, or suspended, in whole or in part, by the contracting agency;
- (4) If the contractor is found guilty of a violation of the Kansas Act Against Discrimination under a decision or order of the Commission which has become final, the contractor shall be deemed to have breached the present contract and it may be cancelled, terminated or suspended, in whole, or in part, by the contracting agency;
- (5) The contractor shall include the provisions of subsections (a)(1) through (4) in every subcontract or purchase order so that such provisions will be binding upon such subcontractor or vendor.

(b) The Kansas Human Rights Commission shall not be prevented hereby from requiring reports of contractors found to be not in compliance with the Kansas Act Against Discrimination.

(c) The provisions of this section shall not apply to a contract entered into by a contractor:

- (1) Who employs fewer than four employees during the term of such contract; or
- (2) Whose contracts with the governmental entity letting such contract cumulatively total \$5,000 or less during the fiscal year of such governmental entity.

Contract Provisions for right of entry by KDHE

The Contractor shall secure the right of entry to the project site for representatives of the Kansas Department of Health and Environment, so they may have access to the work whenever it is in preparation or progress and also to any books, documents, papers and records of the Contractor which are directly pertinent to that specific contract for the purpose of making audit, examinations, excerpts and transcriptions. Proper facilities and safe conditions must be provided for access and inspections, including advice regarding site safety procedures and programs to allow compliance.

Contract Provisions for Historical and Archeological Deposits

If during the course of construction evidence of deposits of historical or archeological interest is found, the contractor shall cease operations affecting the find and shall notify the owner who shall notify the Kansas Department of Health and Environment and the Executive Director, Kansas State Historical Society, 6425 SW 6th Street, Topeka, Kansas 66615. No further disturbance of the deposits shall ensue until the contractor has

been notified by the owner that he may proceed. The owner will issue a notice to proceed only after the State official has surveyed the find and made a determination to Kansas Department of Health and Environment and the owner. Compensation to the contractor, if any, for lost time or changes in construction to avoid the find, shall be determined in accordance with changed conditions or change order provisions of the specifications.

Contract Provisions for NPDES General Permit Coverage for Discharges of Stormwater Runoff from Construction Activities

The owner or Contractor must obtain, prior to construction, permit coverage from KDHE to discharge stormwater runoff associated with construction activity for most any project which disturbs one acre or more of soils. A Notice of Intent form (NOI) must be submitted to KDHE 60 days before the start of construction and a permit determination from KDHE must be made before construction can begin. The Kansas construction stormwater general permit, a Notice of Intent (application form), a frequently asked questions file, and supplemental materials are available on-line on the KDHE Stormwater Web Page at www.kdhe.state.ks.us/stormwater.

Contract Provisions for Restrictions on Lobbying

The Contractor agrees to comply with Title 40 CRF Part 34, New Restrictions on Lobbying. **A Certification form must be submitted with the bid documents.**

Contract Provisions for the Trafficking Victims Protection Act of 2000

The Contractor, its employees, sub-contractors, and sub-contractors employees under any SRF Loan Agreement, may not engage in severe forms of trafficking in persons during the period of time that the award is in effect; procure a commercial sex act during the period of time that the award is in effect; or use forced labor in the performance of the award or sub-awards under the award.

Contract Provisions for Suspension and Debarment

The Contractor certifies that it is not suspended or debarred from participating in federal assistance and benefit programs and further agrees to fully comply with Subpart C of 2 CFR Part 180 and 2 CFR Part 1532, entitled “Responsibilities of Participants Regarding Transactions.” The Contractor must ensure that any lower tier covered transaction, as described in Subpart B of 2 CFR Part 180 and 2 CFR Part 1532, entitled “Covered Transactions,” includes a term or condition requiring compliance with Subpart C. The Contractor agrees that failing to disclose the required information in 2 CFR 180.335 may result in the delay or negation of this assistance agreement, or pursuance of legal remedies, including suspension and debarment.

Contract Provisions for Non Discrimination

The contractor must comply with Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Title IX of the Education Amendments of 1972, the Age Discrimination Act of 1975, and a variety of program-specific statutes with nondiscrimination requirements.

Other civil rights laws may impose additional requirements on the contractor. These laws include, but are not limited to, Title VII of the Civil Rights Act of 1964 (prohibiting race, color, national origin, religion, and sex discrimination in employment), the Americans with Disabilities Act (prohibiting disability discrimination in employment and in services provided by State and local governments, businesses, and non-profit agencies), and the Fair Housing Act (prohibiting race, color, national origin, age, family status, and disability discrimination in housing), as well as any other applicable civil rights laws.

Contract Provisions for Non Segregated Facilities

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 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.

Contract Provisions for American Iron and Steel

All of the iron and steel products used in the project must be produced in the United States. 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. **A Certification form must be submitted with the bid documents.**

The following definitions apply to this provision.

Municipal castings are cast iron or steel infrastructure products that are melted and cast. They typically provide access, protection, or housing for components incorporated into utility owned drinking water, storm water, wastewater, and surface infrastructure. They are typically made of grey or ductile iron, or steel. Examples of municipal castings are access hatches, ballast screen, benches (Iron or Steel), bollards, cast bases, cast iron hinged hatches, square and rectangular; cast iron riser rings, catch basin inlet, cleanout/monument boxes, construction covers and frames, curb and corner guards, curb openings, detectable warning plates, downspout shoes (boot, inlet), drainage grates, frames and curb inlets, inlets; junction boxes, lampposts, manhole covers, rings and frames, and risers.

