Four Rivers Sanitation Authority
Rockford, Illinois

Bidding Requirements and Contract Forms

for

BNR Improvements – Aeration Basin Modifications

Capital Project No. 2304
IEPA Project No. L17-6576

SEPTEMBER 6, 2024 – BID SET

Volume 1 of 2

NOT TO BE USED FOR BIDDING PURPOSES

BLACK & VEATCH
ILLINOIS PROFESSIONAL DESIGN FIRM (PROFESSIONAL & STRUCTURAL ENGINEERING) - 184-002143-0006

B&V DESIGN, LLC
ILLINOIS PROFESSIONAL DESIGN FIRM (ARCHITECTURAL) - 184-007283-0001

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Four Rivers Sanitation Authority
Rockford, Illinois

Bidding Requirements and Contract Forms
and
General Provisions and Technical Specifications

for

BNR Improvements – Aeration Basin Modifications

Capital Project No. 2304
IEPA Project No. L17-6576

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Board of Trustees

Richard Pollack . . . . . President
Ben Bernsten . . . . . Vice President
Ginger Haas . . . . . Clerk/Treasurer
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Christopher T. Baer, PE . . . . . Director of Engineering

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FOUR RIVERS SANITATION AUTHORITY
WASTEWATER TREATMENT PLANT

BNR IMPROVEMENTS – AERATION BASIN MODIFICATIONS
CAPITAL PROJECT NO. 2304
IEPA PROJECT NO. L17-6576

ROCKFORD, ILLINOIS

Seals and Signatures

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General, Civil and Process Mechanical

LICENSED PROFESSIONAL ENGINEER
DAVID S. KOCH
062-064753
STATE OF ILLINOIS

Digitally signed by Koch, David S.
Location: Chicago, IL USA
Reason: I am approving this document
Contact Info: KochDS@bv.com
Date: 2024.09.05 07:53:39-05'00'

9/5/2024
EXP: 11/30/2025

Structural

LICENSED STRUCTURAL ENGINEER
ROBERT J.
RAMPETSREITER
081-005211
STATE OF ILLINOIS

9/5/2024
EXP: 11/30/2024

Architectural

LICENSED ARCHITECT
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DUANE
RISHEL
001-024179
STATE OF ILLINOIS

9/5/2024
EXP: 11/30/2024

HVAC & Plumbing

LICENSED PROFESSIONAL ENGINEER
RICARDO
MARTINEZ
062-75832
STATE OF ILLINOIS

9/5/2024
EXP: 11/30/2025

Instrumentation & Control

LICENSED PROFESSIONAL ENGINEER
MICHAEL
JOSEPH
POTTER
062-051617
STATE OF ILLINOIS

9/5/2024
EXP: 11/30/2025

Electrical

LICENSED PROFESSIONAL ENGINEER
SCOTT D STOCKHAM
062.051986
STATE OF ILLINOIS

9/5/2024
EXP: 11/30/2025

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Section I

Bidding Requirements

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Advertisement for bids

Four Rivers Sanitation Authority
3501 Kishwaukee Street
Rockford, IL 61109

Separate sealed BIDS for the construction of:

BNR Improvements – Aeration Basin Modifications, Capital Project No. 2304, IEPA Project No. L17-6576, is comprised of all labor, materials, equipment, and supervision required to construct the following items:

A. Aeration Basin modifications which consist of:
   a. Relocation of existing hyperboloid mixers within Aeration Basin Nos. 1, 2, 3, 4, 5, and 6 anaerobic zones, including provision of new shortened shafts and new metal access platforms.
   b. Relocation of existing hyperboloid mixers within Aeration Basin Nos. 7 and 8 anaerobic zones, including relocation of the associated existing access platforms.
   c. Demolition of raised center concrete walkways within Aeration Basin Nos. 1, 2, 3, 4, 5, and 6 including removal, relocation, and salvage of existing equipment on walkways as applicable.
   d. Creation of anaerobic, anoxic, and aerobic zones within Aeration Basin Nos. 1, 2, 3, 4, 5, 6, 7, and 8, including FRP and cast-in-place baffle walls, aeration supply piping, supports, valving, and fine pore diffuser grids.
   e. Divider wall walkway modifications including demolition of curb and guard railing, new overhead aeration supply piping and piping supports, concrete repairs and replacement, and new guardrail.
   f. Connection to existing air supply headers.
   g. Eight submersible horizontal propeller internal mixed liquor recycle (IMLR) pumps with VFDs and eight submersible mixers with piping, valving, and supports within Aeration Basins Nos. 1, 2, 3, 4, 5, 6, 7, and 8 anoxic zones.
   h. Connection to RAS piping, valving, grating, and wall penetrations within and at the existing divider wall walkways of Aeration Basin Nos. 1, 2, 3, 4, 5, and 6.
   i. Connection to RAS chamber, valving, and wall penetrations within and thru new baffle walls of Aeration Basins Nos. 7 and 8.
   j. Basin Drain Structure sluice and flap gate replacements for Aeration Basin Nos. 1, 2, 3, 4, 5, 6, 7, and 8. Basin Drain Structure concrete and floor door installation for Aeration Basin Nos. 1, 2, 3, 4, 5, and 6.
   k. All civil, structural, architectural, electrical, mechanical/HVAC, instrumentation and controls, and piping and valves for a complete, operable BNR system.
   l. Whenever an aeration train is off-line and drained, the Contractor will be required to supply pumps to keep the Drainage Structure dry as needed to perform work in it, consisting of replacing 2 sluice gates and one flap gate along with all new manual operators. One pump will be needed in each aeration basin's sump pit to keep the aeration basin dewatered and an additional pump in the drainage chamber. The pumps discharge may be routed to the next aeration basin in service, as directed by FRSA staff. The contractor is responsible for maintaining dewatering as needed to perform required work in aeration basins. The existing aeration basin pressure relief

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valves in the basin slabs shall not be obstructed and shall remain fully functional whenever a basin is dewatered.

B. Blower Building modifications which consist of:
   a. Installation of two high speed gearless turbo blowers, air piping, existing filter room modifications, and appurtenances.
   b. Demolition of two existing blowers and select air piping.
   c. New Electrical Room 20-107 containing VFDs and associated access.
   d. Existing Electrical Room 20-102 modifications consisting of modifications to or the addition of MCCs, panels, and controls.
   e. Roof replacement, and access and safety improvements.
   f. Programming associated with new blowers and integrated with existing blowers to provide a complete, operable BNR aeration control system.
   g. All civil, structural, architectural, electrical, mechanical/HVAC, instrumentation and controls, and piping and valves for a complete, operable Blower Building.

C. Site work, electrical cable trench, and transformer improvements.

A Mandatory Pre-Bid Meeting for this project will be held on Friday, September 27, 2024, at 10:00 a.m. in the Four Rivers Sanitation Authority's (FRSA) Board Room in the Steve Graceffa Administration Building, 3501 Kishwaukee Street, Rockford, Illinois. All contractors that intend to bid on this project must attend this pre-bid meeting.

Bids will be received by FRSA at the office located at 3501 Kishwaukee Street, Rockford, Illinois 61109 until 10:00 a.m., November 4, 2024, and then at said office publicly opened and read aloud.

The apparent low bidder shall submit a schedule of values, including identification of subcontracted work, no later than 12:00 p.m. on Tuesday, November 5, 2024.

Any contract or contracts awarded under this invitation to bids are expected to be funded in part by a loan from the Illinois Environmental Protection Agency (Illinois EPA). Neither the State of Illinois nor any of its departments, agencies, or employees is or will be a party to this invitation for bids or any resulting contract. The procurement will be subject to regulations contained in the Procedures for Issuing Loans from the Water Pollution Control Loan Program (35 IAC Part 365), the Davis-Bacon Act (40 USC 276a through 276a-5) as defined by the United States Department of Labor, the Employment of Illinois Workers on Public Works Act (30 ILCS 570), Illinois Works Jobs Program Act (30 ILCS 559/20-1), and the federal "Build America, Buy America Act" requirements contained in the Infrastructure Investment and Jobs Act, Pub. L. No. 117-58.

This procurement is also subject to the loan recipient's policy regarding the increased use of disadvantaged business enterprises. The loan recipient's policy requires all bidders to undertake specified affirmative efforts at least sixteen (16) days prior to bid opening. The policy is contained in the specifications. Bidders are also required to comply with the President's Executive Order No. 11246, as amended. The requirements for bidders and contractors under this order are explained in 41 CFR 60-4.

The CONTRACT DOCUMENTS may be examined at the FRSA Engineering Department. Please contact Engineering Administrator, Angie Good, at (815) 387-7662 to setup an appointment to view the documents. CONTRACT DOCUMENTS are also available for viewing at the Northern Illinois Building Contractors Association, whose office is located at 1111 S. Alpine Road, Rockford, Illinois.

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Advertisement for bids

Copies of the CONTRACT DOCUMENTS may be obtained at the FRSA Engineering Department located at 3501 Kishwaukee Street, Rockford, Illinois 61109, upon payment of $100.00 for each set.

Dated: September 6, 2024

By: _____
Timothy S. Hanson, Executive Director

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Information for Bidders

BIDS will be received by Four Rivers Sanitation Authority (herein called the "OWNER"), at Steve Graceffa Administration Building, 3501 Kishwaukee Street, Rockford, Illinois 61109 until 10:00 a.m., November 1, 2024, and then at said office publicly opened and read aloud.

Each BID must be submitted in a sealed envelope, addressed to Engineering Department at the Four Rivers Sanitation Authority, 3501 Kishwaukee Street, Rockford, IL 61109. Each sealed envelope containing a BID must be plainly marked on the outside as "BID for BNR Improvements – Aeration Basin Modifications, Capital Project No. 2304, IEPA Project No. L17-6576" and the envelope should bear on the outside the name of the BIDDER, his/her address, his/her license number if applicable, and the name of the project for which the BID is submitted. If forwarded by mail, the sealed envelope containing the BID must be enclosed in another envelope addressed to the OWNER at FRSA, 3501 Kishwaukee Street, Rockford, Illinois 61109.

All BIDS must be made on the required BID form. All blank spaces for BID prices must be filled in, in ink or typewritten, and the BID form must be fully completed and executed when submitted. Only one (1) copy of the BID form is required.

Any BID may be modified or withdrawn prior to the above scheduled time for the opening of BIDS or authorized postponement thereof. Any BID received after the time and date specified shall not be considered. No BIDDER may withdraw a BID within one-hundred and twenty (120) days after the actual date of the opening thereof. Should there be reasons why the contract cannot be awarded within the specified period, the time may be extended by mutual agreement between the OWNER and the BIDDER.

BIDDERS must satisfy themselves of the accuracy of the estimated quantities in the BID Schedule by examination of the site and a review of the drawings and specifications including ADDENDA. After BIDS have been submitted, the BIDDER shall not assert that there was a misunderstanding concerning the quantities of WORK or of the nature of the WORK to be done.

The OWNER shall provide to BIDDERS prior to BIDDING, all information that is pertinent to, and delineates and describes, the land owned, and rights-of-way acquired or to be acquired.

The CONTRACT DOCUMENTS contain the provisions required for the construction of the PROJECT. Information obtained from an officer, agent, or employee of the OWNER or any other person shall not affect the risks or obligations assumed by the CONTRACTOR or relieve him or her from fulfilling any of the conditions of the contract.

A BID bond payable to the OWNER must accompany each BID for five percent (5%) of the total amount of the BID. As soon as the BID prices have been compared, the OWNER will return the BONDS of all except the three (3) lowest responsible BIDDERS. When the Agreement is executed the bonds of the two (2) remaining unsuccessful BIDDERS will be returned. The BID BOND of the successful BIDDER will be retained until the payment BOND and performance BOND have been executed and approved, after which it will be returned. A certified check may be issued in lieu of a BID BOND.

A performance BOND and payment BOND, each in the amount of one hundred percent (100%) of the CONTRACT PRICE, with a corporate surety approved by the OWNER, will be required for the faithful performance of the contract.

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Attorneys-in-fact who sign BID BONDS or payment BONDS and performance BONDS must file with each BOND a certified and effective dated copy of their power of attorney.

Any contract entered into by the loan recipient and any sub-agreement hereunder, shall provide that representatives of the Agency will have access to the work whenever it is in preparation or progress and that the contractor or subcontractor will provide proper facilities for such access and inspection. Such contract or sub-agreement must also provide that the Agency or any authorized representative shall have access to any books, documents, papers, and records of the contractor or subcontractor, which are pertinent to the project for making audit, examination, excerpts, and transcriptions thereof.

The party of whom the contract is awarded will be required to execute the Agreement and obtain the performance BOND and payment BOND within ten (10) calendar days from the date when NOTICE OF AWARD is delivered to the BIDDER. The necessary Agreement and BOND forms shall accompany the NOTICE OF AWARD. In case of failure of the BIDDER to execute the Agreement, the OWNER may at his or her option consider the BIDDER in default, in which case the BID BOND accompanying the proposal shall become the property of the OWNER.

The OWNER within ten (10) days of receipt of acceptable performance BOND, payment BOND, and Agreement signed by the party to whom the Agreement was awarded shall sign the Agreement and return to such party an executed duplicate of the Agreement. Should the OWNER not execute the Agreement within such period, the BIDDER may by WRITTEN NOTICE withdraw his or her signed Agreement. Such notice of withdrawal shall be effective upon receipt of the notice by the OWNER.

The OWNER shall issue the NOTICE TO PROCEED within ten (10) days of the execution of the Agreement. Should there be reasons why the NOTICE TO PROCEED cannot be issued within such period, the time may be extended by mutual agreement between the OWNER and CONTRACTOR. If the NOTICE TO PROCEED has not been issued within the ten (10) day period or within the period mutually agreed upon, the CONTRACTOR might terminate the Agreement without further liability on the part of either party.

The OWNER may make such investigations as he or she deems necessary to determine the ability of the BIDDER to perform the WORK, and the BIDDER shall furnish to the OWNER all such information and data for this purpose as the OWNER may request. The OWNER reserves the right to reject any BID if the evidence is submitted by, or investigation of, such BIDDER fails to satisfy the OWNER that such BIDDER is properly qualified to carry out the obligations of the Agreement and to complete the WORK contemplated therein.

A conditional or qualified BID will not be accepted.

Award will be made to the low, responsive, responsible BIDDER.

All applicable laws, ordinances, and rules and regulations of all authorities having jurisdiction over construction of the PROJECT shall apply to the contract throughout including the Employment of Illinois Workers on Public Works Act (30 ILCS 570) and the Davis-Bacon Wage Act (40 USC 276a through 276a-5) as defined by the United States Department of Labor.

BIDDERS will comply with the federal Build America, Buy America Act (BABA) which is included in the Infrastructure Investment and Jobs Act, Pub. L. No. 117-58 and specifies that all iron, steel, manufactured products, and construction materials used in the project are produced in the United States.

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BIDDER shall not discriminate based on race, color, national origin, or sec 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.

Each BIDDER is responsible for inspecting the site and for reading and being thoroughly familiar with the CONTRACT DOCUMENTS. The failure or omission of any BIDDER to do any of the foregoing shall in no way relieve any BIDDER from any obligation in respect to his or her BID.

Each BIDDER shall supply a list of all subcontractors that submitted proposals and if requested by the OWNER all major material suppliers.

Inspection trips for prospective BIDDERS will leave from the FRSA office located at 3501 Kishwaukee Street, Rockford, Illinois 61109.

The FRSA PROJECT ENGINEER is Scot Strassburg, P.E. His contact information is as follows: (815) 387-7657; Email sstrassburg@fourrivers.illinois.gov.

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Instructions to Bidders

1 General

1.1 Scope and Intent

This section of the Contract Documents is concerned with furnishing detailed information and requirements for preparing bids to prospective bidders, bidders' responsibility, the preparation and the submission of bids, basis for awarding the Contract and other general information concerned with bidding and executing the Contract.

1.2 Contradictions

If in the case of apparent contradiction between or among the Contract Documents, the Contract Documents shall be consulted in the following order: Addenda, Agreement, Supplementary Drawings, Instructions to Bidders, Detailed Specifications, Plans, Four Rivers Sanitation Authority (FRSA) General Provisions and Technical Specifications for Sanitary Sewer Construction. The language in the first such document in which language regarding the conflict, error or discrepancy occurs shall control.

1.3 Mandatory Pre-Bid Meeting

A Mandatory Pre-Bid Meeting for this project will be held on Friday, September 27, 2024 at 10:00 a.m. in the Four Rivers Sanitation Authority (FRSA) Board Room at 3501 Kishwaukee Street, Rockford, Illinois. All Contractors intending to bid on this project must attend the pre-bid meeting.

2 Legal Requirements

1. Public Act 100-1177 (820 ILCS 130/) entitled the "Prevailing Wage Act" requires the Bidder to comply with prevailing wages in accordance with the Illinois Department of Labor Standards.
2. Public Act 83–1030 (30 ILCS 565/) entitled the "Steel Products Procurement Act" requires that steel products used or supplied in performance of this Contract or subcontract must be manufactured or produced in the United States with three exceptions.

   The provisions of this Section shall not apply:

   a. Where the Contract involves an expenditure of less than $500.

   b. Where the executive head of the public agency certifies in writing that

      i. the specified products are not manufactured or produced in the United States in sufficient quantities to meet the agency's requirements, or

      ii. obtaining the specified products, manufactured or produced in the United States would increase the cost of the Contract by more than 10%.

   c. When its application is not in the public interest.
3. Public Act 96-929 (30 ILCS 570/) entitled the "Illinois Workers on Public Works Act" provides that Illinois residents be employed on Illinois public works projects, provided there has been a period of excessive unemployment (5%) in the State of Illinois as defined in the Act; and, further, that Illinois workers are available and capable of performing the particular type work involved.

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4. Public Act 101-0221 entitled the "Workplace Transparency Act" requires that any party to a contract adopt and promulgate written sexual harassment policies that include, as a minimum, the following information:
    a. the illegality of sexual harassment
    b. the definition of sexual harassment under Illinois State law
    c. a description of sexual harassment, utilizing examples
    d. my (our) organization's internal complaint process including penalties
    e. the legal recourse, investigative and complaint process available through the Illinois Department of Human Rights and the Illinois Human Rights Commission
    f. directions on how to contact the Department and the Commission
    g. protection against retaliation as provided by Section 6-101 of the Illinois Human Rights Act

    Upon request, this information must be provided to the Illinois Department of Human Rights and the FRSA.
5. With regard to nondiscrimination in employment, the Contractor for this project will be required to comply with the Illinois Fair Employment Practices Commission's Rules and Regulations.
6. The Contractor for this project must comply with the Occupational Safety and Health Act.
7. The Contractor for this project must comply with the Federal Drug-Free Workplace Act.
8. Public Act 96-1416 requires the Certification of Clean Construction and Demolition Debris (CCDD) and uncontaminated soil prior to disposal at a CCDD fill site. The Contractor for this project must comply with Public Act 96-1416 and be responsible for the certifications and any fees associated with the disposal at a CCDD fill site.
    a. In the event that contaminated soil is uncovered on the project, the Contractor must notify FRSA immediately. Any extra costs resulting from the presence of contaminated soil must be evaluated in accordance with FRSA General Provisions & Technical Specs for Sanitary Sewer Construction; General Conditions: Article 5 – Time Provisions and Article 8 – Changes.