Construction materials are those articles, materials, or supplies made primarily of iron and steel, that are permanently incorporated into the project, not including mechanical and/or electrical components, equipment and systems. Some of these products may overlap with what is also considered "structural steel". This includes, but is not limited to, the following products: wire rod, bar, angles, concrete reinforcing bar, wire, wire cloth, wire rope and cables, tubing, framing, joists, trusses, fasteners (i.e., nuts and bolts), welding rods, decking, grating, railings, stairs, access ramps, fire escapes, ladders, wall panels, dome structures, roofing, ductwork, surface drains, cable hanging systems, manhole steps, fencing and fence tubing, guardrails, doors, and stationary screens.

Mechanical and electrical components, equipment and systems are NOT considered construction materials. Mechanical equipment is typically that which has motorized parts and/or is powered by a motor. Electrical equipment is typically any machine powered by electricity and includes components that are part of the electrical distribution system. The following examples (including their appurtenances necessary for their intended use and operation) are NOT considered construction materials: pumps, motors, gear reducers, drives (including variable frequency drives (VFDs)), electric/pneumatic/manual accessories used to operate valves (such as electric valve actuators), mixers, gates, motorized screens (such as traveling screens), blowers/aeration equipment, compressors, meters, sensors, controls and switches, supervisory control and data acquisition (SCADA), membrane bioreactor systems, membrane filtration systems, filters, clarifiers and clarifier mechanisms, rakes, grinders, disinfection systems, presses (including belt presses), conveyors, cranes, HVAC (excluding ductwork), water heaters, heat exchangers, generators, cabinetry and housings

(such as electrical boxes/enclosures), lighting fixtures, electrical conduit, emergency life systems, metal office furniture, shelving, laboratory equipment, analytical instrumentation, and dewatering equipment.

Noncompliance with this provision is only allowed through a waiver issued by the U.S. Environmental Protection Agency. Q&A documents, waiver request instructions, and a list of proposed and approved waivers can be found at http://water.epa.gov/grants_funding/aisrequirement.cfm .

Davis Bacon Wage Rate Contract Provisions

(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.

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

(ii)(A) The Loan Recipient(s), on behalf of 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 EPA award official shall coordinate with the Department of Labor Wage and Hour Division to 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 Loan Recipient(s) 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 Loan Recipient (s) to the State award official. The State award official 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 the State award official or will notify the State award official 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 and the Loan Recipient(s) 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 State 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 award official or will notify the contracting officer award official 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 Loan Recipient(s) shall upon its own action or upon written request of 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 (Agency) 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)(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the Loan Recipient, that is, the entity that receives the sub-grant or loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the Loan Recipient shall provide written confirmation in a form satisfactory to the State 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). 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 <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 Loan Recipient (s) for transmission to the State or EPA if requested by EPA, the State, 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 the Loan Recipient (s).

(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 (1) 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 the State, 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 Federal agency or State 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 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 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 EPA 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 Loan Recipient(s), State, 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.

(11) Contract Provision for Contracts in Excess of \$100,000.

(a) The following provisions apply to all contracts that are in excess of \$100,000. As used in these provisions, 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 (a)(1) of this section the contractor and any subcontractor responsible therefore 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 in paragraph (a)(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 (a)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The municipality, upon written request of the EPA Award Official or an authorized representative of the Department of Labor, shall 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 (a)(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 (a)(1) through (4) of this section.

(b) In addition to the clauses contained in (a)(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 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 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 (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

Disadvantaged Business Enterprise Contract Provisions

The contractor shall not discriminate on the basis of race, color, national origin or sex in the performance of this contract. The 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 the 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.

A Disadvantaged Business Enterprise (DBE) includes Women's Business Enterprises, (WBE) Minority Business Enterprises (MBE), a Small Business Enterprises (SBE); a Small Business in Rural Area (SBRA); a Labor Surplus Area Firm (LSAF); or a Historically Underutilized Business (HUB) Zone Small Business Concern or a concern under a successor program.

The contractor must also adopt a fair share objective of awarding 4.1/% of the contract amount to Minority Business Enterprises (MBE's) and 6.9% of the contract amount to Women's Business Enterprises (WBE's). This fair share objective is not a quota and the contractor cannot be penalized for failure to meet this objective.

The contractor is required to make the Good Faith Efforts and apply the administrative requirements listed below for any subcontracts.

Good Faith Efforts

1. Ensure DBEs are made aware of subcontracting opportunities to the fullest extent practicable through outreach and recruitment activities.

This step may include sending letters or making other personal contacts with DBEs. DBEs should be contacted when other potential subcontractors/suppliers are contacted, within reasonable time (i.e. minimum of fifteen days) prior to bid submission or closing date for receipt of initial offers. Those letters or other contacts should communicate the following:

- i. Specific description of the work to be subcontracted or supplies to be purchased;
 - ii. How and where to obtain a copy of plans and specifications or other detailed information needed to prepare a detailed price quotation;
 - iii. Date the quotation is due to the prime contractor;
 - iv. Name, address, and phone number of the person in the prime contractor's firm whom the prospective DBE subcontractor/supplier should contact for additional information.
2. Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitations for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.

3. Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs.
4. Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.
5. Use the services and assistance of the SBA and the Minority Business Development Agency of the Department of Commerce.

DBE Administrative Requirements

The contractor:

1. Must pay its subcontractor for satisfactory performance not more than 30 days from the prime contractor's receipt of payment.
2. Must notify KDHE in writing prior to termination of a DBE subcontractor for convenience.
3. Must employ the good faith efforts when soliciting a replacement subcontractor, if the original subcontractor fails to complete work for any reason.