2.2 Americans with Disabilities Act

The Contractor for this project will comply with all applicable requirements of the Americans with Disabilities Act of 1990 (ADA). The Contractor will hold harmless and indemnify Four Rivers Sanitation Authority (FRSA) and their representatives from all:

1. suits, claims, or actions
2. costs, either for defense (including but not limited to reasonable attorney's fees and expert witness fees) or for settlement
3. damages of any kind (including but not limited to actual, punitive, and compensatory damages)

relating in any way to or arising out of the ADA, to which said firm is exposed or which it incurs in the execution of the Contract.

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3 General Instructions

3.1 Bidder's Responsibility

Bidders are cautioned not to submit proposals until having carefully examined the entire site of the proposed work and adjacent premises and the various means of approach and access to the site, and having made all necessary investigations to inform themselves thoroughly as to the facilities for delivering, placing and handling the materials at the site, and having informed themselves thoroughly as to all difficulties involved in the completion of all the work under this Contract in accordance with its requirements.

Bidders must examine the Plans, Specifications and other Contract Documents and shall exercise their own judgment as to the nature and amount of the whole of the work to be done and for the bid prices must assume all risk of variance, by whomsoever made, in any computation or statement of amount or quantities necessary to complete fully the work in strict compliance with the Contract Documents. The Bidder must satisfy himself by making borings or test pits, or by such methods as Bidder may prefer, as to the character and location of the materials to be encountered or work to be performed. No pleas of ignorance of conditions that exist or that may hereafter exist, or of conditions or difficulties that may be encountered in the execution of the work under this Contract, as a result of failure to make the necessary examinations and investigations, will be accepted as an excuse for any failure or omission on the part of the Contractor to fulfill, in every detail, all of the requirements of the Contract Documents, or will be accepted as a basis for any claims whatsoever for extra compensation or for an extension of time.

The Contractor is responsible for verifying the location of all existing utilities in the project areas.

The Bidder, therefore, shall satisfy themself by such means as they may deem proper as to the location of all structures that may be encountered in construction of the work.

3.2 Addenda and Interpretations

No interpretation of the meaning of the Plans, Specifications, or other Contract Documents will be made to any bidder orally. Every request for such interpretation must be in writing addressed to Four Rivers Sanitation Authority, 3501 Kishwaukee Street, Rockford, Illinois. To be given consideration, such request must be received at least five (5) days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda which, if issued, will be sent by email, fax, or certified mail with acknowledgement of receipt requested, to all prospective bidders, at the respective addresses furnished for such purposes, not later than three (3) days prior to the date fixed for the opening of bids. Failure of any bidder to receive any such addenda or interpretation shall not relieve said bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the Contract Documents.

3.3 Laws and Regulations

The prospective bidder is warned that they must comply with all laws of the United States Government, State of Illinois, all ordinances and regulations of FRSA in the performance of the work under this contract. The Bidder's attention is specifically called to that provision of the General Conditions regarding the rate of wage to be paid on the work.

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3.4 Quantities Estimated Only

Bidders are warned that the estimate of quantities of the various items of work and materials, as set forth in the proposal form, is approximate only and is given solely to be used as a uniform basis for the comparison of bids. The quantities actually required to complete the contract work may be less or more than so estimated, and if awarded a contract for the work specified, the Contractor further agrees that they will not make any claim for damages or for loss of profits or for an extension of time because of a difference between the quantities of the various classes of work assumed for comparison of bids and quantities of work actually performed.

3.5 Form, Preparation, and Presentation of Proposals

For particulars as to the quantity and quality of the supplies, materials and equipment to be furnished, and the nature and extent of the work or labor to be done, prospective bidders are referred to the Contract Documents, which may be examined or obtained at the office of FRSA.

Each bid will be submitted upon the prescribed proposal form. All blank spaces for bid prices must be filled in, in ink, with the unit or total sum or both for which the proposal is made. If the proposal contains any omissions, erasures, alterations, additions or items not called for in the itemized proposal, or contains irregularities of any kind, such may constitute sufficient cause for rejection of bid. In case of any discrepancy in the unit price or amount bid for any item in the proposal, the unit price as expressed in figures will govern. In no case is the agreement form to be filled out or signed by the bidder.

Bidders may opt to contact FRSA's Engineering Department at (815) 387-7660 to obtain an electronic Proposal form. If used, this form must be attached to the hard copy proposal form and appropriately signed and executed with the bid.

The bid must be verified and be presented on the prescribed form in a sealed envelope on or before the time and at the place stated in the Advertisement for Bids, endorsed with the name of the person, firm or corporation presenting it, the date of presentation, and the title of the work for which the bid is made. If forwarded by mail, the sealed envelope containing the proposal and marked as directed above, must be enclosed in another envelope addressed to Clerk of Four Rivers Sanitation Authority, 3501 Kishwaukee Street, Rockford, Illinois, 61109 and be sent preferably by certified mail. FRSA will not accept facsimile generated bids.

3.6 Bid Security

Each proposal must be accompanied by the FRSA Bid Bond form with an acceptable Bid Security attached, in the amount specified in Advertisement for Bids. This sum is a guarantee that, if the Proposal is accepted, a contract will be entered into and its performance properly secured. FRSA's Bid Bond Form included in the bid packet must be used. No other Bid Bond form may be substituted.

Within ten (10) days after the opening of bids, the deposits of all but the three lowest bidders will be returned. The deposits of the remaining two unsuccessful bidders will be returned within three (3) days after the execution of the contract, or if no such contract has been executed within ninety (90) days after the date of opening bids. The deposit of the successful bidder will be returned only after he has duly executed the contract and furnished the required bond and insurance.

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3.7 Affidavit of Compliance

Each proposal must be accompanied by an executed Affidavit of Compliance. A separate Affidavit of Compliance form is enclosed with the Proposal packet. Failure to submit an executed Affidavit of Compliance with the proposal may constitute sufficient cause for rejection of the bid.

3.8 Statement of Qualifications

Each proposal must be accompanied by a Statement of Qualifications certifying that the bidder is registered to do business in the State of Illinois and provides documentation that the bidder possesses the appropriate financial, material, equipment, facility and personnel resources and expertise necessary to meet all contractual obligations. FRSA reserves the right to request additional information as needed to evaluate bids prior to making an award.

3.9 Comparison of Proposals

Bids on item contracts will be compared on the basis of a total computed price arrived at by taking the sum of the estimated quantities of each item, multiplied by the corresponding unit prices and including any lump sum bids on individual items, in accordance with the estimate of quantities set forth in the proposal form. Bids on lump sum contracts will be considered upon the basis of the lowest sum bid.

3.10 Acceptance of Bids and Basis of Award

The contract will be awarded, if at all, to the lowest responsive, responsible bidder. No bidder may withdraw his bid after the scheduled closing time for receipt of bids, for at least ninety (90) days. Four Rivers Sanitation Authority also reserves the right to reject any or all bids.

The bidder whose proposal is accepted will be notified of the Intent to Award as required by IEPA Water Pollution Control Loan Program (WPCLP). Once IEPA has concurred with the award, a Notice of Award will be notified by FRSA Executive Director. The bidder shall enter into a written contract for the performance of the work and furnish the required bonds and insurance certificate within ten (10) days of the date of the Notice of Award served on such bidder personally or by mailing a postpaid wrapper to such bidder at the address given in his proposal.

If the bidder does not comply with the Notice of Award, FRSA will issue a Deficiency Notice. If the bidder to whom the contract is awarded refuses or neglects to execute it or fails to furnish the required bond and insurance within five (5) days after receipt by him of Deficiency Notice, the amount of his deposit shall be forfeited and shall be retained by FRSA as liquidated damage and not as a penalty. It being now agreed that said sum is a fair estimate of the amount of damages that FRSA will sustain in case said bidder fails to enter into a contract and furnish the required bond and insurance. No plea of mistake in the bid shall be available to the bidder for the recovery of his deposit or as a defense to any action based upon the neglect or refusal to execute a contract.

3.10.1 Evaluation of Responsiveness

The responsiveness of bidders will be judged on the basis of the completeness of the bid submitted. To be responsive, a Bid must be submitted on the forms provided as part of the Bid Documents and comply with all the requirements of the Instruction to Bidders.

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3.10.2 Evaluation of Responsibility

To be judged as responsible, the bidder shall:

a. Have adequate financial resources for performance, the necessary experience, organization, technical qualifications, and facilities, or a firm commitment to obtain such by subcontracts;

b. Be able to comply with the required completion schedule for the project;

c. Have a satisfactory record of integrity, judgment, and performance, including, in particular, any prior performance on contracts from FRSA;

d. Have an adequate financial management system and audit procedures, that provide efficient and effective accountability and control of all property, funds, and assets;

e. Conform to the civil rights, equal employment opportunity and labor law requirements of the Bid Documents.

3.11 The Rejection of Bids

FRSA reserves the right to reject any bid if the evidence submitted in the statement of the bidder's qualifications, or if investigation of such bidder fails to satisfy FRSA that such bidder is properly qualified to carry out the obligations and to complete the work contemplated therein. Any or all proposals will be rejected if there is reason to believe that collusion exists among the bidders. Conditional bids will not be accepted. FRSA reserves the right to reject any and all bids and to accept the bid which they deem most favorable to the interest of FRSA after all proposals have been examined and canvassed.

3.12 Insurance and Bonding

Contractor shall provide all necessary insurance and bonds required to complete the project. No more than ten (10) calendar days subsequent to FRSA's issuance of an award letter, the Contractor shall provide documentation to prove that he has obtained all required insurance and bonds. FRSA shall be the sole judge as to the acceptability of any such proof.

Contractor shall provide and maintain all insurance and bonds as required by FRSA.

3.12.1 General

The Contractor shall ensure that:

A. All insurance policies shall be specific to the project.

B. The insurance certificate shall state: This certifies that the insurance coverage meets or exceeds that required for BNR Improvements – Aeration Basin Modifications, Capital Project No. 2304, IEPA L17-6576.

C. FRSA and Black & Veatch Corporation, shall be named as Additional Insured in all policies; this shall include the Owners Contractors Protective Policy option.

D. All completed operations coverages and bonds shall remain in force for a period of two (2) years following acceptance of the project and completed operations shall stay in force for two (2) years following completion of the project.

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3.12.2 Insurance

The Contractor shall, for the duration of the contract and for two (2) years following project acceptance, maintain the following at Contractor's sole expense:

A. Commercial General Liability: $2,000,000 combined single limit per occurrence for bodily injury, personal injury and property damage. If Commercial General Liability Insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to this project or the general aggregate limit shall be twice the required occurrence limit. The Contractor shall provide "XCU" coverage.

B. Automobile Liability: $1,000,000 combined single limit per accident for bodily injury and property damage including coverages for owned, hired or non-–owned vehicles, as applicable.

C. Workers' Compensation and Employers Liability: Workers' Compensation limits as required by statute and Employers Liability limits of $1,000,000 per accident, $1,000,000 per employee, and $1,000,000 bodily injury disease limit.

   An endorsement in favor of the Additional Insured(s) waiving the Contractor's and its insurer's rights of subrogation shall be issued with respect to the Commercial General Liability, and Workers' Compensation and Employers Liability policies. Evidence of this endorsement must be noted on the certification of insurance.

D. Builder's Risk (Course of Construction): When stated as a requirement in the Contract Documents, Contractor shall purchase and maintain builder's risk insurance utilizing an "All Risk" (Special Perils) coverage form, with limits equal to one hundred percent (100%) of the completed value of the Work with no coinsurance penalty provisions. Coverage shall be adjusted for any amendments to the Contract that affect the completed value of the Work. Builder's risk insurance shall be maintained until written confirmation of Owner's procurement of property insurance coverage. The insurance company providing the builder's risk coverage shall grant permission for FRSA to partially occupy or use the premises under construction prior to Substantial Completion without removing or affecting the coverage.

   Unless otherwise provided in the Contract Documents, the builder's risk insurance shall also cover materials to be incorporated into the Work which are stored off-site, in-transit or at the place of manufacture.

E. Umbrella: insurance limits of not less than $10,000,000 per occurrence and $10,000,000 in the aggregate. This policy shall be excess of the underlying Employers' Liability, Auto Liability, and General Liability policies without gaps in limits and provide coverage as broad as the underlying policies.

F. Errors and Omissions: If the Contractor performs professional services, Contractor shall maintain errors and omissions insurance with a limit no lower than $1,000,000 for the duration of the contract.

The policies shall contain, or be endorsed to contain, the following provisions in the General Liability and Automobile Liability Coverage's:

a. Unless otherwise provided in paragraph "c" of this section, FRSA, its officers, officials, employees and volunteers shall be covered as additional insureds as respects liability arising out of activities performed by or on insured's general supervision of the Contractor, products and completed operations of the Contractor, premises owned,

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occupied or used by the Contractor, or automobiles owned, leased, hired or borrowed by the Contractor. The coverage shall contain no special limitations on the scope of protection afforded to FRSA, its officers, officials, employees, volunteers, or agents.

b. Unless otherwise provided in paragraph "c" of this section, the Contractor's insurance coverage shall be primary insurance as respects FRSA, its officers, officials, employees, volunteers, and agents. Any insurance or self-insurance maintained by FRSA, its officers, officials, employees, volunteers, or agents shall be excess of the Contractor's insurance and shall not contribute with it.

c. As an acceptable alternative to provisions "a" and "b" of this section, the Contractor may provide owner's and contractor's protective liability insurance with coverage limits, named insureds, and in conformity with all applicable specifications of this section.

d. Any failure to comply with reporting provisions of the policies shall not affect coverage provided to FRSA, its officers, officials, employees, volunteers, or agents.

e. The Contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.

f. All Coverages — Each insurance policy required by this clause shall not be suspended, voided, canceled by either party, reduced in coverage, or in limits except after thirty (30) days' prior written notice by certified mail, return receipt requested, has been given to FRSA.

3.12.3 Best's Ratings

FRSA shall be the sole judge of whether or not said insurer's ratios are satisfactory. FRSA's decision shall be final and FRSA's bidding procedures contain no appeal provision.

1. Alphabetical Rating: For purposes of this Request for Bids, "insurer" shall mean any surety, insurance carrier, or other organization which proposes to provide an insurance policy or bond for the Contractor. No insurer or surety rated lower than "A-, Excellent" in the current *Best's Key Rating Guide* shall be acceptable to FRSA.
2. Financial Size Rating: Provided an insurer's alphabetical rating is satisfactory, FRSA will examine said insurer's financial size rating.

   a. If Best classifies the insurer XII or larger, said insurer shall be acceptable to FRSA.

   b. If Best classifies the insurer as smaller than XII, but larger than VI, said insurer shall be submitted to FRSA's Director of Management Services and/or FRSA's insurance consultant for review.

Financial Size ratings less than VII are not acceptable and will disqualify the Contractor.

3.12.4 Performance Bond and Labor & Materials Payment Bond Form

The Contractor shall provide a Performance Bond and Labor & Materials Payment Bond form acceptable to FRSA. The performance bond shall be for either 100% of the contract price or for the Contractor's unit price times the estimated number of units, as applicable.

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This Request for Bids contains a Performance Bond and a Labor & Material Bond form for the Contractor's use.

If the Contractor fails to provide acceptable bonds within the specified time, they shall be in default.

3.12.5 Correction of Contractor's Insurance or Bond Deficiencies

If FRSA determines that the Contractor's insurance or bond documentation does not conform to these specifications, FRSA shall inform said Contractor of the non-conformity. If said Contractor fails to provide conforming insurance or bond documentation within five (5) calendar days of FRSA's Deficiency Notice, they shall be in default.

3.12.6 Indemnification Clause

Contractor shall protect, indemnify, hold and save harmless and defend FRSA, its officers, officials, employees, volunteers, and agents against any and all claims, costs, causes, actions and expenses, including but not limited to attorney's fees incurred by reason of a lawsuit or claim for compensation arising in favor of any person, including the employees, officers, independent contractors, or subcontractors of the Contractor or FRSA, on account of personal injuries or death, or damages to property occurring, growing out of, incident to, or resulting directly or indirectly from the performance by the Contractor or subcontractor, whether such loss, damage, injury or liability is contributed to by the negligence of FRSA or by premises themselves or any equipment thereon whether latent or patent, or from other causes whatsoever, except that the successful bidder shall have no liability for damages or the costs incident thereto caused by the sole negligence of FRSA.

The indemnification shall not be limited by a limitation on amount or type of damages payable by or for the Contractor or its subcontractor under any employee benefits act including, but not limited, to the Workers Compensation Act.

No inspection by FRSA, its employees, or agents shall be deemed a waiver by FRSA of full compliance with the requirements of the Contract. This indemnification shall not be limited by the required minimum insurance coverages in the Contract.

3.12.7 Funding Requirements

Any contract or contracts awarded under this invitation for bids are expected to be funded by a loan from the Illinois Environmental Protection Agency (IEPA). Neither the State of Illinois nor any of its departments, agencies, or employees is or will be a party to this invitation to bids or any resulting contract. The procurement will be subject to regulations contained in the procedures for issuing loans from the State Revolving Loan Fund Program. The Davis-Bacon Act (40 USC 276a through 276a-5), and the Employment of Illinois Worker's on Public Works Act (30 ILCS CS 570). This procurement is also subject to the loan recipient's policy regarding the increased use of disadvantaged business. The loan recipient's policy requires all Bidders to undertake specified affirmative efforts at least 16 days prior to the day of the bid opening. The policy is contained in the Specifications. Bidders also required to comply with the President's Executive Order No. 11246, as amended. The requirements for bidders and contractors under this order are explained in 41 CFR 60-4.

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3.12.8 Subcontractor's Payments

Contractor shall pay Subcontractors for satisfactory performance no more than thirty (30) days from the Contractor's receipt of payment from FRSA.

3.13 Tax Exemption

FRSA is exempt, by law, from paying bidder Federal Excise Tax and Illinois Retailers' Occupational Tax. Therefore, the bidder shall exclude those taxes from his bid. FRSAs tax exemption number is E9992-3696-06. The bidder shall include all applicable taxes in his bid price.

3.14 Guarantee and Maintenance

The Contractor shall promptly repair, replace, restore or rebuild any imperfections that may arise and shall maintain, satisfactory to FRSA, all work for a period of one (1) year from the date of formal acceptance of the Contract, except where more extended guarantee and maintenance is provided for. The Contractor shall, for this period, indemnify and save harmless FRSA, its officers and agents from any injury or damage done to persons or property as a direct or alleged result of imperfections in the Contractor's work, and shall immediately assume and take charge of the defense of such action or suits in like manner and to all intents and purposes as if said actions and suits had been brought directly against the Contractor.

If the Contractor shall fail to promptly repair, replace, rebuild or restore such defective or damaged work after receiving notice given by FRSA, FRSA shall have the right to have the work done by others and to call on the Contractor and his bondsman to pay the costs thereof.

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Section II

Contract Forms

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Bid Form or Proposal

Proposal of _____ (hereinafter called "BIDDER"), organized and existing under the laws of the State of _____ doing business as _____ _____ (Insert "a corporation", "a partnership", or "an individual" as applicable) to the Four Rivers Sanitation Authority (hereinafter called "OWNER").

In compliance with your Advertisement for Bids, BIDDER hereby proposes to perform all WORK for the construction of BNR Improvements – Aeration Basin Modifications, Capital Project No. 2304, IEPA Project No. L17-6576 in strict accordance with the CONTRACT DOCUMENTS, within the time set forth therein, and at the prices stated below.

BIDDER hereby agrees to commence WORK under this contract on or before a date to be specified in the NOTICE TO PROCEED and to fully complete the PROJECT through substantial completion within **738** consecutive calendar days and through final completion within **799** consecutive calendar days thereafter. BIDDER further agrees to pay as liquidated damages, the sum of $2,000.00 and $1,000.00 for each consecutive calendar day after the time of substantial completion, and final completion, respectively. In addition, BIDDER agrees to pay as liquidated damages, the sums as indicated in the Agreement for each consecutive calendar day after the stated time of each Milestone should the WORK associated with each Milestone not be completed within the stated period.

BIDDER certifies that all iron, steel, manufactured products, and construction materials used in the project for the construction, alteration, maintenance, or repair of a publicly owned treatment works (POTW) are produced in the United States in compliance with the federal Build America, Buy America Act, Pub. L. No. 117-58 §§ 70901-52.

By submission of the bid, each bidder certifies, and in the case of a joint bid each party to the joint bid certifies, as to his or her own organization, that in connect with the bid:

(I) By submission of the bid, each bidder certifies, and in the case of a joint bid, each party certifies as to his own organization, that in connection with the bid:

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

(ii) Unless otherwise required by law, the prices quoted in the bid have not knowingly been directly or indirectly disclosed to any other bidder or to any competitor prior to opening; and

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

(II) Each person signing the bid shall certify that:

(i) He or she is the person in the bidder's organization responsible for the decision as to the prices being bid and that he or she has not participated, and will not participate, in any action contrary to (I)(i) through (I)(iii) above; or

(ii) He or she is not the person in the bidder's organization responsible for the decision as to the prices being bid, but that he or she has been authorized to act as agent certifying that

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the persons determining the prices have not participated, and will not participate, in any action contrary to (I)(i) through (I)(iii) above, and as their bidder's agent shall so certify. He or she shall also certify that he or she has not participated, and will not participate, in any action contrary to (I)(i) through (I)(iii) above.

BIDDER acknowledges receipt of the following ADDENDUM (where applicable):

_____

_____

_____

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

(1) Minimum wages

(i) All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less 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 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 confirmed under paragraph (a)(1)(ii) of this section) and the Davis Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. Sub-recipients may obtain wage determinations from the US Department of Labor's website, http://beta.sam.gov/.

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(ii)

(A) The sub-recipient, on behalf of the USEPA, shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The USEPA award official shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the sub-recipient agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the sub-recipient to IEPA. IEPA shall forward the report to the Administrator of the Wage and Hour Division, US Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise IEPA or will notify IEPA within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborer or mechanics to be employed in the classification or their representatives, and the sub-recipient do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), IEPA shall refer the questions, including the views of all interested parties and the recommendation of the sub-recipient, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise IEPA or will notify IEPA 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.

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

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or program. Provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis Bacon Act have been met. The Secretary of Labor may require the contractor to set aside, in a separate account, assets for the meeting of obligations under the plan or program.

(2) Withholding.

The sub-recipient shall upon 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, all or part of the wages required by the contract, the sub-recipient 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, 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.

(A) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the sub-recipient. Such documentation shall be available upon request of IEPA or USEPA. 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

NOT TO BE USED FOR BIDDING PURPOSES

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 Website [https://www.dol.gov/agencies/whd/government-contracts/construction/payroll-certification]. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker and shall provide them upon request to the sub-recipient, for transmission to the IEPA, USEPA, 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 contractors for its own records, without weekly submission to the sub-recipient.

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of 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, 20 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

NOT TO BE USED FOR BIDDING PURPOSES

representatives of IEPA, USEPA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency 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 sure 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 US 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 ninety (90) days of probationary employment as an apprentice in such 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 no 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 ratio 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 journeyman's 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 in 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

NOT TO BE USED FOR BIDDING PURPOSES

pursuant to and individually registered in a program which has received prior approval, evidences by form certification by the US Department of Labor, Employment and Training Administration. The ratio of trainees to journeyman 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 trainees 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 journeyman 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 is incorporated by reference in this contract.

(6) Subcontracts. The contractor or subcontractor shall insert any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the USEPA may be appropriate instruction 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 breech 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 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.

NOT TO BE USED FOR BIDDING PURPOSES

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 the contracting agency, the US 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 US Criminal Code, 18 USC 1001.

Contract Provision for Contracts in Excess of $100,000 – clauses (1) through (4) shall be inserted in full in any contract in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act.

Contract Work Hours and Safety Standards Act

(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 received compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (b)(1) of this section the contractor and any subcontractor responsible therefore shall be liable 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 mechanics, 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 calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The sub-recipient, shall upon its own action or upon written request of the USEPA award official or an authorized representative of the Department of Labor, 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 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.

NOT TO BE USED FOR BIDDING PURPOSES

(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.

The following shall be inserted in any contractor subject only to the Contract Work Hours and Safety Standards Act.

The contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for 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 USEPA and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

NOT TO BE USED FOR BIDDING PURPOSES

Basis of BID

A. Base Bid (Type I) Materials and Equipment:

1. Bidder has included in the Bid price, the installed cost of material and equipment furnished by the circled Supplier as named in the Base Bid (Type I) Material and Equipment Schedule, which is included at the end of this Bid Form.

2. The circled Supplier has been selected from listed Supplier(s) as named in the Base Bid (Type I) Material and Equipment Schedule in accordance with the Instructions to Bidders.

3. If a voluntary substitute is offered, where allowed as indicated in the Base Bid (Type I) Material and Equipment Schedule, Bidder has included the name of the Supplier and the amount to be deducted from the Bid price for the proposed substitute in the Base Bid (Type I) Material and Equipment Schedule in accordance with the Instructions to Bidders. Bidder agrees that the procedures for submission and consideration by Engineer for determining the acceptability of substitutes will be as set forth in the General Conditions and the Supplementary Conditions.

B. Base Bid (Type II) Material and Equipment:

1. Bidder has included in the Bid price, the installed cost of material and equipment furnished by Supplier A as named in the Base Bid (Type II) Material and Equipment Schedule, which is included at the end of this Bid Form.

2. Bidder has included the Supplier's price and the installed cost of each item for Supplier A in the Base Bid (Type II) Material and Equipment Schedule in accordance with the Instructions to Bidders.

3. If a voluntary substitute is offered, Bidder has included the name of the Supplier, the Supplier's price, and the installed cost for the proposed substitute in the Base Bid (Type II) Material and Equipment Schedule in accordance with the Instructions to Bidders. Bidder agrees that the procedures for submission and consideration by Engineer for determining the acceptability of voluntary substitutes will be as set forth in the General Conditions and the Supplementary Conditions.

4. Upon request by the Owner, the Bidder agrees to submit to the Owner a Supplier's price quotation.

C. Adjustment Unit Price Work, Extended Warranties, Maintenance Service Plans:

1. Bidder has included in the Bid price, the installed cost for the quantities of work described by the Adjustment Prices herein, and at the unit price provided by the Bidder.

NOT TO BE USED FOR BIDDING PURPOSES

2. Extended warranties are ineligible for Water Pollution Control Loan Program financing. The specifications call for an extended warranty in Section 43 11 15 to be provided as part of the Contract Price. The difference in value of the manufacturer's standard warranty and the extended warranty provided as part of the Bid Total shall be provided by the Bidder.

3. Equipment maintenance service plans are ineligible for Water Pollution Control Loan Program financing. The specifications call for pricing for such plans in Section 43 11 15 to be provided. Bid price adders for such plans are to be provided where indicated herein but are NOT to be included in the Bid Total.

NOT TO BE USED FOR BIDDING PURPOSES

BID SCHEDULE

Note: BIDS shall include sales tax and all other applicable taxes and fees.

TOTAL OF BID: ……$_____

Bidder is currently certified as an MBE or WBE under EPA's DBE Program? Yes _____ No ___

Respectfully submitted:

_____ (Printed Name of Firm)	By: _____ (Authorized Rep's Signature)
_____ (Printed Street Address)	By: _____ (Printed Authorized Rep's Name)
_____ (Printed City, State, Zip)	By: _____ (Printed Authorized Rep's Title)
_____ (Area Code and Phone Number)	By: _____ (Fax Number)

_____ (Authorized Rep's Email Address)

(Seal – if the BID is by a corporation)

Attest: _____

NOT TO BE USED FOR BIDDING PURPOSES

SUBCONTRACTOR LISTING

The following is a listing of proposed Subcontractors having a direct contract with the Contractor.

1.

2.

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13.

NOT TO BE USED FOR BIDDING PURPOSES

BASE BID *(TYPE I)* MATERIAL AND EQUIPMENT SCHEDULE			
Specification Section	**Item**	**Supplier**	**Amount To Be Deducted From Bid Price**
26 12 19	Pad-Mounted, Liquid-Filled, Medium-Voltage Transformers	(A) Siemens/Eaton	
		(B) Cooper Power Systems	
		(C) ABB Power T&D	
		(D) General Electric	
		(E) MGM Transformer	
		(F) Schneider Electric	
		(G) VanTran Industries	
		(H) Virginia Transformer	
		_____ (substitute)	$
26 24 23	600 Volt Class Motor Control Centers	(A) Square D	
		(B) General Electric (ABB)	
		_____ (substitute)	$
26 29 24	Variable Frequency Drives	(A) Danfoss	
		(B) ABB	
		_____ (substitute)	$
40 05 57	Valve and Gate Actuators	(A) Rotork	
		(B) Auma	
		_____ (substitute)	$
40 05 59.23	Stainless Steel Slide Gates	(A) RW Gate Company	
		(B) Whipps	
		_____ (substitute)	$
40 05 62.16	Eccentric Plug Valves	(A) DeZurik	
		(B) Milliken	
		(C) Val-Matic	
		_____ (substitute)	$
40 05 64.22	Industrial Butterfly Valves	(A) Keystone "AR2"	
		(B) DeZurik	
		(C) Bray Series 31	
		_____ (substitute)	$

NOT TO BE USED FOR BIDDING PURPOSES

40 05 78	Flap Gates	(A) Hydro Gate	
		(B) M&H	
		(C) Rodney Hunt	
		_____ (substitute)	$
40 64 00	Programmable Logic Controller (PLC)	(A) Emerson Automation PAC System RX3i Series	
		(B) Allen-Bradley ControlLogix Series	
		_____ (substitute)	$
40 64 00	Operator Interface Terminals (OITs)	(A) Advanced Technology Services	
		(B) Allen-Bradley	
		_____ (substitute)	$
40 66 11	Industrial Managed Ethernet Switches	(A) Cisco	
		(B) Hirschmann	
		(C) Moxa	
		(D) Red Lion N-Tron	
		_____ (substitute)	$
40 71 00	Thermal Dispersion Flow Meters (part of the BNR Control Valve Package)	(A) Kurz Instrument	
		(B) Sage Metering, Inc.	
		(no substitute allowed)	
43 11 15	High Speed Gearless Turbo Blower	(A) Aerzen	
		(B) APG-Neuros	
		(C) Lone Star Blower	
		(D) Sulzer	
		(E) TNE Global	
		(no substitute allowed)	
43 25 60	Submersible Horizontal Propeller Pumps	(A) Flygt Corporation	
		(B) ABS/Sulzer	
		(C) Grundfos	
		_____ (substitute)	$
46 41 23	Submersible Mixers	(A) Flygt Corporation	
		(B) ABS/Sulzer	
		_____ (substitute)	$

NOT TO BE USED FOR BIDDING PURPOSES

46 51 31	Fine Pore Diffused Aeration Equipment	(A) Aquarius	
		(B) Environmental Dynamics	
		(C) Sanitaire (Xylem)	
		(D) SSI	
		_____ (substitute)	$

BASE BID *(TYPE II)* MATERIAL AND EQUIPMENT SCHEDULE				
Specification Section	**Item**	**Supplier**	**Supplier's Price**	**Installed Cost**
40 05 64.23	BNR Control Valves, Operators, Flowmeters and Appurtenances	(A) Iris Diaphragm Control Valves - Egger	$	$
		_____ (substitute)	$	$
40 72 00	Pressure and Level Instruments (Pressure Gauges)	(A) Ashcroft	$	$
		_____ (substitute)	$	$
40 75 00	Process Liquid Analytical Multiparameter Transmitter and Probes	(A) Hach	$	$
		_____ (substitute)	$	$

NOT TO BE USED FOR BIDDING PURPOSES

ADJUSTMENT UNIT PRICE WORK, EXTENDED WARRANTIES, MAINTENANCE SERVICE PLANS

The following adjustment unit prices will apply in the event that the estimated quantities included in the Bid Total are different from final measure quantities. A single price shall be bid for each item.

ADJUSTMENT PRICES					
No.	**Item**	**Unit**	**Unit Price**	**Amount**	**Total Price**
1	Concrete Crack Repair (Section 03 01 26.66)	LF		500	
2	Concrete Surface Repair, Floor Surface Repairs, Thickness of 1/4 inch or less (Section 03 01 26.76)	SF		250	
3	Concrete Surface Repair, Floor Surface Repairs, Thickness between 1/4 inch and 1 inch (Section 03 01 26.76)	SF		150	
4	Concrete Surface Repair, Floor Surface Repairs, Thickness greater than 1 inch (Section 03 01 26.76)	SF		150	
5	Concrete Surface Repair, Vertical and Overhead Surface Repairs, Trowel Applied (Section 03 01 26.76)	SF		50	
6	Concrete Surface Repair, Vertical Repairs, Form and Pour, Thickness 6 inches or Less (Section 03 01 26.76)	SF		75	
7	Concrete Joint Repair (See Drawings)	LF		270	

NOT TO BE USED FOR BIDDING PURPOSES

Extended warranties are ineligible for Water Pollution Control Loan Program financing. The specifications call for an extended complete parts and labor warranty in Section 43 11 15 to be provided as part of the Contract Price. The difference in value of the manufacturer's standard warranty and the extended warranty provided as part of the Bid Total is as follows:

Extended warranty:

_____Dollars $_____
(words) (numbers)

Equipment maintenance service plans are ineligible for Water Pollution Control Loan Program financing. The specifications call for pricing for such plans in Section 43 11 15 to be provided. The bid price adder, NOT included in the Bid Total, of such service plans are as follows:

5-year maintenance service plan:

_____Dollars $_____
(words) (numbers)

10-year maintenance service plan:

_____Dollars $_____
(words) (numbers)

NOT TO BE USED FOR BIDDING PURPOSES

Davis-Beacon Wage Rates

"General Decision Number: IL20240012 07/26/2024

Superseded General Decision Number: IL20230012

State: Illinois

Construction Types: Heavy and Highway

Counties: Bureau, Carroll, Henry, Jo Daviess, Lee, Ogle, Rock Island, Stephenson, Whiteside and Winnebago Counties in Illinois.

HEAVY CONSTRUCTION PROJECTS (including Sewer & Water Line Construction & Drainage Projects) & HIGHWAY CONSTRUCTION PROJECTS (excluding tunnels, building structures in rest area projects, and railroad construction; bascule, suspension & spandrel arch bridges; bridges designed for commercial navigation; bridges involving marine construction, other major bridges).