Determination of Compliance

If Prime contractors award any subcontracts, they must demonstrate compliance with DBE requirements in order to be deemed responsive prior to contract award. Demonstration of compliance shall include a list of DBE subcontractors contacted and the method used to contact them (the attached Demonstration of Compliance with DBE Good Faith Efforts Worksheet can be used for this purpose).

EMPLOYEE RIGHTS UNDER THE DAVIS-BACON ACT

FOR LABORERS AND MECHANICS EMPLOYED ON FEDERAL OR FEDERALLY ASSISTED CONSTRUCTION PROJECTS

THE UNITED STATES DEPARTMENT OF LABOR WAGE AND HOUR DIVISION

PREVAILING WAGES

You must be paid not less than the wage rate listed in the Davis-Bacon Wage Decision posted with this Notice for the work you perform.

OVERTIME

You must be paid not less than one and one-half times your basic rate of pay for all hours worked over 40 in a work week. There are few exceptions.

ENFORCEMENT

Contract payments can be withheld to ensure workers receive wages and overtime pay due, and liquidated damages may apply if overtime pay requirements are not met. Davis-Bacon contract clauses allow contract termination and debarment of contractors from future federal contracts for up to three years. A contractor who falsifies certified payroll records or induces wage kickbacks may be subject to civil or criminal prosecution, fines and/or imprisonment.

APPRENTICES

Apprentice rates apply only to apprentices properly registered under approved Federal or State apprenticeship programs.

PROPER PAY

If you do not receive proper pay, or require further information on the applicable wages, contact the Contracting Officer listed below:

or contact the U.S. Department of Labor's Wage and Hour Division.



For additional information:

1-866-4-USWAGE
(1-866-487-9243) TTY: 1-877-889-5627



WWW.WAGEHOUR.DOL.GOV

**REQUEST FOR AUTHORIZATION OF
ADDITIONAL CLASSIFICATION AND RATE**

CHECK APPROPRIATE BOX
 SERVICE CONTRACT
 CONSTRUCTION CONTRACT

OMB Control Number: 9000-0066
Expiration Date: 5/31/2025

Paperwork Reduction Act Statement - This information collection meets the requirements of 44 U.S.C. § 3507, as amended by section 2 of the Paperwork Reduction Act of 1995. You do not need to answer these questions unless we display a valid Office of Management and Budget (OMB) control number. The OMB control number for this collection is 9000-0066. We estimate that it will take .5 hours to read the instructions, gather the facts, and answer the questions. Send only comments relating to our time estimate, including suggestions for reducing this burden, or any other aspects of this collection of information to: U.S. General Services Administration, Regulatory Secretariat Division (M1V1CB), 1800 F Street, NW, Washington, DC 20405.

INSTRUCTIONS: THE CONTRACTOR SHALL COMPLETE ITEMS 3 THROUGH 16, KEEP A PENDING COPY, AND SUBMIT THE REQUEST, IN QUADRUPLICATE, TO THE CONTRACTING OFFICER.

1. TO: ADMINISTRATOR, WAGE AND HOUR DIVISION U.S. DEPARTMENT OF LABOR WASHINGTON, DC 20210	2. FROM: (REPORTING OFFICE)
---	------------------------------------

3. CONTRACTOR	4. DATE OF REQUEST
----------------------	---------------------------

5. CONTRACT NUMBER	6. DATE BID OPENED (SEALED BIDDING)	7. DATE OF AWARD	8. DATE CONTRACT WORK STARTED	9. DATE OPTION EXERCISED (IF APPLICABLE) (SERVICE CONTRACT ONLY)
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10. SUBCONTRACTOR (IF ANY)

11. PROJECT AND DESCRIPTION OF WORK (ATTACH ADDITIONAL SHEET IF NEEDED)

12. LOCATION (CITY, COUNTY, AND STATE)

13. IN ORDER TO COMPLETE THE WORK PROVIDED FOR UNDER THE ABOVE CONTRACT, IT IS NECESSARY TO ESTABLISH THE FOLLOWING RATE(S) FOR THE INDICATED CLASSIFICATION(S) NOT INCLUDED IN THE DEPARTMENT OF LABOR DETERMINATION

NUMBER: _____	DATED: _____				
a. LIST IN ORDER: PROPOSED CLASSIFICATION TITLE(S); JOB DESCRIPTION(S); DUTIES; AND RATIONALE FOR PROPOSED CLASSIFICATIONS (Service contracts only) (Use reverse or attach additional sheets, if necessary)	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; text-align: center;"> b. WAGE RATE(S) </td> <td style="width:50%; text-align: center;"> c. FRINGE BENEFITS PAYMENTS </td> </tr> <tr> <td style="height: 150px;"> </td> <td style="height: 150px;"> </td> </tr> </table>	b. WAGE RATE(S)	c. FRINGE BENEFITS PAYMENTS		
b. WAGE RATE(S)	c. FRINGE BENEFITS PAYMENTS				

14. SIGNATURE AND TITLE OF SUBCONTRACTOR REPRESENTATIVE (IF ANY)	15. SIGNATURE AND TITLE OF PRIME CONTRACTOR REPRESENTATIVE
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16. SIGNATURE OF EMPLOYEE OR REPRESENTATIVE	TITLE	CHECK APPROPRIATE BOX-REFERENCING BLOCK 13. <input type="checkbox"/> AGREE <input type="checkbox"/> DISAGREE
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TO BE COMPLETED BY CONTRACTING OFFICER (CHECK AS APPROPRIATE - SEE FAR 22.1019 (SERVICE CONTRACT LABOR STANDARDS) OR FAR 22.406-3 (CONSTRUCTION WAGE RATE REQUIREMENTS))

THE INTERESTED PARTIES AGREE AND THE CONTRACTING OFFICER RECOMMENDS APPROVAL BY THE WAGE AND HOUR DIVISION. AVAILABLE INFORMATION AND RECOMMENDATIONS ARE ATTACHED.

THE INTERESTED PARTIES CANNOT AGREE ON THE PROPOSED CLASSIFICATION AND WAGE RATE. A DETERMINATION OF THE QUESTION BY THE WAGE AND HOUR DIVISION IS THEREFORE REQUESTED. AVAILABLE INFORMATION AND RECOMMENDATIONS ARE ATTACHED.
 (Send 3 copies to the Department of Labor)

SIGNATURE OF CONTRACTING OFFICER OR REPRESENTATIVE	TITLE AND COMMERCIAL TELEPHONE NUMBER	DATE SUBMITTED
--	---------------------------------------	----------------

PAYROLL

(For Contractor's Optional Use; See Instructions at www.dol.gov/esa/whd/forms/wh347instr.htm)



Rev. Dec. 2008

Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number.

OMB No.: 1215-0149
 Expires: 12/31/2011

NAME OF CONTRACTOR <input type="checkbox"/> OR SUBCONTRACTOR <input type="checkbox"/>				ADDRESS					OMB No.: 1215-0149 Expires: 12/31/2011										
PAYROLL NO.		FOR WEEK ENDING			PROJECT AND LOCATION				PROJECT OR CONTRACT NO.										
(1) NAME AND INDIVIDUAL IDENTIFYING NUMBER (e.g., LAST FOUR DIGITS OF SOCIAL SECURITY NUMBER) OF WORKER	(2) NO. OF WITHHOLDING EXEMPTIONS	(3) WORK CLASSIFICATION	OT OR ST.	(4) DAY AND DATE							(5) TOTAL HOURS	(6) RATE OF PAY	(7) GROSS AMOUNT EARNED	(8) DEDUCTIONS					(9) NET WAGES PAID FOR WEEK
				HOURS WORKED EACH DAY										FICA	WITH- HOLDING TAX		OTHER	TOTAL DEDUCTIONS	
			O										/						
			S										/						
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While completion of Form WH-347 is optional, it is mandatory for covered contractors and subcontractors performing work on Federally financed or assisted construction contracts to respond to the information collection contained in 29 C.F.R. §§ 3.3, 5.5(a). The Copeland Act (40 U.S.C. § 3145) contractors and subcontractors performing work on Federally financed or assisted construction contracts to "furnish weekly a statement with respect to the wages paid each employee during the preceding week." U.S. Department of Labor (DOL) regulations at 29 C.F.R. § 5.5(a)(3)(ii) require contractors to submit weekly a copy of all payrolls to the Federal agency contracting for or financing the construction project, accompanied by a signed "Statement of Compliance" indicating that the payrolls are correct and complete and that each laborer or mechanic has been paid not less than the proper Davis-Bacon prevailing wage rate for the work performed. DOL and federal contracting agencies receiving this information review the information to determine that employees have received legally required wages and fringe benefits.

Public Burden Statement

We estimate that it will take an average of 55 minutes to complete this collection, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. If you have any comments regarding these estimates or any other aspect of this collection, including suggestions for reducing this burden, send them to the Administrator, Wage and Hour Division, ESA, U.S. Department of Labor, Room S3502, 200 Constitution Avenue, N.W. Washington, D.C. 20240

WAGE RATE DETERMINATION

The wage rate determination found on the following pages must be utilized for the duration of the contract. Each class of workers (including workers in subcontracts) must be paid at least the indicated hourly rate and fringe for such class. If worker compensation includes fringe benefits recognized by the U.S. Department of Labor, then verification of payment of these benefits must be made to the Municipality (Owner) with the first submitted payroll report. If worker compensation does not include fringe benefits then workers must be paid the indicated fringe rate in cash.

If a particular class of worker is not listed on the wage rate determination, but is utilized for the project, Standard Form 1444 must be completed by the contractor and submitted to the Municipality (Owner). The U.S. Department of Labor will determine if the wage rate indicated on the submitted Standard Form 1444 is acceptable.

Workers must be paid weekly. Any worker who works more than 40 hours a week must be paid one and one-half times the base pay plus all fringe benefits. Weekly payroll reports shall be submitted to the Municipality (Owner) for every week until the job is complete even if no work is performed.

The Contractor is responsible for all subcontractor compliance and reporting.

Appendix B

Davis Bacon Wage Determination

"General Decision Number: KS20240159 01/05/2024

Superseded General Decision Number: KS20230159

State: Kansas

Construction Type: Heavy

County: Sedgwick County in Kansas.

HEAVY 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)(1).

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:	<ul style="list-style-type: none">• Executive Order 14026 generally applies to the contract.• The contractor must pay all covered workers at least \$17.20 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 2024.
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:	<ul style="list-style-type: none">• Executive Order 13658 generally applies to the contract.• The contractor must pay all covered workers at least \$12.90 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours performing on that contract in 2024.