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:	. 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:	. 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 spent 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

NOT TO BE USED FOR BIDDING PURPOSES

Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at http://www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/05/2024
1	03/15/2024
2	04/05/2024
3	05/17/2024
4	05/24/2024
5	05/31/2024
6	06/07/2024
7	06/28/2024
8	07/05/2024
9	07/26/2024

CARP0004-010 05/01/2024

HENRY and ROCK ISLAND COUNTIES

	Rates	Fringes
CARPENTER	$ 37.00	34.13

CARP0174-002 05/01/2024

BUREAU COUNTY

	Rates	Fringes
CARPENTER	$ 39.30	37.73

CARP0790-004 05/01/2024

CARROLL, JO DAVIESS, LEE, OGLE (Oregon and South thereof), STEPHENSON, and WHITESIDE COUNTIES

	Rates	Fringes
CARPENTER	$ 47.60	37.12

CARP0792-002 05/01/2024

OGLE (Northern One-Half), and WINNEBAGO COUNTIES

	Rates	Fringes
CARPENTER	$ 50.00	34.72

ELEC0051-005 01/01/2024

BUREAU & HENRY (Annawan, Burns, Cambridge, Galva, Kewanee,

NOT TO BE USED FOR BIDDING PURPOSES

Weller, and Westerfield TWPS)

	Rates	Fringes
Line Construction		
Groundman/Equipment Operator (All crawler type equipment larger than D-4, 15 ton crane or larger)	$ 52.63	32.5%+7.25
Groundman/Truck Driver	$ 39.92	32.5%+7.25
Lineman and Substation Technician	$ 58.58	32.5%+7.25

ELEC0145-003 12/04/2023

CARROLL (Townships of Fair Haven, Freedom, Mount Carroll, Salem, Savanna, Washington, Woodland & York), JO DAVIESS (Townships of Council Hill, Derinda, Dunleith, East Galena, Elizabeth, Guilford, Hanover, Menominee, Rawlins, Rice, Scales Mound, Vinegar Hill & West Galena), HENRY (Except Annawan, Burns, Cambridge, Galva, Kewanee, Weller, and Westerfield TWPS) ROCK ISLAND & WHITESIDE (Townships of Albany, Clyde, Erie, Fenton, Fulton, Garden Plain, Lyndon, Mount Pleasant, Newton, Prophetstown, Union Grove & Ustick) COUNTIES

	Rates	Fringes
Line Construction		
Cable Splicer	$ 53.12	33%+7.00
Dynamiter	$ 43.92	33%+7.00
Groundman Equipment Operator	$ 41.61	33%+7.00
Groundman Truck Driver	$ 36.15	33%+7.00
Groundman	$ 34.64	33%+7.00
Lineman, Technician, Heavy Equipment Operator	$ 52.67	33%+7.00

FOOTNOTE:
A. PAID HOLIDAYS: Memorial Day, Independence Day, Labor Day, and Thanksgiving Day

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ELEC0145-005 12/05/2022

CARROLL (Chadwick, Mt. Carroll, Savanna and Thompson TWPS), HENRY (Excluding Annawan, Burns, Cambridge, Galva, Kewanee, Weller, and Westerfield TWPS), JO DAVIESS (Savanna Ordnance Depot), WHITESIDE (Remainder of County), and ROCK ISLAND COUNTIES

	Rates	Fringes
CABLE SPLICER	$ 40.25	25.47
ELECTRICIAN	$ 39.25	25.39

ELEC0176-005 06/01/2023

NOT TO BE USED FOR BIDDING PURPOSES

BUREAU and HENRY (Annawan, Burns, Cambridge, Galva, Kewanee, Weller, and Wethersfield Twps) COUNTIES

	Rates	Fringes
ELECTRICIAN.....	$ 50.45	44.96

ELEC0196-002 03/06/2023

CARROLL (Townships of Cherry Grove, Elkhorn Grove, Lima, Rock Creek, Shannon & Wysox), JO DAVIESS (Townships of Apple River, Berreman, Pleasant Valley, Nora, Rush, Stockton, Thompson, Wards Grove, Warren & Woodbine), LEE, OGLE, STEPHENSON, WHITESIDE (Townships of Genesee, Hahnaman, Hopkins, Hume, Jordan, Montmorency, Sterling & Tapico) & WINNEBAGO COUNTIES

	Rates	Fringes
Line Construction		
Equipment Operator.....	$ 49.22	34%+7.00+A
Groundman Truck Driver.....	$ 39.19	34%+7.00+A
Groundman.....	$ 37.81	34%+7.00+A
Lineman, Substation Technician, Cable Splicing Technician, Digger Operator, Crane Operator 20 tons and above, and Signal Technician.....	$ 59.17	34%+7.00+A

FOOTNOTE: A. PAID HOLIDAYS: Memorial Day, Independence Day, Labor Day, and Thanksgiving Day

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ELEC0364-002 06/03/2024

CARROLL (Cherry Grove, Shannon, Rock Creek, Lima, Wysox, Elkhorn Grove TWPS), JO DAVIESS (Warren, Rush, Nora, Stockton, Wards Grove, Pleasant Valley, and Berrenman TWPS), LEE, OGLE, STEPHENSON, WHITESIDE (Genesee, Jordan, Hopkins, Sterling, Hume, Montgomery, Tampico, and Hahnaman TWPS) and WINNEBAGO COUNTIES

	Rates	Fringes
ELECTRICIAN.....	$ 58.00	42.48

ENGI0150-004 06/01/2024

CARROLL, JO DAVIESS, LEE, OGLE, STEPHENSON, WHITESIDE (Eastern Half) and WINNEBAGO COUNTIES

	Rates	Fringes

OPERATOR: Power Equipment

NOT TO BE USED FOR BIDDING PURPOSES

Group 1	$ 52.40	49.50
Group 2	$ 51.85	49.50
Group 3	$ 50.55	49.50
Group 4	$ 49.10	49.50
Group 5	$ 47.65	49.50

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Asphalt Plant; Asphalt Heater and Planer combination; Asphalt Spreader; Asphalt Silo Tender; Autograder, GOMACO or similar; Belt Loader; Caisson Rigs; Car Dumper, Central Redi-Mix Plant; Combination Backhoe Front End Loader Machine (1 cu yd or over Backhoe bucket with attachments); Backhoe with Shear attachment; Concrete Breaker (truck mounted); Concrete Conveyor; Concrete Paver over 27E cu ft; Concrete Placer; Concrete Tube Float; Cranes, all attachments; Cranes, Hammerhead, Linden, Peco and machines of a like nature; Creter Crane; Crusher, stone; Derricks; Derrick Boats; Derricks, traveling; Dredges; Field Mechanic Welder; Formless Curb and Gutter Machine; Gradall and machines of a like nature; Grader, Elevating; Grader, Motor Grader, Motor Patrol, Auto Patrol, Form Grader, Pull Grader, Subgrader; Guard Rail Post Driver mounted; Hoists, one, two, and three Drum; Hydraulic Backhoes; Locomotive, all Mucking Machine; Pile Drivers and Skid Rig; Pre-Stress Machine; Pump Cretes Dual Ram, Rock Drill-Crawler or Skid Rig; Rock Drill truck mounted; Roto Mill Grinder, 36"" and over; Roto Mill Grinder, less than 36""; Slip- Form Paver; Soil Test Drill Rig, truck mounted; Straddle Buggies; GCI Crane and similar; Hydraulic Telescoping Form (tunnel); Tie Back Machine; Tractor Drawn Belt Loader: Tractor Drawn Belt Loader with attached Pusher; Tractor with boom; Tractaire with attachment; Traffic Barrier Conveyor Machine; Raised or Blind Hoe Drill (Tunnel & Shaft); Trenching Machine; Truck Mounted Concrete Pump with boom; Truck mounted Concrete Conveyor; Underground Boring and/or Mining Machines under 5 ft; Wheel Excavator & Widener (Apsco)

GROUP 2: Batch Plant; Bituminous Mixer; Bobcats over .75 cu yd; Boiler and Throttle Valve; Bulldozer; Car Loader Trailing Conveyors, Combination Backkhoe Front End Loader Machine, less than 1 cu yd Backhoe Bucket with attachments; Compressor and Throttle Valve; Compressor, common receiver (3); Concrete Breaker or Hydro Hammer; Concrete Grinding Machine; Concrete Mixer or Paver 7S series to and including 27 cu ft; Concrete Spreader; Concrete Curing Machine, Burlap Machine; Belting Machine and Sealing Machine; Conveyor Muck Cars (Haglund or similar type); Finishing Machine-Concrete; Greaser Engineer; Highlift Shovels or Front End Loader; Hoist-Sewer Dragging Machine; Hydraulic Boom Trucks, all attachments; Locomotives, Dinky; Pump Cretes, Squeeze Cretes-Screw Type pumps, Gypsum Bulker and Pump; Roller Asphalt; Rotary Snow Plows; Rototiller, Seaman, etc self-Propelled; Scoops-Tractor Drawn; Self-propelled Compactor; Spreader-Chip- Stone etc; Scraper; Scraper-Prime Mover in Tandem regardless of size (add $1.00 to to Group 2 hourly rate for each hour and for each machine attached thereto); Tank Car Heater; Tractors,

NOT TO BE USED FOR BIDDING PURPOSES

Push, pulling Sheeps Foot, Disc, or Compactor, etc; Tug Boats

GROUP 3: Boilers; Brooms, all power propelled; Cement Supply Tender; Compressor, Common Receiver (2); Concrete Mixer, two bag and over; Conveyor, Portable; Farm type Tractors used for mowing, seeding, etc; Fireman on Boilers; Forklift Trucks; Grouting Machines; Hoists, Automatic; Hoists, all Elevators; Hoists, Tugger single Drum; Jeep Diggers; Pipe Jacking Machines; Post- hole Digger; Power Saw, Concrete, Power Driven; Pug Mills; Rollers, other than asphalt; Seed and Straw Blower; Steam Generators; Stump Machine; Winch Trucks with A-Frame; Work Boats; Tamper-Form motor driven

GROUP 4: Air compressor - Small 185 and under (1 to 5 not to exceed a total of 300 ft); Air Compressor - Large over 185; Asphalt Spreader Backend Man; Combination - Small Equipment Operator; Generators - Small 50 kw and under; Generators - Large , over 50 kw; Heaters, Mechanical; Hydraulic power unit (Pile Driving, Extracting or Drilling); Light Plants All (1 to 5); Pumps, over 3"" (1 to 3, not to exceed a total of 300 ft); Pumps, Well Points; Tractaire; Welding Machines (2 through 5); Winches, 4 small electric drill winches; Bobcats up to and including .75 cu yd

GROUP 5: Oilers

PREMIMUM PAY:

Long Boom :
Cranes & Derricks 90' to 150' including jib receive an extra $.50 per hour. Cranes & Derricks over 150' including jib receive an extra $.50 per hour plus an additional $.10 for each additional 10' of boom or jib.

Capacity Pay:
Cranes & Derricks with maximum capacity exceeding 50 ton with less than 90' of boom or jib shall be compensated $.01 per hour for each ton of the rated capacity in excess of 50 ton.

Long Boom pay and capacity pay cannot be combined.

Crane mounted earth auger, raised and blind hole drills, and truck mounted drill rigs receive an extra $.50 per hour.

Creter Cranes:
When the Creter Crane is equipped with a conveyor system capable of extending 70' or more, the engineer shall receive an extra $.50 per hour.

Truck Mounted Concrete Pumps:
When the Truck Mounted Concrete Pump is equipped with a boom, which is capable of extending 90' or more, the engineer shall receive $.50 per hour extra.

Truck Mounted Concrete Conveyor:
Truck Mounted Concrete Conveyors equipped with conveyors that are capable of extending 90' or more, the engineer shall

NOT TO BE USED FOR BIDDING PURPOSES

receive an extra $.50 per hour.

Underground Work:
Employees working in tunnels, shafts, etc. shall be paid an additional $.40 per hour. Employees working under air pressure 1/2 pound to 7 pounds shall receive an additional $.50 per hour. Employees working under air pressure of 7 pounds or over shall receive $.65 per hour more.

Mining Machines- Boring Machines:
The crew operating and maintaining the Mining Machines shall be compensated an additional $.50 per hour.

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* ENGI0150-016 06/01/2023

BUREAU COUNTY (The portion lying east and north of Highway 26 from the Town or Village of Bureau to the northern Bureau County line.)

	Rates	Fringes
OPERATOR: Power Equipment		
Group 1	$ 54.80	47.70
Group 2	$ 54.25	47.70
Group 3	$ 52.20	47.70
Group 4	$ 50.80	47.70
Group 5	$ 49.60	47.70

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Asphalt Plant*; Asphalt Heater and Planer combination; Asphalt Heater Scarfire*; Asphalt Spreader; Autograder; ABG Paver*; Backhoes with Caisson Attachment*;Belt Loader*;Caisson Rigs*; Car Dumper, Central Redi-Mix Plant*; Combination Backhoe Front End Loader Machine (1 cu yd or over Backhoe bucket with attachments); Concrete Breaker (truck mounted)*; Concrete Conveyor; Concrete Paver over 27E cu ft*; Concrete Placer*; Concrete Tube Float; Cranes, all attachments*; Cranes, Hammerhead, Linden, Peco and machines of a like nature*; Creter Crane; Crusher, stone etc.; All Derricks; Derrick Boats; Derricks, traveling*; Dredges*; Field Mechanic Welder; Formless Curb and Gutter Machine; Gradall and machines of a like nature; Grader, Elevating; Grader, Motor Grader, Motor Patrol, Auto Patrol, Form Grader, Pull Grader, Subgrader; Guard Rail Post Driver mounted*; Hoists, one, two, and three Drum; Hydraulic Backhoes; Locomotive, all Mucking Machine; Pile Drivers and Skid Rig*; Pre- Stress Machine; Pump Cretes Dual Ram (Requires frequent lubrication and water)*; Rock/Track Tamper; Rock Drill truck mounted; Roto Mill Grinder, 36"" and over*; Roto Mill Grinder, less than 36""; Slip- Form Paver*; Soil Test Drill Rig, truck mounted*; Straddle Buggies; Hydraulic Telescoping Form (tunnel); Tractor Drawn Belt Loader*; Tractor Drawn Belt Loader with attached Pusher (two engineers); Tractor with boom; Tractaire with attachments; Raised or Blind Hoe Drill (Tunnel & Shaft)*; Trenching Machine; Truck Mounted

NOT TO BE USED FOR BIDDING PURPOSES

Concrete Pump with boom; Underground Boring and/or Mining Machines 5 ft in diameter and over tunnel, etc.*; Underground Boring and/or Mining Machines under 5 ft; Wheel Excavator* & Widener (Apsco)

GROUP 2: Batch Plant; Bituminous Mixer; Boiler and Throttle Valve; Bulldozer; Car Loader Trailing Conveyors; Combination Backkhoe Front End Loader Machine, less than 1 cu yd Backhoe Bucket with attachments; Compressor and Throttle Valve; Compressor, common receiver (3); Concrete Breaker or Hydro Hammer; Concrete Grinding Machine; Concrete Mixer or Paver 7S series to and including 27 cu ft; Concrete Spreader; Concrete Curing Machine, Burlap Machine; Belting Machine and Sealing Machine; Concrete Wheel Saw; Conveyor Muck Cars (Haglund or similar type); all Drills; Finishing Machine-Concrete; Greaser Engineer; Highlift Shovels or Front End Loader; Hoist-Sewer Dragging Machine; Hydraulic Boom Trucks, all attachments; Hydro-Blaster requires two operators (one Group 4); Hydraulic Boom Trucks (All attachments);Locomotives, Dinky; Off-Road Hauling Units (including articulating); Laser Screed; Pump Cretes, Squeeze Cretes-Screw Type pumps, Gypsum Bulker and Pump; Rock Drill-Crawler or Skid*; Rock Drill-Truck Mounted*; Roller Asphalt; Rotary Snow Plows; Rototiller, Seaman, etc. Self- Propelled; Scoops-Tractor Drawn; Self-propelled Compactor; Spreader-Chip-Stone etc; Scraper; Scraper-Prime Mover in Tandem regardless of size (add $1.00 to to Group 2 hourly rate for each hour and for each machine attached thereto); Tank Car Heater; Tractors, Push, Pulling Sheeps Foot, Disc, Compactor, etc; Tug Boats

GROUP 3: Boilers; Brooms, all power propelled; Cement Supply Tender; Compressor, Common Receiver (2); Concrete Mixer, two bag and over; Conveyor, Portable; Farm type Tractors used for mowing, seeding, etc; Fireman on Boilers; Forklift Trucks; Grouting Machines; Hoists, Automatic; Hoists, all Elevators; Hoists, Tugger single Drum; Jeep Diggers; Low Boys; Pipe Jacking Machines; Post-Hole Digger; Power Saw, Concrete, Power Driven; Pug Mills; Rollers, other than asphalt; Seed and Straw Blower; Steam Generators; Stump Machine; Winch Trucks with A-Frame; Work Boats;Tamper-Form motor driven

GROUP 4: Air compressor - Small 250 and under (1 to 5 not to exceed a total of 300 ft); Air Compressor - Large over 250; Combination - Small Equipment Operator; Generators - Small 50 kw and under; Generators - Large, over 50 kw; Heaters, Mechanical; Hydraulic power unit (Pile Driving, Extracting or Drilling); Hydro-Blaster requires two operators (one Group 2); Light Plants All (1 to 5); Pumps, over 3"" (1 to 3, not to exceed a total of 300 ft); Tractaire; Welding Machines (2 through 5); Winches, 4 small electric drill winches

GROUP 5: Bobcats (All); Brick Forklifts; Directional Boring Machine Locator; Oilers

*Equipment requires an Oiler

NOT TO BE USED FOR BIDDING PURPOSES

ENGI0150-020 06/01/2024

HENRY (Western Half), ROCK ISLAND, and WHITESIDE (Western Half) COUNTIES

	Rates	Fringes
OPERATOR: Power Equipment		
Group 1	$ 42.75	39.45
Group 2	$ 40.75	39.45
Group 3	$ 38.10	39.45
Group 4	$ 37.05	39.45

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Crane (Friction or Hydraulic, regardless of size or attachments); Tow or Push Boat

GROUP 2: Asphalt Heater-Planer Unit; Asphalt Paver; Asphalt Paver Screed; Asphalt Plant; Automatic Curbing Machine; Backfiller (throw bucket); Blastholer Self-Propelled Rotary Drill or Similar Machines; Boom Tractor or Side Boom; Boring Machine (Directional, Vertical or Horizontal); Building Hoist (1,2 or 3 drums); Caisson Auguring Machines; Central Redi-Mix Plant; Chip Spreader; Cleaning & Priming Machine; Combination Backhoe Front End Loader; Combination Concrete Finishing Machine and Float; Concrete Breaker or Hydro-Hammer; Concrete Conveyor or Pump; Concrete Paver; Concrete Spreader; Concrete Wheel Saw (Large self-propelled); Crusher (Stone, Concrete, Asphalt, etc.); Curing-Tinning Machine; Dipper Dredge Crane man; Dipper Dredge Operator; Dual Purpose Truck (Boom, Winch, etc.); Excavator; Farm-Type Tractor Operating Scoop or Scraper or with Power Attachment; Forklift (6000 lb. capacity); Grader, Motor Grader, Motor Patrol, Auto Grader, Form Grader, Pull Grader, Sub Grader, Elevating Grader; Group Equipment Greaser; Guard Rail Post Driver; Hoists; Hydraulic Dredge Leverman or Engineer; Hydro-Vac Truck Mounted or Pull Type, and Similar Equipment; Laser Screed; Loader (Track, Rubber Tire or Articulated); Locomotive Engineer; Mechanic-Welder; Mechanical Loaded Log Chippers or Similar Machines; Milling Machine; Mucking Machine; Pile Driver; Pipe Bending; Pug Mill; Road Widener-Shoulder Spreader; Scraper (self-propelled); Self-Propelled Roller or Tire Roller (on Asphalt or Blacktop), Sheep Foot or Pad Foot Compactor; Shovel; Slip Form Paver; Steel Track-Type Tractor (Dozer, Push Cat, etc.); Transfer or Shuttle Buggy; Trenching Machine (40 H.P. & over); Work Boat.

GROUP 3: Articulated Off-Road Haul Unit; Asphalt Booster; Boiler (Engineer or Fireman); Conveyor Over 20 H.P.; Distributor; Driver on Truck Crane or Similar Machines; Elevator; Farm-Type Tractor (Without Power Attachment); Fireman & Pump Operator at Asphalt Plant; Forklift (Less than 6000 lb. capacity); Grout Pump; Light Plant; Mechanical Broom; Mud Jack; Self-Propelled Roller (Other than listed in Group 2); Straddle Carrier; Trench Machine

NOT TO BE USED FOR BIDDING PURPOSES

(Under 40 H.P.).

GROUP 4: Air Compressor (400 C.F.M. or over); Compact Loader (Rubber Tire, Track & Utility); Engine Driven Welding Machine; Mechanical Heater (other than steam boiler); Small Outboard Motor Boat (Safety Boat & Life Boat); Water Pump (More than one well point pump).