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

CARPENTER, Excludes Form Work....	\$ 24.15	6.18
LABORER: Common or General.....	\$ 15.84 **	3.59
LABORER: Pipelayer.....	\$ 16.03 **	2.88
OPERATOR:		
Backhoe/Excavator/Trackhoe.....	\$ 22.92	6.20
OPERATOR: Bobcat/Skid		
Steer/Skid Loader.....	\$ 24.45	8.52
OPERATOR: Crane.....	\$ 29.82	6.41
OPERATOR: Loader.....	\$ 20.14	3.64
OPERATOR: Roller.....	\$ 31.50	16.88
TRUCK DRIVER: Dump Truck.....	\$ 24.95	9.62

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 (\$17.20) or 13658 (\$12.90). Please see the Note at the top of the wage determination for more information. Please also note that the minimum wage requirements of Executive Order 14026 are not currently being enforced as to any contract or subcontract to which the states of Texas, Louisiana, or Mississippi, including their agencies, are a party.

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) (iii)).

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 DECISION"

EXHIBIT A
CITY OF WICHITA MANDATORY CONTRACTUAL PROVISIONS ATTACHMENT

1. **Terms Herein Controlling Provisions.** The terms of this attachment shall prevail and control over the terms of any other conflicting provision in any other document relating to and a part of the Agreement.
2. **Choice of Law.** This Agreement shall be interpreted under and governed by the laws of the State of Kansas. Any dispute or cause of action that arises in connection with this Agreement will be brought before a court of competent jurisdiction in Sedgwick County, Kansas.
3. **Termination Due To Lack of Funding Appropriation.** If, in the judgment of the City's Director of Finance, sufficient funds are not appropriated to continue the function performed in this Agreement and for the payment of the charges hereunder, City may terminate this Agreement at the end of its current fiscal year. City agrees to give written notice of termination to Contractor at least thirty (30) days prior to the end of its current fiscal year and shall give such notice for a greater period prior to the end of such fiscal year as may be provided for in the Agreement, except that such notice shall not be required prior to ninety (90) days before the end of such fiscal year. Contractor shall have the right, at the end of such fiscal year, to take possession of any equipment provided to City under the Agreement. City will pay to Contractor all regular contractual payments incurred through the end of such fiscal year, plus contractual charges incidental to the return of any related equipment. Upon the effective termination of the Agreement by City, title to any such equipment shall revert to Contractor. The termination of the Agreement pursuant to this paragraph shall not cause any penalty to be charged to the City or the Contractor.
4. **Disclaimer of Liability.** City shall not hold harmless or indemnify any Contractor beyond that liability incurred under the Kansas Tort Claims Act (K.S.A. 75-6101 *et seq.*). It is understood that the duty to indemnify or hold harmless includes the duty to defend. This indemnification and hold harmless clause shall apply whether or not insurance policies shall have been determined to be applicable to any of such damages or claims for damages. In no event shall either party be obligated to indemnify the other on account of the negligence or willful misconduct of the party seeking indemnity or any agent or employee thereof.
5. **Acceptance of Agreement.** This Agreement shall not be considered accepted, approved or otherwise effective until the statutorily required approvals and certifications have been given.
6. **Arbitration, Damages, Jury Trial and Warranties.** The City does not ever accept binding arbitration or the payment of damages or penalties upon the occurrence of a contingency, and expressly denies such acceptance for this Agreement. The City never consents to a jury trial to resolve any disputes that may arise hereunder, and expressly denies such consent for this Agreement. Contractor waives its right to a jury trial to resolve any disputes that may arise hereunder. No provision of any document within the Agreement between the Parties will be given effect which attempts to exclude, modify, disclaim or otherwise attempt to limit implied warranties of merchantability and fitness for a particular purpose.
7. **Representative's Authority to Contract.** By signing this Agreement, the representative of the Contractor thereby represents that such person is duly authorized by the Contractor to execute this Agreement on behalf of the Contractor and that the Contractor agrees to be bound by the provisions thereof.
8. **Federal, State and Local Taxes.** Unless otherwise specified, the proposal price shall include all applicable federal, state, and local taxes. Contractor shall pay all taxes lawfully imposed on it with respect to any product or service delivered in accordance with this Agreement. City is exempt from state sales or use taxes and federal excise taxes for direct purchases. These taxes shall not be included in the Agreement. Upon request, City shall provide to the Contractor a certificate of tax exemption. City makes no representation as to the exemption from liability of any tax imposed by any governmental entity on the Contractor.
9. **Insurance.** City shall not be required to purchase any insurance against any liability loss or damage to which this Agreement relates, nor shall this Agreement require the City to establish a "self-insurance" fund to protect against any such loss or damage. Subject to the provisions of the Kansas Tort Claims Act (K.S.A. 75-6101 *et seq.*), Contractor shall bear the risk of any loss or damage to any personal property to which Contractor holds title.
10. **Conflict of Interest.** Contractor shall not knowingly employ, during the period of this Agreement or any extensions to it, any professional personnel who are also in the employ of the City and providing services involving this Agreement or services similar in nature to the scope of this Agreement to the City. Furthermore, Contractor shall not knowingly employ, during the period of this Agreement or any extensions to it, any City employee who has participated in the making of this Agreement until at least two years after his/her termination of employment with the City.
11. **Confidentiality.** Contractor may have access to private or confidential data maintained by City to the extent necessary to carry out its responsibilities under this Agreement. Contractor must comply with all the requirements of the Kansas Open Records Act (K.S.A. 42-215 *et seq.*) in providing services and/or goods under this Agreement. Contractor shall accept full responsibility for providing adequate supervision and training to its agents and employees to ensure compliance with the Act. No private or confidential data collected, maintained or used in the course of performance of this Agreement shall be disseminated by either party except as authorized by statute, either during the period of the Agreement or thereafter. Contractor must agree to return any or all data furnished by the City promptly at the request of City in whatever form it is maintained by Contractor. Upon the termination or expiration of this Agreement, Contractor shall not use any of such data or any material derived from the data for any purpose and, where so instructed by City, shall destroy or render such data or material unreadable. The parties accept that City must comply with the Kansas Open Records Act and will produce upon written request all documents pertaining to this Agreement other than those covered by express exceptions to disclosure listed in the Act.

12. **Cash Basis and Budget Laws.** The right of the City to enter into this Agreement is subject to the provisions of the Cash Basis Law (K.S.A. 10-1112 and 10-1113), the Budget Law (K.S.A. 79-2935), and all other laws of the State of Kansas. This Agreement shall be construed and interpreted so as to ensure that the City shall at all times stay in conformity with such laws, and as a condition of this Agreement the City reserves the right to unilaterally sever, modify, or terminate this Agreement at any time if, in the opinion of its legal counsel, the Agreement may be deemed to violate the terms of such laws.
13. **Anti-Discrimination Clause.** Contractor agrees: (a) to comply with the Kansas Act Against Discrimination (K.S.A. 44-1001 *et seq.*), the Kansas Age Discrimination in Employment Act (K.S.A. 44-1111 *et seq.*), the Discrimination Against Military Personnel Act, K.S.A. 44-1125, and the applicable provisions of the Americans with Disabilities Act (42 U.S.C. 12101 *et seq.*) (ADA); (b) to not engage in discrimination in employment against its contractors, subcontractors, or employees on the basis of their age, color, disability, familial status, gender identity, genetic information, national origin or ancestry, race, religion, sex, sexual orientation, veteran status or any other factor protected by law ("protected class"), subject to the qualifications found at 2.06.060 of the Municipal Code of the City of Wichita; (c) to include in all solicitations or advertisements for employees the phrase "equal opportunity employer;" (d) to comply with the reporting requirements set out at K.S.A. 44-1031 and K.S.A. 44-1116; (e) to include those provisions in every subcontract or purchase order so that they are binding upon such subcontractor or vendor.

Contractor's failure to comply with the reporting requirements of (d) above, or if the Contractor is found guilty of any violation of such acts by the Kansas Human Rights Commission or City of Wichita Hearing Officer, such violation shall constitute a breach of contract and the Agreement may be cancelled, terminated or suspended, in whole or in part by City without incurring contractual damages or penalty; and (g) if it is determined that the Contractor has violated applicable provisions of the ADA, such violation shall constitute a breach of the Agreement and the Agreement may be cancelled, terminated or suspended, in whole or in part by City without incurring contractual damages or penalty.

14. **Suspension/Debarment.** Contractor acknowledges that as part of the Code of Federal Regulations (2 C.F.R. Part 180) a person or entity that is debarred or suspended in the System for Award Management (SAM) shall be excluded from federal financial and nonfinancial assistance and benefits under federal programs and activities. All non-federal entities, including the City of Wichita, must determine whether the Contractor has been excluded from the system and any federal funding received or to be received by the City in relation to this Agreement prohibits the City from contracting with any Contractor that has been so listed. In the event the Contractor is debarred or suspended under the SAM, the Contractor shall notify the City in writing of such determination within five (5) business days as set forth in the Notice provision of this Agreement. City shall have the right, in its sole discretion, to declare the Agreement terminated for breach upon receipt of the written notice. Contractor shall be responsible for determining whether any sub-contractor performing any work for Contractor pursuant to this Agreement has been debarred or suspended under the SAM and to notify City within the same five (5) business days, with the City reserving the same right to terminate for breach as set forth herein.
15. **Compliance with Law.** Contractor shall comply with all applicable local, state, and federal laws and regulations in carrying out this Agreement, regardless of whether said local, state, and federal laws are specifically referenced in the Agreement to which this attached is incorporated.
16. **No Assignment.** The services to be provided by the **VENDOR** under this Contract are personal and cannot be assigned, delegated, sublet, or transferred without the specific written consent of the **CITY**.
17. **Third Party Exclusion.** This Agreement is intended solely for the benefit of City and Contractor and is not intended to benefit, either directly or indirectly, any third party or member(s) of the public at large. No third party may sue for damages based on the terms or performance of this Agreement.
18. **No Arbitration.** The Contractor and the City shall not be obligated to resolve any claim or dispute related to the Contract by arbitration. Any reference to arbitration in bid or proposal documents is deemed void.
19. **Bankruptcy.** Contractor shall be considered to be in default of this Contract in the event Contractor (i) applies for or consents to the appointment of a receiver, trustee, or liquidator of itself or any of its property, (ii) is unable to pay its debts as they mature or admits in writing its inability to pay its debts as they mature, (iii) makes a general assignment for the benefit of creditors, (iv) is adjudicated as bankrupt or insolvent, or (v) files a voluntary petition in bankruptcy or a petition or an answer seeking reorganization or an arrangement with creditors, or taking advantage of any bankruptcy, reorganization, insolvency, readjustment of debt, dissolution or liquidation law or statute, or admits the material allegations of a petition filed against it in any proceedings under any such law, or if any action shall be taken by Contractor for the purpose of effecting any of the foregoing.