ENGI0649-005 04/01/2024

HENRY (Eastern Half) and BUREAU (Western Half) COUNTIES

	Rates	Fringes
OPERATOR: Power Equipment		
Group 1	$ 46.67	40.35+A
Group 2	$ 43.14	40.35+A
Group 3	$ 37.36	40.35+A

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Cranes: Overhead Cranes; Hydro Crane; Shovels: Crane type Backfiller; Tower Cranes-Mobile, Crawler, Stationary; Derricks, Hoist (3 drum); Draglines; Brott Yumbo & similar types considered as Cranes; 360 Degrees Swing Excavator, Backhoe; Derrick Boats; Pile Driver and Skid Rigs; Clam Shell; Locomotive Cranes; Road Pavers (Single Drum, Dual Drum, Tri Batcher); Motor Patrol & Power Blades (Dunmore, Elevating & similar types); Mechanics; Central Concrete Mixing Plant Operator, Asphalt Batch Plant Operator and Plant Engineer; Gradall, Caisson Rigs; Skimmer Scoop, Koehring Scooper; Dredges (all types); Hoptoe; All Cherry Pickers; Work Boat; Ross Carrier; Helicopter; Dozer; Tournadozer; Tournapulls (all & similar types); Concrete and all recycle machines, Multiple Unit Earth Movers; 75 cents per hour for each scoop over one; Scoops (all sizes); Pushcats; Endloaders (all types); Asphalt Surfacing Machine; Slip Form Paver; Rock Crusher; Material Crusher (outside pits and quarries); Screening Plants (outside pits and quarries); Tunnel Boring Machine; Heavy Equipment Greaser (Top Greaser on Spread); CMI, Auto Grade, CMI Belt Placer (3 track & similar types); Side Booms; Starting Engineer on Pipeline or Construction (eleven 11 pieces or more); Asphalt Heater & Planer Combination; Wheel Tractors with Dozer, Hoe or End Loader attachements; CAT Earthwork Compactors and similar types; Blaw Knox Spreader & similar types; Trench Machines; Pump Crete, Belt Crete, Squeeze Crete, Screw Type Pumps & Gypsum; Creter Crane; Concrete Pump Truck; Formless Finishing Machines; Flaherty Spreader or similar types; Screedman on Laydown Machine; Vermeer Concrete Saw; Laser Screed; Span Saw; Dredge Leverman; Dredge Engineer; Lull or similar type; Hydro-Boom Truck; Guard Rail Machine.

GROUP 2: Bulker & Pump; Power Launches; Boring Machine & Pipe Jacking Machine; Dinkeys; Carts, powered haul unit for a boring machine; P-H one Pass Soil Cement Machines and similar types: Wheel Tractor; Back Fillers; Euclid Loader;

NOT TO BE USED FOR BIDDING PURPOSES

Fork LIfts; Jeep with Ditching Machines or other attachments; Tuneluger; Automatic Cement & Gravel Batching Plants; Mobile Drills Soil Testing and similar types); Pugmill with Pump; All 1 and 2 Drum Hoists; De-watering Systems; Straw Blower; Hydro Seeder; Bump Grinders, Self Propelled; Assistant Heavy Equipment Greaser; Apsco Spreader Tractors (Track-Type w/o Power Units pulling Rollers); Rollers on Asphalt, Brick, or Macadam; Concrete Breakers; Concrete Spreaders; Cement Strippers; Cement Finishing Machines & CMI Texture & Reel Curing Machines; Vibro-Tampers & similar types self-propelled; Mechanical Bull-Floats; Self-Propelled Concrete Saw; Truck Mounted Power Saws; Curb Cutters; Mixers over 3 bags to 27E; Winch & Boom Trucks; Tractor pulling Power Blade or Elevating Grader; Porter Rex Rail; Clary Screed; Mule pulling Rollers; Pugmill w/o Pump; Barber Greene or similar Loaders; Track Type Tractor with power unit attached; Fireman; Spray Machine on paving; Curb Machine; Paved Ditch Machine; Power Broom; Self-Propelled Sweepers; Self-Propelled Conveyors; Power Subgrader; Oil Distributor; Straight Tractor; Truck Crane Oiler; Truck Type Oilers; Directional Boring Machine; Horizontal Directional Drill; Articulating End Dump Vehicles; Starting Engineer (6 to 10 pieces).

GROUP 3: Straight Framed Truck and Truck Mounted Vac Unit, Starting Engineer (3 to 5 pieces); Trac Air Machine w/o attachments; Rollers, 5 tons & under on earth & gravel; Form Grader; Bulk Cement Plant; Oilers.

- Escalated Rate on Crane, Derrick Booms, and Tower Cranes: Additional $1.00 per hour over scale when Crane or Derrick is positioned 50 ft. or more above adjacent ground level or water level. $.05 per hour, per foot, over 90 feet including jib. $0.02 per hour per ton - over 50-ton capacity.

- Operating engineers who operate Lattice Boom Crawler Cranes, Lattice Boom Truck Cranes, Telescopic Boom Cranes less than 17.5 Tons, Tower Cranes, Overhead Cranes and have been Certified by the National Commission for the Certification of Crane Operators on the equipment they operate shall receive $1.60 per hour over scale.

A. On designated Hazardous Waste jobs, operators shall receive:
Level A add $4.00 to the appropriate group rate; Levels B and C add $3.00 to the appropriate group rate; and Level D add $2.00 to the appropriate group rate.

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* IRON0111-003 07/01/2024

CARROLL (Thompson, Savanna & vicinity), HENRY, JO DAVIESS (East Dubuque, Galena, Hanover, & vicinity), KNOX (Galesburg and area North of the City), MERCER (except Southwest Part), ROCK ISLAND, WARREN (includes Northwest Part), and WHITESIDE (Western Half) COUNTIES

NOT TO BE USED FOR BIDDING PURPOSES

	Rates	Fringes
IRONWORKER	$ 37.50	30.99

IRON0444-004 06/01/2022

Bureau County

	Rates	Fringes
IRONWORKER	$ 45.50	38.90

IRON0498-002 06/01/2021

CARROLL (Remainder), JO DAVIESS (Remainder), LEE, OGLE, STEPHENS, WHITESIDE (Eastern Half), and WINNEBAGO COUNTIES

	Rates	Fringes
IRONWORKER	$ 41.37	44.41

LABO0032-002 05/01/2024

WINNEBAGO COUNTY

	Rates	Fringes
LABORER		
General Laborer	$ 44.59	36.11
Skilled Laborer	$ 47.94	36.11

LABORER DESCRIPTIONS

General Laborer: Carpenter Tender, Tool Cribman, Fireman or Salamander Tender, Flagman, Gravel Box Man, Bumpman & Spotter, Form Handler, Material Handler, Fencing Laborer, Cleaning Lumber, Pit Man, Material Checker, Landscaper, Unloading Explosives, Laying of Sod, Planting of Trees, Asphalt Workers with Machine & Layers, Asphalt Plant Laborer, Wrecking, Fire-proofing, Driving Stakes, Stringlines for All Machinery, Window Cleaning, Demolition Worker, Explosive Handling, Trimming & Removal of Trees, Multi-Plate Pipe, Pilot Cars for Traffic Control, Power Rigging

Skilled Laborer: Asbestos abatement worker, Hazardous Waste Worker, Handling Any Materials with any Foreign Matter Harmful to Skin or Clothing, Track Labor, Cement Handler, Chloride Handler, Unloading & Laborers with Steel Workers & Re-Bars, Wet Concrete Workers, Tunnel Tenders in Free Air, Batch Dumper, Mason Tender, Kettle & Tar Man, Tank Cleaner, Platsic Installer, Scaffold Worker, Motorized Buggies or Motorized Unit Used for Wet Concrete or Handling of Building Materials, Laborers with De-Watering Systems, Sewer Workers Plus Depth, Vibrator Operator, Cement Silica, Clay, Fly Ash, Lime & Plasters Handlers (Bulk or Bag); Cofferdam Worker Plus Depth, Concrete Paving, Placing

NOT TO BE USED FOR BIDDING PURPOSES

Cutting & Tying of Reinforcing, Deck Hand, Dredge Hand and Shore Laborer, Bankman on Floating Plant, Grade Checker, Power Tools, Front End Man on Chip Spreader, Caisson Worker Plus Depth, Gunnite Nozzleman, Leadman on Sewer Work, Welder, Cutter, Burner & Torchman, Chain Saw Operator, Jackhammer & Drill Operator, Layout Man and/or Tile Layer, Steel Form Setter - Street & Highway, Air Tamping Hammerman, Signal Man On Crane, Concrete Saw Operator, Screenman on Asphalt Paver, Tending Masons With Hot Material or Where Foreign Materials are used, Mortar Mixer Operator, Multiple Concrete Duct - Leadman, Luteman, Asphalt Raker, Curb Asphalt Machine Operator, Ready Mix Scaleman Permanent Portable or Temporary Plant, Laborer Handling Masterplate or Similar Materials, Laser Beam Operator, Concrete Burning Machine Operator, Coring Machine Operator, Plaster Tender, Underpinning & Shoring of Buildings, Pump Man, Manhole & Catch Basin, Dirt & Stone Tamper, Hoseman on Concrete Pump.

LABO0309-001 01/01/2024

ROCK ISLAND COUNTY

	Rates	Fringes
LABORER		
GROUP 1	$ 33.77	23.60
GROUP 2	$ 34.27	23.60
GROUP 3	$ 34.90	23.60

LABORER CLASSIFICATIONS

GROUP 1: Flagman, Dumpman, Spotter, Broom Man, Removal of Trees, Fencing Laborers, Cleaning of Forms or Lumber (in Bone Yard), Moving and/or Maintenance of Flares and Barricades, Operation of all Hand, Electric, Air, Hydraulic, or Mechanically Powered Tools under the the Laborers' including Jackhammers, Tampers, Air Spades, Augers, Concrete Saws, Chain Saws, Utility Saws, Rock Drills, Vibrators, Mortar Mixer, Power and Hand Saw (When Clearing Timber), General Laborer (Not Elsewhere Covered), Craft- Tender, Material Checker, Material Handler, Form Handler, Concrete Dumper, Puddler, Explosives Handler, Center Strip, Reinforcing in Concrete, Wire Mesh Handler and Installer, Prime Mover or any Mechanical Device Taking the Place of Concrete Buggy or Wheel-Barrow, Sandpoint Setter, Asphalt Kettleman, Sheeting Hammer Drivers, Laying and Joining of Telephone Conduit, Gas Distribution Men, Pipe Setter On Laterals, Drain Tiles, Culvert Pipe, and Storm Sewer Catch Basin Leads, Catch Basins, Manholes, Batch Dumpers, Tank Cleaners, Cofferdam Worker, Bankman on Floating Plant, Jointman With Pipelayers Back-up Man (Corker, Joint Maker) With Pipe Setter On Sewer and Water Mains, Batterboard Man or Laser Operator on Sewer and Water Main, Laborer in Ditch, or Tunnel, on Sewer or Water Mains and Telephone Conduit, Cutters, Burners, Torchman, Gravel Box Man, Asphalt Plant Laborer, Concrete Plant Laborer, Deck Hand, Unloading of Steel and Rebar, Laser Beam

NOT TO BE USED FOR BIDDING PURPOSES

Operator, Wrecking Laborers.

GROUP 2: Asphalt Raker or Luteman, Head Form Setter, Head Dynamite Man (Powderman) Head String or Wireline Man (on paving), Pipe Setter on Sewer or Water Main, Gunnite Nozzle Man, Asphalt or Concrete Curb Machine Operator, Head Grade Man, Head Tunnel Miner, Concrete Burning Machine Operator, Coring Machine Operator, Welder, Hazardous Waste Worker, Asbestos Abatement Worker.

GROUP 3 - Concrete Specialist

LABO0393-002 05/01/2022

BUREAU COUNTY

	Rates	Fringes
LABORER		
Group 1	$ 34.11	30.07
Group 2	$ 34.31	30.07
Group 3	$ 34.51	30.07
Group 4	$ 35.11	30.07
Group 5	$ 36.11	30.07

LABORER CLASSIFICATIONS

GROUP 1: UNSKILLED - All classifications not listed below

GROUP 2: SEMI-SKILLED - Handling of materials treated with oil, creosote, asphalt and/or foreign material harmful to skin or clothing; Track laborers; Cement handlers; Chloride handlers; Unloading and laborers with Steel Workers and Re-bars; Concrete Workers)wet); Batch Dumpers; Mason Tenders; Kettle and Tar Men; Tank Cleaners; Plastic Installers; Scaffold Workers; Motorized buggies or motorized ubit used for wet concrete or handling of building materials; Laborers with de-watering systems; Sewer workers plus depth; Vibrator Operators; Motor Mixer Operators; Cement, silica, clay, fly ash, lime and plasters, handlers (bulk or bag); Cofferdam workers plus depth; Concrete paving, placing, cutting and tying of reinforcing; Deck hand; dredge hand and shore laborers; Backmen on floating plant; Asphalt workers with machine and layers; Grade checker; Power tools; Driving all stakes, stringlines for all machinery; Setting and building of manholes and catch basins; Stripping of all concrete forms except paving forms; All concrete paving and slope walls, placing, cutting and tying of reinforcing (re-bars and wire mesh)

GROUP 3: SKILLED - Mason Tenders; Caisson Workers plus depth; Gunnite Nozzle Men; Lead Man on Sewer Work; Welders, Cutters, Burners & Torchmen; Chain Saw Operators; Paving Breaker, Jackhammer & Drill Operators; Layout Man and/or tile layer; Steel Form Setters (Street & Hwy); Air Tamping hammerman; Signal man on Crane; Concrete Saw Operator; Screenman on Asphalt Pavers; Front End Man on Chip Spreader; Laborers tending masons with hot materials or

NOT TO BE USED FOR BIDDING PURPOSES

where foreign materials are used; Multiple Concrete duct-leadman; Luteman; Asphalt Raker; Curb Asphalt Machine Operator; Ready mix scalemen, permanent, portable or temporary plant; Laborers handling masterplate or similar materials; Laser Beam Operator; Coring Machine Operator; Plasterer Tenders; Underpinning and Shoring of Building; Material selector when working with firebrick or castable materials; Fire Watch; Signalling of all power equipment; Tree Topper or Trimmer

GROUP 4: Dynamite man

GROUP 5: Asbestos Abatement Worker and Hazardous Waste Worker

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LABO0538-005 05/01/2024

HENRY COUNTY

	Rates	Fringes
LABORER		
General Laborer.....	$ 35.23	28.10
Skilled Laborer.....	$ 36.23	28.10

LABORER CLASSIFICATIONS

General Laborer: All classifications not listed below.

Skilled Laborer: Flaggers; Traffic Control and all associated work; Handling of materials treated with oil, creosote, asphalt and/or foriegn material harmful to skin or clothing; Track Laborers; Chloride Handlers; Unloading and Laborers with Steel Workers and Re-bars; Concrete Workers (wet); Batch Dumpers; Mason Tenders; Kettle and Tar Men; Plastic Installers; Scaffold Workers; Motorized buggies or motorized unit used for wet concrete or handling of building materials; Laborers with de-watering systems; Sewer workers plus depth; Vibrator Operators; Motor Mixer Operators; Cement Silica, clay, fly ash, lime and plasters, handlers (bulk or bag); Cofferdam Workers plus depth; Concrete paving, placing, cutting and tying of reinforcing; Deckhand, dredge hand and shore laborers; Backmen on floating plant; Asphalt Workers with machine and layers; Grade Checker; Power Tools; Stripping of all concrete forms except paving forms, dumpmen and spotters, when necessary; Caisson Workers plus depth; Gunnite Nozzle Men; Tunnel Helpers in free air; Rod and Chainmen; Welders, Cutters, Burners, and Torchmen; Chainsaw Operator; Paving Breaker, Jackhammer and Drill Operator, Layout man and /or Tile Layer; Steel Form Setters - street and highway, Air Tamping Hammerman; Signalman on Crane Concrete Saw Operator; Screedman on Asphalt Pavers; Front End Man on Chip Spreader; Multiple Concrete Duct; Luteman, Asphalt Raker; Curb Asphalt Machine Operator.

LABO0727-002 05/01/2024

NOT TO BE USED FOR BIDDING PURPOSES

CARROLL, JO DAVIESS, LEE, OGLE, STEPHENSON, and WHITESIDE COUNTIES

	Rates	Fringes
LABORER		
General Laborer	$ 46.72	34.05
Skilled Laborer	$ 50.07	34.05

LABORER CLASSIFICATIONS

General Laborer: Carpenter Tender, Tool Cribman, Fireman or Salamander Tender, Flagman, Gravel Box Man, Dumpman & Spotter, Form Handler, Material Handler, Fencing Laborer, Cleaning Lumber, Pit Man, Unloading Explosives, Removal of Trees, Asphalt Workers With Machine & Layers, Asphalt Plant Laborer, Wrecking, Fireproofing, Driving Stakes, Stringlines for all Machinery, Window Cleaning.

Skilled Laborer: Handling any Materials with any Foreign Matter Harmful to Skin or Clothing, Track Labor, Cement Handler, Chloride Handler, Unloading & Laborers with Steel Workers & Re-Bars, Wet Concrete Workers, Tunnel Tenders in Free Air, Batch Dumper, Mason Tender, Kettle & Tar Man, Tank Cleaner, Plastic Installer, Scaffold Worker, Motorized Buggies or Motorized Unit Used for Wet Concrete or so Handling of Building Materials, Laborers with De- Watering Systems, Sewer Workers Plus Depth, Vibrator Operator; Cement Silica, Clay, Fly Ash, Lime & Plasters Handlers (Bulk or Bag); Cofferdam Worker Plus Depth, Concrete Paving, Placing Cutting & Tying of Reinforcing, Deck Hand, Dredge Hand and Shore Laborer, Bankman on Floating Plant, Grade Checker, Power Tools, Front End Man on Chip Spreader, Caisson Worker plus Depth, Gunniter Nozzleman, Leadman on Sewer Work, Welder, Cutter, Burner & Torchman, Chain Saw Operator, Jackhammer & Drill Operator, Layout Man and/or Tile Layer, Steel Form Setter - Street & Highway, Air Tamping Hammerman, Signal Man on Crane, Concrete Saw Operator, Screenman on Asphalt Paver, Tending Masons with Hot Material or where Foreign Materials are used, Mortar Mixer Operator, Multiple Concrete Duct - Leadman, Luteman, Asphalt Raker Curb Asphalt Machine Operator, Ready Mix Scaleman Permanent Portable or Temporary Plant, Laborer Handling Masterplate or Similar Materials, Laser Beam Operator, Concrete Burning Machine Operator, Coring Machine Operator, Plaster Tender, Underpinning & Shoring of Buildings, Pump Man, Manhole & Catch Basin, Dirt & Stone Tamper, Hoseman on Concrete Pump.