EXHIBIT B
CITY OF WICHITA MANDATORY INDEPENDENT CONTRACTOR ADDENDUM

1. This Agreement shall satisfy all tax and other governmentally imposed responsibilities including, but not limited to payment of: state, federal, and social security taxes; unemployment taxes; workers' compensation and self-employment taxes. No federal, state, or local taxes of any kind shall be withheld or paid by City.
2. The parties agree that as an independent contractor, Contractor is not entitled to any benefits from City, including but not limited to: (a) unemployment insurance benefits; (b) workers' compensation coverage; or (c) health insurance coverage. Contractor may only receive such coverages if provided by Contractor or an entity other than City. Subject to the foregoing, Contractor hereby waives and discharges any claim, demand, or action against City's workers' compensation insurance and/or health insurance and further agrees to indemnify City for any such claims related to Contractor's operations or the performance of services by Contractor hereunder.
3. The parties hereby acknowledge and agree that City will not: (a) require Contractor to work exclusively for City; (b) establish means or methods of work for Contractor, except that City may provide plans and specifications regarding the work but will not oversee the actual work. City may establish performance standards for the contracted outcomes; (c) pay to Contractor a salary or hourly rate, but rather will pay to Contractor a fixed or contract rate; (d) provide training for Contractor on performance of the services to be done; City may provide informational briefing on known conditions; (e) provide tools or benefits to Contractor (materials and equipment may be supplied if negotiated); (f) dictate the time of Contractor's performance; and (g) pay Contractor personally; instead, City will make all checks payable to the trade or business name under which Contractor does business.
4. Contractor does not have the authority to act for City, to bind City in any respect whatsoever, or to incur debts or liabilities in the name of or on behalf of City.
5. Unless given express written consent by City, Contractor agrees not to bring any other party (including but not limited to employees, agents, subcontractors, sub-subcontractors, and vendors) onto the project site.
6. If Contractor is given written permission to have other parties on the site, and Contractor engages any other party which may be deemed to be an employee of Contractor, Contractor will be required to provide the appropriate workers' compensation insurance coverage as required by this Agreement.
7. Contractor has and hereby retains control of and supervision over the performance of Contractor's obligations hereunder. Contractor agrees to retain control over any allowed parties employed or contracted by Contractor for performing the services hereunder and take full and complete responsibility for any liability created by or from any actions or individuals brought to the project by Contractor.
8. Contractor represents that it is engaged in providing similar services to the general public and not required to work exclusively for City.
9. All services are to be performed solely at the risk of Contractor and Contractor shall take all precautions necessary for the safety of its and the City's employees, agents, subcontractors, sub-subcontractors, vendors, along with members of the general public it encounters while performing the work.
10. Contractor will not combine its business operations in any way with City's business operations and each party shall maintain their operations as separate and distinct.

CHALLENGES AND PROTESTS

Challenges

A challenge is defined as a written objection by any party interested in responding to either a bid or proposal (collectively referred to as solicitations), when that party wishes to have the City consider an addition, substitution or modification to the specifications stated in the outstanding solicitation.

The written challenge of the solicitation specifications must be filed with the Purchasing Manager located on the 12th Floor, Finance Department at City Hall, 455 N Main, Wichita, KS 67202, telephone number (316)268-4636, at least five (5) business days before the solicitation opening due date and time as listed on the solicitation documents. Any challenge to solicitation specifications received after the five (5) business days deadline will not be considered by the City. The Purchasing Manager will acknowledge receipt of the challenge. The written challenge is to include the name, address, email address and telephone number of the interested party, identification of the solicitation number and project title, a detailed statement of the reasons for the challenge, supporting evidence or documentation to substantiate any arguments, and the form of relief requested, e.g. the proposed addition, substitution or modification to the specifications. The Purchasing Manager will investigate the written challenge and any evidence or documentation submitted with the challenge.

In the event of a timely challenge of the solicitation specifications to the Purchasing Manager, the affected pending solicitation shall not proceed further until the challenge is resolved by Purchasing Manager decision. The Purchasing Manager will issue a written decision, which will be posted on the City's Vendor Services website, <https://selfserviceict.wichita.gov/vss> for viewing by all interested parties. The decision rendered by the Purchasing Manager will be final.

Protests

A protest is defined as a written objection to a proposed award, or the award of a contract, with the intention of receiving a remedial result. In order to be considered valid, a protest must 1) come from an actual bidder or proposer for the contract, 2) who claims to be the rightful award recipient, 3) whose economic interest may be affected substantially and directly by the award of a contract or by the failure to award a contract. Suppliers or subcontractors to a bidder or proposer cannot file a valid protest. A valid protest can only be filed by a bidder or proposer which can show that it would be awarded the contract if the protest were successful. Therefore, all conditions numbered 1 through 3 listed above in this paragraph must be met.

The written protest for bids must be filed with the Contract Compliance Officer located on the 12th Floor, Finance Department, City Hall, 455 N Main, Wichita, KS prior to 9:00 a.m. of the Tuesday immediately following the posting of the notice of intent to award on the City's Purchasing Bid Results site <https://www.wichita.gov/Finance/Purchasing/Pages/BidResults.aspx>. Failure of a protestor to file a written protest related to the award of a contract prior to the 9:00 a.m., Tuesday deadline will invalidate that protest and cause it not to be considered.

The written protest for proposals must be filed with the Contract Compliance Officer located on the 12th Floor, Finance Department, City Hall, 455 N Main, Wichita, KS prior to 5:00 p.m. on the third business day following the day of issuing an email or written notification of award. Failure of a protestor to file a written protest related to the award of a contract prior to 5:00 p.m. on the third business day deadline will invalidate that protest and cause it not to be considered.