NOT TO BE USED FOR BIDDING PURPOSES

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* PAIN0030-004 06/01/2024

BOONE, JO DAVIESS, LEE, OGLE, STEPHENSON AND WINNEBAGO COUNTIES

	Rates	Fringes
PAINTER		
Brush, Roller, Spray,		

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     Sandblasting, Paperhanger,
     Drywall Finishing, Taper,
     and Spray Structural Steel..$ 45.15            29.41
----------------------------------------------------------------
 PAIN0030-010 06/01/2023

BUREAU, FORD, HANCOCK, LA SALLE, LIVINGSTON, MCDONOUGH, MCLEAN,
PUTNAM AND STARK COUNTIES


                                  Rates          Fringes

PAINTER
     Brush, Roller, Pressure
     Roller, Spray, Airless
     Spray, Sandblasting,
     Taper, Drywall
     Taper/Finisher, Structural
     Steel, and Bridges..........$ 40.00            26.90
----------------------------------------------------------------
 PAIN1178-001 06/01/2022

CARROLL, HENRY, ROCK ISLAND, AND WHITESIDE COUNTIES

                                  Rates          Fringes

PAINTER
     Bridges.....................$ 32.00            17.37
     Brush and Roller............$ 30.00            17.37
     Spray, Structural Steel, &
     Sandblasting................$ 30.50            17.37
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 PLAS0011-004 06/01/2023

CARROLL, JO DAVIESS, LEE, OGLE, STEPHENSON, AND WHITESIDE
(Except Erie and area Southwest thereof) COUNTIES


                                  Rates          Fringes

CEMENT MASON/CONCRETE FINISHER...$ 38.48            38.77
PLASTERER...................$ 38.98            36.58
----------------------------------------------------------------
 PLAS0011-035 06/01/2023

BUREAU COUNTY

                                  Rates          Fringes

CEMENT MASON/CONCRETE FINISHER...$ 40.50            33.54
----------------------------------------------------------------
 PLAS0011-017 06/01/2023

WINNEBAGO COUNTY

                                  Rates          Fringes

CEMENT MASON/CONCRETE FINISHER...$ 41.03            36.39
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NOT TO BE USED FOR BIDDING PURPOSES

PLAS0018-007 06/01/2015

HENRY COUNTY

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 36.70	22.08

PLAS0018-036 01/01/2020

ROCK ISLAND COUNTY

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 28.52	24.04

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* TEAM0325-002 07/01/2023

CARROLL (North of Route. #72 & East of Route #78), JODAVIESS (East of Route #78, excluding Stockton), STEPHENSON, and WINNEBAGO COUNTIES

	Rates	Fringes
TRUCK DRIVER		
2 or 3 Axles	$ 43.47	25.45
4 Axles	$ 43.62	25.45
5 Axles	$ 43.82	25.45
6 Axles	$ 43.93	25.45

FOOTNOTE: .20 cents additional per axle over 6 axles.

CLASSIFICATIONS:

Group 1 - Frame Truck when used for transportation purposes; Air Compressor and Welding Machines, including those pulled by cars, pick-up trucks and tractors; Ambulances; Batch Gate Lockers; Batch Hopperman; Car and Truck Washers; Forl Lifts and Hoisters; Helpers;
Mechanics Helpers and Greasers; Oil Distributors, two-man operation; Pavement Breakers
Pole Trailer, up to 40 feet; Power Mower Tractors; Skipman; Slurry Trucks, two-man operation; Teamsters; Truck Drivers hauling warning lights, barricades, and portable toilets on the job site

Group 2 - Dump Crets and Adgetators under 7 yards; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment under 16 cubic yards; Mixer Trucks under 7 yards; Ready-Mix Plant Hopper Operator; Winch Trucks, 2 Axles

Group 3 - Dump Crets and Adgetators, 7 yards and over; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment over 16 cubic yards; Explosives and/or Fission Material Trucks; Mixer

NOT TO BE USED FOR BIDDING PURPOSES

Trucks 7 yards or over; Mobile Cranes while in transit; Oil Distributors, one-man operation
Pole Trailer, over 40 feet; Pole and Expandable Trailers hauling material over 50 feet long, additional $0.50 per hour; Slurry Trucks, one-man operation; Winch Trucks, 3 axles or more
*Mechanic*Truck Welder and Truck Painter; *Winter Rate: Between Dec. 15 and Feb. 28 the mechanic and welder rate shall be $2.00 less than the scheduled scale. Truck Painter and Truck Welder classifications shall only apply in areas where and when it has been a past area practice;
Dual-purpose vehicels, such as mounted crane tucks with hoist and accessories

Group 4 - Foreman; Master Mechanic; Self-loading equipment like P.B. and trucks with scoops on the front

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* TEAM0330-003 06/01/2019

LEE (East of Route 251, Compton, Lee, Paw Paw, Scarboro, & Steward), and OGLE (North of Route 72/East of Route 251, Adeline, Byron, Creston, Dement, Forreston North of Route 72, Leaf River North of Route 72, Lynnville, Monroe, Rochelle, & Scott) COUNTIES

	Rates	Fringes
TRUCK DRIVER		
2-3 AXLES	$ 38.23	0.25+a
4 AXLES	$ 38.38	0.25+a
5 AXLES	$ 38.58	0.25+a
6 AXLES	$ 38.78	0.25+a

FOOTNOTE: a. $868.50 per week

An additional $.20 per axle shall be paid for all vehicles with more than six (6) axles.

Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

900 straight time hours or more in 1 calendar year for the same employer shall receive 1 week paid vacation; 3 years - 2 weeks paid vacation; 10 years - 3 weeks paid vacation; 20 years - 4 weeks paid vacation.

CLASSIFICATIONS:

Group 1 - Frame Truck when used for transportation purposes; Air Compressor and Welding Machines, including those pulled by cars, pick-up trucks and tractors; Ambulances; Articulated Dumps; Batch Gate Lockers; Batch Hopperman; Car and Truck Washers; Carry Alls; Forl Lifts and Hoisters; Helpers; Mechanics Helpers and Greasers; Oil Distributors, two-man operation; Pavement Breakers; Pole Trailer, up to 40 feet; Pothole Repair Trucks; Power Mower Tractors; Quick Change Barrier; Self-Propelled Chip Spreader; Shipping and

NOT TO BE USED FOR BIDDING PURPOSES

Receiving Clerks and Checkers; Skipman; Slurry Trucks, two-man operation; Slurry Trucks, Conveyor Operated - 2 or 3 man operation; Teamsters; Unskilled Dumpmen; Warehousemen and Dockmen; Truck Drivers hauling warning lights, barricades, and portable toilets on the job site

Group 2 - Dispatcher; Dump Crets and Adgetators under 7 yards; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment under 16 cubic yards; Mixer Trucks under 7 yards; Ready-Mix Plant Hopper Operator; Winch Trucks, 2 Axles

Group 3 - Dump Crets and Adgetators, 7 yards and over; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment over 16 cubic yards; Explosives and/or Fission Material Trucks; Mixer Trucks 7 yards or over; Mobile Cranes while in transit; Oil Distributors, one-man operation; Pole Trailer, over 40 feet; Pole and Expandable Trailers hauling material over 50 feet long;
Slurry Trucks, one-man operation; Winch Trucks, 3 axles or more; Mechanic - *Truck Welder and *Truck Painter*These classifications shall only apply in areas where and when it has been a past area practice; Asphalt Plant Operators in areas where it has been past practice

Group 4 - Dual-purpose vehicels, such as mounted crane tucks with hoist and accessories; Foreman; Master Mechanic; Self-loading equipment like P.B. and trucks with scoops on the front

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TEAM0371-004 05/01/2022

HENRY and ROCK ISLAND COUNTIES

	Rates	Fringes
TRUCK DRIVER		
Group 1	$ 41.00	22.37
Group 2	$ 41.58	22.37
Group 3	$ 41.90	22.37
Group 4	$ 42.25	22.37
Group 5	$ 43.36	22.37

CLASSIFICATIONS:

GROUP 1: Drivers on 2 axles hauling less than 9 tons; air compressor & welding machines and brooms, including those pulled by separate units; Truck Driver Helper, warehouse employees; Mechanic Helpers; greasers and tiremen; pick-up trucks when hauling material, tools, or workers to and from and on the job site; and forklifts up to 6,000 lb capacity.

GROUP 2: 2 or 3 axles hualing more than 9 tons but hauling less than 16 tons; A-frame winch trucks; hydrolift trucks; Vactor Trucks or similar equipment when used for

NOT TO BE USED FOR BIDDING PURPOSES

transportation purposes; Forklift over 6,000 lb.capacity; winch trucks; and four axle combiation units.

GROUP 3: 2, 3 or 4 Axles hauling 16 tons or more; 5-Axles or more combination units; drivers on water pulls; articulated dump trucks; mechanics and working forepersons.

GROUP 4: Low Boy and Oil Distributors.

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

TEAM0722-001 05/01/2022

BUREAU, CARROLL (West of Route78/South of Route 72), JODAVIESS (West of Route 78), LEE (West of Route 251), OGLE (South of Route 72/West of Route 251), and WHITESIDE COUNTIES

	Rates	Fringes
TRUCK DRIVER		
Group 1	$ 40.91	22.10
Group 2	$ 41.50	22.10
Group 3	$ 41.77	22.10
Group 4	$ 42.16	22.10
Group 5	$ 43.26	22.10

CLASSIFICATIONS:

GROUP 1: Drivers on 2 axles hauling less than 9 tons; air compressor & welding machines and brooms, including those pulled by separate units; Truck Driver Helper, warehouse employees; Mechanic Helpers; greasers and tiremen; pick-up trucks when hauling material, tools, or workers to and from and on the job site; and forklifts up to 6,000 lb capacity.

GROUP 2: 2 or 3 axles hauling more than 9 tons but hauling less than 16 tons; A-frame winch trucks; hydrolift trucks; Vactor Trucks or similar equipment when used for transportation purposes; Forklift over 6,000 lb.capacity; winch trucks; and four axle combiation units.

GROUP 3: 2, 3 or 4 Axles hauling 16 tons or more; 5-Axles or more combination units; drivers on water pulls; articulated dump trucks; mechanics and working forepersons.

GROUP 4: Low Boy and Oil Distributors.

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

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

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NOT TO BE USED FOR BIDDING PURPOSES

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

NOT TO BE USED FOR BIDDING PURPOSES

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.

State Adopted Rate Identifiers

Classifications listed under the ""SA"" identifier indicate that the prevailing wage rate set by a state (or local) government was adopted under 29 C.F.R. ◆1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 01/03/2024 reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

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

* an existing published wage determination
* a survey underlying a wage determination

NOT TO BE USED FOR BIDDING PURPOSES

* 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"

NOT TO BE USED FOR BIDDING PURPOSES

Winnebago County Prevailing Wage Rates posted on 7/15/2024

						Overtime										
Trade Title	**Rg**	**Type**	**C**	**Base**	**Foreman**	**M-F**	**Sa**	**Su**	**Hol**	**H/W**	**Pension**	**Vac**	**Trng**	**Other Ins**	**Add OT 1.5x owed**	**Add OT 2.0x owed**
ASBESTOS ABT-GEN	All	BLD		47.94	48.94	1.5	1.5	2.0	2.0	9.55	22.76	0.00	0.80	0.00	3.00	6.00
ASBESTOS ABT-MEC	All	BLD		40.68	44.75	1.5	1.5	2.0	2.0	12.60	22.42	0.00	0.58		0.00	0.00
BOILERMAKER	All	BLD		55.76	60.77	2.0	2.0	2.0	2.0	6.97	26.44	0.00	3.34	1.95	0.00	38.26
BRICK MASON	All	BLD		47.50	50.25	1.5	1.5	2.0	2.0	14.45	18.75	0.00	1.32	0.00	0.00	0.00
CARPENTER	All	BLD		45.00	49.95	1.5	1.5	2.0	2.0	13.21	22.00	0.00	0.82	0.00	0.00	0.00
CARPENTER	All	HWY		50.00	51.75	1.5	1.5	2.0	2.0	12.90	21.00	0.00	0.82	0.00	0.00	0.00
CEMENT MASON	All	ALL		42.60	45.35	1.5	1.5	2.0	2.0	13.65	23.09	0.00	0.80	0.00	0.00	0.00
CERAMIC TILE FINISHER	All	BLD		39.83		1.5	1.5	2.0	2.0	12.20	12.72	0.00	1.16		0.00	0.00
COMMUNICATION TECHNICIAN	All	BLD		48.00	52.80	1.5	1.5	2.0	2.0	17.79	18.63	0.00	0.96		0.00	0.00
ELECTRIC PWR EQMT OP	All	ALL		50.82	69.34	1.5	1.5	2.0	2.0	7.25	14.22	0.00	1.52	1.52	8.63	17.26
ELECTRIC PWR GRNDMAN	All	ALL		39.04	69.34	1.5	1.5	2.0	2.0	7.25	10.93	0.00	1.17	1.17	6.63	13.27
ELECTRIC PWR LINEMAN	All	ALL		61.09	69.34	1.5	1.5	2.0	2.0	7.25	17.10	0.00	1.83	1.83	10.38	20.76
ELECTRIC PWR TRK DRV	All	ALL		40.46	69.34	1.5	1.5	2.0	2.0	7.25	11.33	0.00	1.21	1.21	6.87	13.75
ELECTRICIAN	All	BLD		58.00	63.80	1.5	1.5	2.0	2.0	17.79	23.53	0.00	1.16		0.00	0.00
ELEVATOR CONSTRUCTOR	All	BLD		62.51	70.32	2.0	2.0	2.0	2.0	16.17	20.96	5.00	0.75		0.00	0.00
FENCE ERECTOR	All	ALL		42.45	47.54	1.5	1.5	2.0	2.0	13.21	28.62	0.00	1.80	0.00	0.00	0.00
GLAZIER	All	BLD		46.73	48.73	1.5	1.5	1.5	2.0	15.15	10.85	0.00	1.25	0.00	0.00	0.00
HEAT/FROST INSULATOR	All	BLD		40.68	44.75	1.5	1.5	2.0	2.0	12.60	22.42	0.00	0.58		0.00	0.00
IRON WORKER	All	ALL		46.59	52.18	2.0	2.0	2.0	2.0	13.21	33.79	0.00	1.80	0.00	0.00	0.00
LABORER	All	BLD		41.34	42.34	1.5	1.5	2.0	2.0	9.55	22.76	0.00	0.80	0.00	3.00	6.00
LABORER	All	HWY		44.59	45.34	1.5	1.5	2.0	2.0	9.55	25.76	0.00	0.80	0.00	4.50	9.00
LABORER, SKILLED	All	HWY		47.94	48.69	1.5	1.5	2.0	2.0	9.55	25.76	0.00	0.80	0.00	4.50	9.00
LATHER	All	BLD		45.00	49.95	1.5	1.5	2.0	2.0	13.21	22.00	0.00	0.82	0.00	0.00	0.00
MACHINIST	All	BLD		58.39	62.39	1.5	1.5	2.0	2.0	9.93	8.95	1.85	1.47		0.00	0.00
MARBLE FINISHER	All	BLD		39.83		1.5	1.5	2.0	2.0	12.20	12.72	0.00	1.16		0.00	0.00
MARBLE MASON	All	BLD		43.48	45.98	1.5	1.5	2.0	2.0	12.20	14.06	0.00	1.21		0.00	0.00

NOT TO BE USED FOR BIDDING PURPOSES

Winnebago County Prevailing Wage Rates posted on 7/15/2024

MATERIAL TESTER I	All	ALL		47.94	48.69	1.5	1.5	2.0	2.0	9.55	25.76	0.00	0.80	0.00	4.50	9.00
MATERIALS TESTER II	All	ALL		47.94	48.69	1.5	1.5	2.0	2.0	9.55	25.76	0.00	0.80	0.00	4.50	9.00
MILLWRIGHT	All	BLD		50.00	55.00	1.5	1.5	2.0	2.0	12.20	18.41	0.00	0.82	0.00	0.00	0.00
OPERATING ENGINEER	All	BLD	1	52.55	56.55	2.0	2.0	2.0	2.0	23.95	19.70	3.00	2.85	0.00	0.00	0.00
OPERATING ENGINEER	All	BLD	2	51.85	56.55	2.0	2.0	2.0	2.0	23.95	19.70	3.00	2.85	0.00	0.00	0.00
OPERATING ENGINEER	All	BLD	3	49.40	56.55	2.0	2.0	2.0	2.0	23.95	19.70	3.00	2.85	0.00	0.00	0.00
OPERATING ENGINEER	All	BLD	4	47.40	56.55	2.0	2.0	2.0	2.0	23.95	19.70	3.00	2.85	0.00	0.00	0.00
OPERATING ENGINEER	All	BLD	5	56.30	56.55	2.0	2.0	2.0	2.0	23.95	19.70	3.00	2.85	0.00	0.00	0.00
OPERATING ENGINEER	All	BLD	6	55.55	56.55	2.0	2.0	2.0	2.0	23.95	19.70	3.00	2.85	0.00	0.00	0.00
OPERATING ENGINEER	All	BLD	7	52.55	56.55	2.0	2.0	2.0	2.0	23.95	19.70	3.00	2.85	0.00	0.00	0.00
OPERATING ENGINEER	All	HWY	1	52.40	56.40	1.5	1.5	2.0	2.0	23.95	19.70	3.00	2.85	0.00	0.00	0.00
OPERATING ENGINEER	All	HWY	2	51.85	56.40	1.5	1.5	2.0	2.0	23.95	19.70	3.00	2.85	0.00	0.00	0.00
OPERATING ENGINEER	All	HWY	3	50.55	56.40	1.5	1.5	2.0	2.0	23.95	19.70	3.00	2.85	0.00	0.00	0.00
OPERATING ENGINEER	All	HWY	4	49.10	56.40	1.5	1.5	2.0	2.0	23.95	19.70	3.00	2.85	0.00	0.00	0.00
OPERATING ENGINEER	All	HWY	5	47.65	56.40	1.5	1.5	2.0	2.0	23.95	19.70	3.00	2.85	0.00	0.00	0.00
OPERATING ENGINEER	All	HWY	6	55.40	56.40	1.5	1.5	2.0	2.0	23.95	19.70	3.00	2.85	0.00	0.00	0.00
OPERATING ENGINEER	All	HWY	7	53.40	56.40	1.5	1.5	2.0	2.0	23.95	19.70	3.00	2.85	0.00	0.00	0.00
PAINTER	All	ALL		45.15	47.15	1.5	1.5	1.5	2.0	14.85	13.16	0.00	1.40	0.00	0.00	0.00
PILEDRIVER	All	BLD		46.00	51.06	1.5	1.5	2.0	2.0	13.21	22.00	0.00	0.82	0.00	0.00	0.00
PILEDRIVER	All	HWY		51.00	52.75	1.5	1.5	2.0	2.0	12.90	21.00	0.00	0.82	0.00	0.00	0.00
PIPEFITTER	All	BLD		54.40	58.21	1.5	1.5	2.0	2.0	13.47	14.20	0.00	2.35	0.00	0.00	0.00
PLASTERER	All	BLD		39.47	43.42	1.5	1.5	2.0	2.0	13.50	24.50	0.00	0.80	0.00	0.00	0.00
PLUMBER	All	BLD		54.40	58.21	1.5	1.5	2.0	2.0	13.47	14.20	0.00	2.35	0.00	0.00	0.00
ROOFER	All	BLD		50.25	55.25	1.5	1.5	2.0	2.0	11.83	16.44	0.00	1.11	0.00	0.00	0.00
SHEETMETAL WORKER	All	BLD		52.14	61.41	1.5	1.5	2.0	2.0	10.70	23.56	0.00	1.42	1.80	17.75	35.51
SPRINKLER FITTER	All	BLD		47.09	50.09	1.5	1.5	2.0	2.0	11.45	14.92	0.00	0.52		0.00	0.00
STONE MASON	All	BLD		47.50	50.25	1.5	1.5	2.0	2.0	14.45	18.75	0.00	1.32	0.00	0.00	0.00
TERRAZZO FINISHER	All	BLD		39.83		1.5	1.5	2.0	2.0	12.20	12.72	0.00	1.16		0.00	0.00
TERRAZZO MASON	All	BLD		43.48	45.98	1.5	1.5	2.0	2.0	12.20	14.06	0.00	1.21		0.00	0.00
TILE LAYER	All	BLD		45.00	49.95	1.5	1.5	2.0	2.0	13.21	22.00	0.00	0.82	0.00	0.00	0.00

NOT TO BE USED FOR BIDDING PURPOSES

Winnebago County Prevailing Wage Rates posted on 7/15/2024

TILE MASON	All	BLD		43.48	45.98	1.5	1.5	2.0	2.0	12.20	14.06	0.00	1.21		0.00	0.00
TRUCK DRIVER	All	ALL	1	45.47		1.5	1.5	2.0	2.0	12.20	13.30	0.00	0.20	0.00	0.00	0.00
TRUCK DRIVER	All	ALL	2	45.62		1.5	1.5	2.0	2.0	12.20	13.30	0.00	0.20	0.00	0.00	0.00
TRUCK DRIVER	All	ALL	3	45.82		1.5	1.5	2.0	2.0	12.20	13.30	0.00	0.20	0.00	0.00	0.00
TRUCK DRIVER	All	ALL	4	45.93		1.5	1.5	2.0	2.0	12.20	13.30	0.00	0.20	0.00	0.00	0.00
TUCKPOINTER	All	BLD		47.50	50.25	1.5	1.5	2.0	2.0	14.45	18.75	0.00	1.32	0.00	0.00	0.00

Legend
Rg Region
Type Trade Type - All,Highway,Building,Floating,Oil & Chip,Rivers
C Class
Base Base Wage Rate
OT M-F Unless otherwise noted, OT pay is required for any hour greater than 8 worked each day, Mon through Fri. The number listed is the multiple of the base wage.
OT Sa Overtime pay required for every hour worked on Saturdays
OT Su Overtime pay required for every hour worked on Sundays
OT Hol Overtime pay required for every hour worked on Holidays
H/W Health/Welfare benefit
Vac Vacation
Trng Training
Other Ins Employer hourly cost for any other type(s) of insurance provided for benefit of worker.

Explanations WINNEBAGO COUNTY

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

EXPLANATION OF CLASSES

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

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Winnebago County Prevailing Wage Rates posted on 7/15/2024

CERAMIC TILE FINISHER, MARBLE FINISHER, TERRAZZO FINISHER

Assisting, helping or supporting the tile, marble and terrazzo mechanic by performing their historic and traditional work assignments required to complete the proper installation of the work covered by said crafts. The term "Ceramic" is used for naming the classification only and is in no way a limitation of the product handled. Ceramic takes into consideration most hard tiles.

COMMUNICATIONS TECHNICIAN

Installing, manufacturing, assembling and maintaining sound and intercom, protection alarm (security), fire alarm, master antenna television, closed circuit television, low voltage control for computers and/or door monitoring, school communications systems, telephones and servicing of nurse and emergency calls, and the installation and maintenance of transmit and receive antennas, transmitters, receivers, and associated apparatus which operates in conjunction with above systems. All work associated with these system installations will be included EXCEPT the installation of protective metallic conduit in new construction projects (excluding less than ten-foot, runs strictly for protection of cable) and 120 volt AC (or higher) power wiring and associated hardware.

LABORER, SKILLED - HIGHWAY

Individuals engaged in the following types of work, irrespective of the site of the work: asbestos abatement worker, handling of any materials with any foreign matter harmful to skin or clothing, track laborer, cement handlers, chloride handlers, the unloading and loading with steel workers and re-bars, concrete workers wet, tunnel helpers in free air, batch dumpers, mason tenders, kettle and tar men, tank cleaners, plastic installers, scaffold workers, motorized buggies or motorized unit used for wet concrete or handling of building materials, laborers with de-watering systems, sewer workers plus depth, rod and chainmen with technical engineers, rod and chainmen with land surveyors, rod and chainmen with surveyors, vibrator operators, cement silica, clay, fly ash, lime and plasters, handlers (bulk or bag), cofferdam workers plus depth, on concrete paving, placing, cutting and tying of reinforcing, deck hand, dredge hand, and shore laborers, bankmen on floating plant, grade checker, power tools, front end man on chip spreaders, cassion workers plus depth, gunnite nozzle men, lead man on sewer work, welders, cutters, burners and torchmen, chainsaw operators, jackhammer and drill operators, layout man and/or drainage tile layer, steel form setter - street and highway, air tamping hammermen, signal man on crane, concrete saw operator, screedman on asphalt pavers, laborers tending masons with hot material or where foreign materials are used, mortar mixer operators, multiple concrete duct - leadsman, lumen, asphalt raker, curb asphalt machine operator, ready mix scalemen (permanent, portable or temporary plant), laborers handling masterplate or similar materials, laser beam operator, con-crete burning machine operator, coring machine operator, plaster ten-der, underpinning and shoring of buildings, pump men, manhole and catch basin, dirt and stone tamper, hose men on concrete pumps, hazardous waste worker, lead base paint abatement worker, lining of pipe, refusing machine, assisting on direct boring machine, the work of lay-ing watermain, fire hydrants, all mechanical joints to watermain work, sewer worker, and tapping water service and forced lift station mechanical worker.

MATERIAL TESTER I: Hand coring and drilling for testing of materials; field inspection of uncured concrete and asphalt.

MATERIAL TESTER II: Field inspection of welds, structural steel, fireproofing, masonry, soil, facade, reinforcing steel, formwork, cured concrete, and concrete and asphalt batch plants; adjusting proportions of bituminous mixtures.

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Winnebago County Prevailing Wage Rates posted on 7/15/2024

OPERATING ENGINEERS - BUILDING

Class 1. Asphalt Plant; Asphalt Spreader; Autograde; Backhoes with Caisson Attachment; Batch Plant; Benoto (requires Two Engineers); Boiler and Throttle Valve; Caisson Rigs; Central Redi-Mix Plant; Combination Back Hoe Front End-loader Machine; Compressor and Throttle Valve; Concrete Breaker (Truck Mounted); Concrete Conveyor; Concrete Paver (over 27E cu. ft.); Concrete Paver (27 cu. ft. and under); Concrete Placer; Concrete Pump (Truck Mounted); Concrete Conveyor (Truck Mounted); Concrete Tower; Cranes, All; GCI and similar types (required two operators only); Cranes, Hammerhead; Creter Crane; Crusher, Stone, etc.; Derricks, All; Derricks, Traveling; Formless Curb and Gutter Machine; Grader, Elevating; Grouting Machines; Highlift Shovels or Front Endloader 2-1/4 yd. and over; Hoists, Elevators, outside type rack and pinion and similar machines; Hoists, one, two and three Drum; Hoists, Two Tugger One Floor; Hydraulic Backhoes; Hydraulic Boom Trucks; Hydro Vac (and similar equipment - excluding hose work and any sewer work); Locomotives, All; Lubrication Technician; Manipulators; Motor Patrol; Pile Drivers and Skid Rig; Post Hole Digger; Pre-Stress Machine; Pump Cretes Dual Ram; Pump Cretes: Squeeze Cretes - Screw Type Pumps, Gypsum Bulker and Pump; Raised and Blind Hole Drill; Rock Drill (self-propelled); Rock Drill - Truck Mounted; Roto Mill Grinder; Scoops - Tractor Drawn; Slipform Paver; Scrapers Prime Movers; Straddle Buggies; Tie Back Machine; Tractor with Boom and Side Boom; Trenching Machines.

Class 2. Bobcat (over 3/4 cu. yd.); Boilers; Brick Forklift; Broom, All Power Propelled; Bulldozers; Concrete Mixer (Two Bag and Over); Conveyor, Portable; Forklift Trucks; Highlift Shovels or Front Endloaders under 2-1/4 yd.; Hoists, Automatic; Hoists, Sewer Dragging Machine; Hoists, Tugger Single Drum; Laser Screed; Rollers, All; Steam Generators; Tractors, All; Tractor Drawn Vibratory Roller; Winch Trucks with "A" Frame.

Class 3. Air Compressor; Asphalt Spreader; Combination - Small Equipment Operator; Generators; Heaters, Mechanical; Hoists, Inside Elevators - (Rheostat Manual Controlled); Hydraulic Power Units (Pile Driving, Extracting, or Drilling - with a seat); Lowboys; Pumps, Over 3" (1 to 3 not to exceed total of 300 ft.); Pumps, Well Points; Welding Machines (2 through 5); Winches, 4 Small Electric Drill Winches; Bobcat (up to and including 3/4 cu. yd.).

Class 4. Elevator push button with automatic doors; Hoists, Inside; Oilers; Brick Forklift.

Class 5. Assistant Craft Foreman

Class 6. Mechanics; Welders.

Class 7. Gradall

OPERATING ENGINEERS - HIGHWAY CONSTRUCTION

Class 1. Asphalt Plant; Asphalt Heater and Planer Combination; Asphalt Heater Scarfire; Asphalt Silo Tender; Asphalt Spreader; Autograder; ABG Paver; Backhoes with Caisson Attachment; Ballast Regulator; Belt Loader; Caisson Rigs; Car Dumper; Central Redi-Mix Plant; Backhoe w/shear attachments; Combination Backhoe Front Endloader Machine, (1 cu. yd. Backhoe Bucket or over or with attachments); Concrete Breaker (Truck Mounted); Concrete Conveyor; Concrete Paver over 27E cu. ft.; Concrete Placer; Concrete Tube Float; Cranes, all attachments; Cranes, Tower of all types; Creter Crane; Crusher, Stone, etc.; Derricks, All; Derrick Boats; Derricks, Traveling; Directional Boring Machine over 12"; Dredges; Formless Curb and Gutter Machine; Grader, Elevating;

NOT TO BE USED FOR BIDDING PURPOSES

Grader, Motor Grader, Motor Patrol, Auto Patrol, Form Grader, Pull Grader, Subgrader; Guard Rail Post Driver Mounted; Hoists, One, Two and Three Drum; Hydraulic Backhoes; Hydro Vac, Self Propelled, Truck Mounted (excluding hose work and any sewer work); Lubrication Technician; Manipulators; Pile Drivers and Skid Rig; Pre-Stress Machine; Pump Cretes Dual Ram; Rock Drill - Crawler or Skid Rig; Rock Drill - Truck Mounted; Rock/Track Tamper; Roto Mill Grinder; Slip-Form Paver; Snow Melters; Soil Test Drill Rig (Truck Mounted); Straddle Buggies; GCI Crane; Hydraulic Telescoping Form (Tunnel); Tie Back Machine; Tractor Drawn Belt Loader; Tractor Drawn Belt Loader with attached pusher; Tractor with Boom; Tractaire with Attachments; Traffic Barrier Conveyor Machine; Raised or Blind Hole Drills; Trenching Machine (over 12"); Truck Mounted Concrete Pump with Boom; Truck Mounted Concrete Conveyor; Work Boat (no license required - 90 h.p. or above); Underground Boring and/or Mining Machines; Wheel Excavator; Widener (APSCO).

Class 2. Batch Plant; Bituminous Mixer; Boiler and Throttle Valve; Bulldozers; Car Loader Trailing Conveyors; Combination Backhoe Front Endloader Machine (less than 1 cu. yd. Backhoe Bucket or over or with attachments); Compressor and Throttle Valve; Compressor, Common Receiver (3); Concrete Breaker or Hydro Hammer; Concrete Grinding Machine; Concrete Mixer or Paver 7S Series to and including 27 cu. ft.; Concrete Spreader; Concrete Curing Machine, Burlap Machine, Belting Machine and Sealing Machine; Concrete Wheel Saw (large self-propelled - excluding walk-behinds and hand-held); Conveyor Muck Cars (Haglund or Similar Type); Drills, all; Finishing Machine - Concrete; Highlift Shovels or Front Endloader; Hoist - Sewer Dragging Machine; Hydraulic Boom Trucks (All Attachments); Hydro Blaster; All Locomotives, Dinky; Off-Road Hauling Units; Non-Self Loading Dump; Ejection Dump; Pump Cretes: Squeeze Cretes - Screw Type Pumps, Gypsum Bulker and Pump; Roller, Asphalt; Rotary Snow Plows; Rototiller, Seaman, etc., self-propelled; Scoops - Tractor Drawn; Self-Propelled Compactor; Spreader - Chip - Stone, etc.; Scraper; Scraper - Prime Mover in Tandem (Regardless of Size); Tank Car Heater; Tractors, Push, Pulling Sheeps Foot, Disc, Compactor, etc.; Tug Boats.

Class 3. Boilers; Brooms, All Power Propelled; Cement Supply Tender; Compressor, Common Receiver (2); Concrete Mixer (Two Bag and Over); Conveyor, Portable; Farm-Type Tractors Used for Mowing, Seeding, etc.; Fireman on Boilers; Forklift Trucks; Grouting Machine; Hoists, Automatic; Hoists, All Elevators; Hoists, Tugger Single Drum; Jeep Diggers; Low Boys; Pipe Jacking Machines; Post-Hole Digger; Power Saw, Concrete Power Driven; Pug Mills; Rollers, other than asphalt; Seed and Straw Blower; Steam Generators; Stump Machine; Winch Trucks with "A" Frame; Work Boats; Tamper - Form - Motor Driven.

Class 4. Air Compressor - Small and Large; Asphalt Spreader, Backend Man; Bobcat (Skid Steer) all; Brick Forklift; Combination - Small Equipment Operator; Directional Boring Machine up to 12"; Generators; Heaters, Mechanical; Hydraulic Power Unit (Pile Driving, Extracting, or Drilling); Hydro-Blaster; Light Plants, All (1 through 5); Pumps, over 3" (1 to 3 not to exceed a total of 300 ft.); Pumps, Well Points; Tractaire; Trencher 12" and under; Welding Machines (2 through 5); Winches, 4 Small Electric Drill Winches.

Class 5. Oilers and Directional Boring Machine Locator.

Class 6. Field Mechanics and Field Welders

Class 7. Gradall and machines of like nature.

TRUCK DRIVER - BUILDING, HEAVY AND HIGHWAY CONSTRUCTION Class 1. Two or three Axle Trucks. A-frame Truck when used for transportation purposes; Air Compressors and Welding Machines, including those pulled by cars, pick-up trucks and

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tractors; Ambulances; Batch Gate Lockers; Batch Hopperman; Car and Truck Washers; Carry-alls; Fork Lifts and Hoisters; Helpers; Mechanics Helpers and Greasers; Oil Distributors 2-man operation; Pavement Breakers; Pole Trailer, up to 40 feet; Power Mower Tractors; Self-propelled Chip Spreader; Skipman; Slurry Trucks, 2-man operation; Slurry Truck Conveyor Operation, 2 or 3 man; TTeamsters Unskilled dumpman; and Truck Drivers hauling warning lights, barricades, and portable toilets on the job site.

Class 2. Four axle trucks; Dump Crets and Adgetors under 7 yards; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment under 16 cubic yards; Mixer Trucks under 7 yeards; Ready-mix Plant Hopper Operator, and Winch Trucks, 2 Axles.

Class 3. Five axle trucks; Dump Crets and Adgetors 7 yards and over; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnatrailers or turnapulls when pulling other than self-loading equipment or similar equipment over 16 cubic yards; Explosives and/or Fission Material Trucks; Mixer Trucks 7 yards or over; Mobile Cranes while in transit; Oil Distributors, 1-man operation; Pole Trailer, over 40 feet; Pole and Expandable Trailers hauling material over 50 feet long; Slurry trucks, 1-man operation; Winch trucks, 3 axles or more; Mechanic--Truck Welder and Truck Painter.

Class 4. Six axle trucks; Dual-purpose vehicles, such as mounted crane trucks with hoist and accessories; Foreman; Master Mechanic; Self-loading equipment like P.B. and trucks with scoops on the front.

Other Classifications of Work:

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

LANDSCAPING

Landscaping work falls under the existing classifications for laborer, operating engineer and truck driver. The work performed by landscape plantsman and landscape laborer is covered by the existing classification of laborer. The work performed by landscape operators (regardless of equipment used or its size) is covered by the classifications of operating engineer. The work performed by landscape truck drivers (regardless of size of truck driven) is covered by the classifications of truck driver.