The Contract Compliance Officer will acknowledge receipt of the written protest. The written protest is to include the name, address, email address and telephone number of the protestor, identification of the solicitation number or contract number and project title, a detailed statement of the reasons for the protest which justify the relief sought, supporting evidence or documentation to substantiate any arguments, and a concise statement of the form of relief requested (e.g. reconsideration of the offer). All the above required information must be included in the protest at its submission. Untimely protests will be returned unopened. Incomplete protests will be rejected without consideration.

In the event of a valid, timely protest, the City shall not proceed with the execution of the contract until all City administrative remedies have been exhausted or waived, or until a determination is made that a contract award is required to protect the interests of the City.

The decision of the Contract Compliance Officer, based on review of the written protest and information available from City sources, will be rendered within ten (10) business days after receipt of protest, will recite the reasons for the decision, and be provided to the protestor by email or written notification.

GENERAL SPECIFICATIONS

BID FORMS

Unless bidding on-line, all bids MUST be submitted on the enclosed "Request For Formal Bid" form and signed by an officer or employee authorized to sign bids. Any exceptions, to the specifications, terms and/or other conditions concerning the bid, must be noted on the front of the "Request For Formal Bid" form to be considered. The "Request For Formal Bid" form is to be submitted in the enclosed pre-address envelope.

Bidders are requested to submit current literature or brochures relating to their bid.

LICENSE

Vendors bidding on commodities or services for the City of Wichita must be currently licensed by the City of Wichita or the State of Kansas, where applicable, before a purchase order or contract will be issued.

BILLING TERMS

Discounts for prompt payment will be considered in the evaluation of your bid. The discount time will not begin until the City receives all of the commodities or services. If testing is required, the discount time will begin upon completion of the testing. Billing terms must be noted on the bid form to consider the deduction in the award.

CONTRACT

The successful bidder agrees to enter into a contract with the City, and when required, as per specifications, to furnish bond by a surety company authorized to do business in the State of Kansas.

EMERGING & DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION ENCOURAGEMENT

The City of Wichita encourages all bidders to include emerging and disadvantaged business participation in their bid.

ARBITRATION PROVISIONS

"Notwithstanding anything to the contrary contained in these bid documents or the contract to be awarded herein, the City shall not be subject to arbitration and any clause relating to arbitration contained in these bid documents or in the contract to be awarded herein shall be null and void."

ANTITRUST LITIGATION CLAUSE

"For good cause, and as consideration for executing a purchase order/contract, the contractor, acting therein by and through its authorized agent, hereby conveys, sells, assigns, and transfers to the City of Wichita, all rights title and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the State of Kansas, relating to the particular product, products, or services purchased or acquired by the City of Wichita, Kansas, pursuant to a purchase order/contract.

CONSTRUCTION - PAVING PROJECTS

On construction or paving projects, contractors MUST contact the City Controller's Office, City Hall, 12th Floor, 455 North Main Street for a Kansas Sales Tax Exemption Certificate prior to starting work. Contractors will be responsible for paying Kansas Sales Tax on any purchase for these projects made before the certificate is issued.

RESTORATION

"Contractor shall, as a condition of final payment, restore all right-of-way and adjacent private property which has been disturbed, damaged or otherwise affected by construction to a condition equal to or better than existed prior to the commencement of construction. Such restoration shall include but not be limited to regrading and seeding of areas where grass was planted and growing prior to construction; provided, however, such regrading and seeding of lawn areas, when completed, shall be considered to be restoration of an area to a condition equal to or better than previously existing grass growth and Contractor shall have no responsibility to ensure growth of such seeded area(s). This restoration shall be considered part of the contract work and Contractor shall be responsible for the performance of such restoration work in the same manner as it is responsible for the performance of the contract work."

FEDERAL EXCISE TAX

The articles specified in this bid are for the exclusive use of the City of Wichita, Kansas. Therefore, Federal Excise Tax shall not be imposed. The City of Wichita, Kansas Federal Excise Tax Exemption Certificate Number is 48 77 0021K.

ESTIMATED QUANTITIES

If estimated quantities are shown, on the "Request For Formal Bid" form, they are used to evaluate the bid only. The figure(s) listed is the estimated usage only and is not intended to limit or guarantee in any way, the amount the City may purchase under the purchase order/contract.

CITY OF WICHITA CREDIT CARD

Presently, many City Agencies use a City of Wichita Procurement Card (Visa) in lieu of a City warrant to pay for some of its purchases. No additional charges will be allowed for using the card.

DELIVERY

Delays in delivery caused by bona fide strikes, government priority or requisitions, riots, fires, sabotage, acts of God or any other delays deemed by the Board of Bids and Contracts to be clearly and unequivocally beyond the contractor's

control, will be recognized by the City, and the contractor will be relieved of the responsibility of meeting the delivery time, as stipulated in the contract, upon contractor's filing with the Board of Bids and Contracts a notarized just and true statement signed by a responsible official of the contractor's company, giving in detail all the essential circumstances which, upon verification by the City, justifies such action by the Board of Bids and Contracts.

AWARD

The City, through its Board of Bids and Contracts reserves the right to accept or reject any or all bids and any part of parts of any bid and to waive formalities therein to determine which is lowest and best bid. Any bid which is incomplete, conditional, obscure, or which contains additions not called for or irregularities of any kind, may be cause for rejection of the bid. All bids are awarded subject to a check of the computations shown on the "Request For Formal Bid" form. In the event of a discrepancy in the extension(s) or total for the item(s), the unit cost shall prevail.

If there are tie bids, the Board of Bids and Contracts will recommend the successful bidder, and final determination will be made by the City Council.