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Fair Employment Practices Affidavit of Compliance

Project: BNR Improvements – Aeration Basin Modifications, Capital Project No. 2304, IEPA Project No. L17-6576

NOTE: THE BIDDER MUST EXECUTE THIS AFFIDAVIT AND SUBMIT IT WITH ITS SIGNED BID. THE FOUR RIVERS SANITATION AUTHORITY CANNOT ACCEPT ANY BID WHICH DOES NOT CONTAIN THIS AFFIDAVIT

_____, being first duly sworn, deposes and says that:
(Name of person making affidavit)

They are: _____ of _____
(Officer's Title) (Company Name)

that said company is and "Equal Opportunity Employer" as defined by Section 2000(e) of Chapter 21, Title 42 of the United States Code Annotated and Federal Executive Orders #11375 which are incorporated herein by reference;

and that said company will comply with any and all requirements of Title 44 Admin. Code 750. APPENDIX A – Equal Opportunity Clause, Rules and Regulations, Illinois Department of Human Rights, which read as follows:

"In the event of the contractor's non-compliance with the provisions of this Equal Employment Opportunity Clause, the Illinois Human Rights Act or the Rules and Regulations of the Illinois Department of Human Rights ("Department"), the contractor may be declared ineligible for future contracts or subcontracts with the State of Illinois or any of its political subdivisions or municipal corporations, and the contract may be cancelled or voided in whole or in part, and such other sanctions or penalties may be imposed or remedies invoked as provided by statute or regulation. During the performance to this contract, the contractor agrees as follows:

1. That it will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, marital status, national origin or ancestry, citizen status, age, physical or mental handicap unrelated to ability, sexual orientation, military status or an unfavorable discharge from military service; and further that it will examine all job classifications to determine if minority persons or women are underutilized and will take appropriate affirmative action to rectify any such underutilization.

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

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

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

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

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

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

(Source: Amended at 32 I11. Reg. 16484, effective September 23, 2008)"

IL Dept of Human Rights Registration No.: _____ Expiration Date: _____

_____
Signature

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

_____
Notary Public

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Bid Bond

KNOW ALL MEN AND WOMEN BY THESE PRESENTS, that we, the undersigned, _____ _____ as Principal, and _____ _____ as Surety, are hereby held and firmly bound unto __Four Rivers Sanitation Authority____ as OWNER in the penal sum of _____ _____ for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed, this _____ day of _____, 20_____.

The Condition of the above obligation is such that whereas the Principal has submitted to Four Rivers Sanitation Authority_____ a certain BID, attached hereto and hereby made a part hereof to enter into a contract in writing, for the _____ _____ _____.

NOW, THEREFORE,

(a) If said BID shall be rejected, or

(b) If said BID shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said BID) and shall furnish a BOND for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its BOND shall be in no way impaired or affected by any extension of the time within which the OWNER may accept such bid; and said Surety does hereby waive notice of any such extension.

NOT TO BE USED FOR BIDDING PURPOSES

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

_____
Principal

_____
Surety

By: _____

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

NOT TO BE USED FOR BIDDING PURPOSES

Agreement

THIS AGREEMENT, made this _____ day of _____, 20_____, by and between Four Rivers Sanitation Authority, hereinafter called "OWNER" and _____ doing business as (an individual) or (a partnership) or (a corporation) hereinafter called "CONTRACTOR".

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned:

1. The CONTRACTOR will commence and complete the construction of BNR Improvements – Aeration Basin Modifications, Capital Project No. 2304, IEPA Project No. L17-6576.

2. The CONTRACTOR will furnish all of the material, supplies, tools, equipment, labor and other services necessary for the construction and completion of the PROJECT described herein.

3. The CONTRACTOR will commence the work required by the Contract Documents within one (1) calendar day after the date of the NOTICE TO PROCEED and will complete this project in **799 calendar days** after NOTICE TO PROCEED unless the period for completion is extended otherwise by the CONTRACT DOCUMENTS.

A. The WORK will be substantially completed in **738** calendar days upon NOTICE TO PROCEED, and completed and ready for final payment in accordance with Article 15 of the General Conditions in **799 calendar days** upon NOTICE TO PROCEED.

B. Liquidated Damages:

i. Substantial Completion: CONTRACTOR shall pay OWNER $2,000 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 3A above for Substantial Completion until the WORK is substantially complete.

ii. Completion of Remaining Work: After Substantial Completion, if CONTRACTOR shall neglect, refuse, or fail to complete the remaining Work within the Contract Time (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, CONTRACTOR shall pay OWNER $1,000 for each day that expires after such time until the Work is completed and ready for final payment.

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

iv. CONTRACTOR and OWNER also recognize that OWNER will suffer financial loss if part of the WORK is not completed within Milestone times specified in Section 01 11 13 Work Covered by Contract Documents, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding

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the actual loss suffered by OWNER if part of 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 the amount stated below for each day that expires after the time specified in Section 01 11 13 of each Milestone until the WORK is complete.

a. Milestone No. 1: Blower and Aeration Control System. Milestone 1 must be completed concurrently with Milestone 2 to ensure IMLR pump VFDs are installed within the Blower Building and operatable. Shutdown of the Blower Building to complete modifications and tie-ins is limited to maximum increments of four (4) hours. The Contractor shall provide at least 7 days notification of projected start date to allow scheduling of the outage.
   i. Liquidated damages: CONTRACTOR shall pay for liquidated damages for an amount of $1,000 per day after the completion of Milestone No. 2.
b. Milestone No. 2: Aeration Basin Nos. 7 and 8 Improvements. Shutdown of the Aeration Basin Nos. 7 and 8 is limited to 162 calendar days. The Contractor shall provide at least 21 calendar days notification of projected start date to allow scheduling of the outage and coordinate continuous operation of the facility.
   i. Liquidated damages: CONTRACTOR shall pay for liquidated damages for an amount of $1,000 per day after the 162 day period.
c. Milestone No. 3: Aeration Basin Nos. 5 and 6 Improvements. Shutdown of the Aeration Basin Nos. 5 and 6 is limited to 172 calendar days. The Contractor shall provide at least 21 calendar days notification of projected start date to allow scheduling of the outage and coordinate continuous operation of the facility.
   i. Liquidated damages: CONTRACTOR shall pay for liquidated damages for an amount of $1,000 per day after the 172 day period.
d. Milestone No. 4: Aeration Basin Nos. 3 and 4 Improvements. Shutdown of the Aeration Basin Nos. 3 and 4 is limited to 172 calendar days. The Contractor shall provide at least 21 calendar days notification of projected start date to allow scheduling of the outage and coordinate continuous operation of the facility.
   i. Liquidated damages: CONTRACTOR shall pay for liquidated damages for an amount of $1,000 per day after the 172 day period.
e. Milestone No. 5: Aeration Basin Nos. 1 and 2 Improvements. Shutdown of the Aeration Basin Nos. 1 and 2 is limited to 172 calendar days. The Contractor shall

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provide at least 21 calendar days notification of projected start date to allow scheduling of the outage and coordinate continuous operation of the facility.

i. Liquidated damages: CONTRACTOR shall pay for liquidated damages for an amount of $1,000 per day after the 172 day period.

f. Milestone No. 6: Control Loop Tuning is limited to two (2) months and a maximum of 738 calendar days from the Notice to Proceed.

i. Liquidated damages: CONTRACTOR shall pay for liquidated damages for an amount of $1,000 per day after the 738 day period.

g. Milestone No. 7: Full System Start-up is limited to a maximum of 799 calendar days from the Notice to Proceed.

i. Liquidated damages: CONTRACTOR shall pay for liquidated damages for an amount of $1,000 per day after the 799 day period.

4. The CONTRACTOR agrees to perform all of the WORK described in the CONTRACT DOCUMENTS and comply with the terms therein for the sum of $_____, or as shown in the BID schedule.

5. The term "CONTRACT DOCUMENTS" means and includes the following:

(A) Advertisement for Bids
(B) Information for Bidders
(C) Instructions for Bidders
(D) Bid Form or Proposal
(E) Bid Bond
(F) Agreement
(G) Payment Bond
(H) Performance Bond
(I) Notice of Award
(J) Notice to Proceed
(K) Change Order
(L) Drawings prepared by Four Rivers Sanitation Authority numbered 0 through 113, and dated _____, 2024
(M) Specifications prepared by Four Rivers Sanitation Authority dated _____, 2024
(N) Addenda:
No. _____, dated _____, 20_____
No. _____, dated _____, 20_____
No. _____, dated _____, 20_____

6. The OWNER will pay to the CONTRACTOR in the manner and at such times, such amounts as required by the CONTRACT DOCUMENTS.

7. 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

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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.

8. This Agreement may be executed and recorded in counterparts, each of which shall be deemed an original and all of which, when taken together, shall constitute one and the same instrument. The Parties hereby acknowledge and agree that facsimile signatures or signatures transmitted by electronic mail in so-called "pdf" format shall be legal and binding and shall have the same full force and effect as if an original of this Agreement had been delivered. Each of the parties (a) intend to be bound by the signatures on any document sent by facsimile or electronic mail, (b) are aware that the other party will rely on such signatures, and (c) hereby waive any defenses to the enforcement of the terms of this Agreement based on the foregoing forms of signature.

9. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.

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IN WITNESS WHEREOF, the parties hereto have executed, or caused to be executed by their duly authorized officials, this Agreement shall be deemed an original on the date first above written.

OWNER:

Four Rivers Sanitation Authority

By: _____

Name: _____

(Please Type) Title: _____

(SEAL)

ATTEST:

Four Rivers Sanitation Authority

By: _____

Name: _____

Title: _____

CONTRACTOR:

_____

By: _____

Name: _____

(Please Type) Address: _____

_____

(SEAL)

ATTEST:

_____

By: _____

Name: _____

Title: _____

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Performance Bond

KNOW ALL MEN AND WOMEN BY THESE PRESENTS, that WHEREAS, the Four Rivers Sanitation Authority has awarded to: _____ hereinafter designated as the "Principal", a contract, dated, _____, for the Four Rivers Sanitation Authority.

WHEREAS, said Principal is required under the terms of said Contract to furnish a bond for the faithful performance of said Contract (the "Bond");

NOW, THEREFORE, we the Principal and _____, as Surety, are firmly bound unto the Four Rivers Sanitation Authority in the penal sum of _____ Dollars ($_____) lawful money of the United States for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally firmly by these presents for a performance bond. The conditions of this obligation is such that if the said Principal does well and faithfully performs all the conditions and covenants of said Contract, according to the true intent and meaning thereof, upon its part to be kept and performed, then the above obligation is to be null and void otherwise to remain in full force and effect.

THE CONDITION OF THIS OBLIGATION IS SUCH, that if the above bounden Principal, its heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions and agreements in the said Contract, including the provisions for liquidated damages in the said Contract, any changes, additions or alterations thereof made as therein provided, on its part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify and save harmless the Four Rivers Sanitation Authority, its officers and agents, as therein stipulated, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect. And the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder or the specifications accompanying the same and no inadvertent overpayment of progress payments shall in any way affect its obligations on this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work or to the specifications or of any inadvertent overpayment of progress payments. The Four Rivers Sanitation Authority shall be named as beneficiary on this Performance Bond.

NOT TO BE USED FOR BIDDING PURPOSES

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their seal this _____day of _____, 20_____, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

CONTRACTOR

_____
Contractor Firm Name

By: _____
Signature

_____
Printed Name

_____
Title

ATTEST:

_____
Corporate Secretary (Corporations only)

SURETY

By: _____
Attorney-in-Fact Signature

_____
Printed Name

_____
Resident Agent

NOTE: Date of BOND must not be prior to date of Contract.
If CONTRACTOR is Partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing BONDS must appear n the Treasury's Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the PROJECT is located.

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Labor & Material Payment Bond

TO: _____Contractor Name

_____Contractor City, State

KNOW ALL MEN AND WOMEN BY THESE PRESENTS

That _____(Contractor)

as Principal, and _____

a corporation of the State of _____ as Surety, are held and firmly bound unto the Four Rivers Sanitation Authority, as Obligee, for the use and benefit of claimants as hereinafter defined in the amount of

_____Dollars ($_____), for the payment where of Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has by written agreement dated _____20__ Entered into a Contract with Obligee for _____ in accordance with contract documents prepared by the Four Rivers Sanitation Authority which Contract is by reference made a part hereof, and is hereinafter referred to as "the Contract".

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if Principal shall promptly pay for all laborers, workers and mechanics engaged in the work under the Contract, and not less than the general prevailing rate of hourly wages of a similar character in the locality in which the work is performed, as determined by the State of Illinois Department of Labor pursuant to the Illinois Compiled Statutes 280 ILCS 130 / 1-12 et.seq. and for all material used or reasonably required for use in the performance of the Contract, then this obligation shall be void; otherwise it shall remain in full force and effect.

1. A claimant is deemed as any person, firm, or corporation having contracts with the Principal or with any of Principal's subcontractors for labor or materials furnished in the performance of the Contract on account of which this Bond is given.

2. Nothing in this Bond contained shall be taken to make the Obligee liable to any subcontractor, material man or laborer, or to any other person to any greater extent than it would have been liable prior to the enactment of The Public Construction Bond Act, approved June 20, 1931, as amended; provided further, that any person having a claim for labor and materials furnished in the performance of the Contract shall have no right of action unless he shall have filed a verified notice of such claim with the Obligee within 180 days after the date of the last item of work or the furnishing of the last item of materials, which claim shall have been verified and shall contain the name and address of the claimant, the business address of the claimant within the State of Illinois, if any, or if the claimant be a foreign corporation having no place of business within the State the principal place of business of the corporation, and in all cases of partnership the names and residences of each of the partners, the name of the Contractor for the Obligee, the name of the person, firm or corporation by whom the claimant was employed or to whom such claimant furnished materials, the amount of the claim and a brief

NOT TO BE USED FOR BIDDING PURPOSES

description of the public improvement for the construction or installation of which the contract is to be performed. No defect in the notice herein provided for shall deprive the claimant of its right of action under the terms and provisions of this Bond unless it shall affirmatively appear that such defect has prejudiced the rights of an interested party asserting the same.

3. No action shall be brought on this Bond until the expiration of 120 days after the date of the last item of work or of the furnishing of the last item of material except in cases where the final settlement between Obligee and the Contractor shall have been made prior to the expiration of the 120 day period, in which case action may be taken immediately following such final settlement; nor shall any action of any kind be brought later than 6 months after the acceptance by the Obligee of the work. Such suit shall be brought only in the circuit court of this State in the judicial district in which the Contract is to be performed.

4. Surety hereby waives notice of any changes in the Contract, including extensions of time for the performance thereof.

5. The amount of this Bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder.

6. The Principal and Surety shall be liable for any attorneys' fees, engineering costs, or court costs incurred by the Obligee relative to claims made against this Bond.

Signed and Sealed this _____day of _____, 20___.

CONTRACTOR

_____
Contractor Firm Name

By: _____
Signature

_____
Printed Name

_____
Title

ATTEST:

_____
Corporate Secretary (Corporations only)

SURETY

By: _____
Attorney-in-Fact Signature

_____
Printed Name

_____
Resident Agent

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NOTE: Date of BOND must not be prior to date of Contract.
If CONTRACTOR is Partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing BONDS must appear n the Treasury's Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the PROJECT is located.

Notice of Intent to Award

Via Email and USPS First Class Mail:
To: _____
Attn: _____
_____
_____
Email: _____

Project: BNR Improvements – Aeration Basin Modifications, Capital Project No. 2304
IEPA Project No. L17-6576

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

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

You will be required by the Information for Bidders to execute the Agreement and furnish the required CONTRACTOR'S Performance BOND, Payment BOND and certificates of insurance (including general and auto liability additional insured endorsements) listing Four Rivers Sanitation Authority as Additional insured parties within ten (10) calendar days from the date of the final Notice to be sent upon IEPA approval, to you.

Dated this _____ day of _____, 20_____.

Four Rivers Sanitation Authority
(Owner)

By: _____

Name: Timothy S. Hanson

Title: Executive Director

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Notice of Award

Via Email and USPS First Class Mail:

To: _____
_____
_____
_____
Email: _____

Project: BNR Improvements – Aeration Basin Modifications, Capital Project No. 2304
IEPA Project No. L17-6576

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

You are hereby notified that your BID has been accepted for items in the amount of $_____ _____.

You are required by the Information for Bidders to execute the Agreement and furnish the required CONTRACTORS Performance BOND, Payment BOND and certificates of insurance (including general and auto liability additional insured endorsements) listing Four Rivers Sanitation Authority as Additional insured parties within ten (10) calendar days from the date of this Notice to you.

If you fail to execute said Agreement and to furnish said BONDS within ten (10) days from the date of this Notice, said OWNER will be entitled to consider all your rights arising out of the OWNER'S acceptance of your BID as abandoned and as a forfeiture of your BID BOND. The OWNER will be entitled to such other rights as may be granted by law.

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

Dated this _____ day of _____, 2024.

Four Rivers Sanitation Authority
(Owner)

By: _____

Name: Timothy S. Hanson
Title: Executive Director

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged,

By: _____ this the _____ day of _____, 2024.
(Contractor)

By: _____

Printed Name: _____
Title: _____

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Notice to Proceed

Via Email and USPS:

To: Name _____
Company _____
Street _____
City, State, Zip _____
Email _____

Date: _____

Project: **BNR Improvements - Aeration Basin Modifications**
Capital Project No. 2304
IEPA Project No. L17-6576

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

The date of completion of all WORK is therefore _____.

Four Rivers Sanitation Authority
(Owner)

By: _____

Name: Timothy S. Hanson
Title: Executive Director

ACCEPTANCE OF NOTICE

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

_____
this the _ day of _____, 20____.

_____
Firm Name

By: _____

Printed Name: _____
Title: _____

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Change Order No. _____

Date of Issuance: _____ Effective Date: _____

Project:	Owner:	Owner's Contract No.:
Contract:		Date of Contract:
Contractor:		Engineer's Project No.:

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

Description:

Attachments: (List documents supporting change):

CHANGE IN CONTRACT PRICE:

Original Contract Price:

$_____

[Increase] [Decrease] from previously approved Change Orders No._____to No._____:

$_____

Contract Price prior to this Change Order:

$_____

[Increase] [Decrease] of this Change Order:

$_____

Contract Price incorporating this Change Order:

$_____

CHANGE IN CONTRACT TIMES:

Original Contract Times: ☐ Working days ☐ Calendar days

Substantial completion (days or date): _____

Ready for final payment (days or date): _____

[Increase] [Decrease] from previously approved Change Orders No._____to No._____:

Substantial completion (days): _____

Ready for final payment (days): _____

Contract Times prior to this Change Order:

Substantial completion (days or date): _____

Ready for final payment (days or date): _____

[Increase] [Decrease] of this Change Order:

Substantial completion (days or date): _____

Ready for final payment (days or date): _____

Contract Times with all approved Change Orders:

Substantial completion (days or date): _____

Ready for final payment (days or date): _____

RECOMMENDED:	ACCEPTED:	ACCEPTED:
By: _____	By: _____	By: _____
Engineer (Authorized Signature)	Owner (Authorized Signature)	Contractor (Authorized Signature)
Date: _____	Date: _____	Date: _____

Approved by Funding Agency (if applicable): _____ Date: _____

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Section III

Federal, State, and Local Forms

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

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

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

Timetables	Goals for minority participation for each trade	Goals for female participation in each trade
	6.3 %*	**6.9 %***

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

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

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

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

4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is Illinois, Winnebago County, City of Rockford.

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Construction Contractors Affirmative Action Requirements
Goals for Minority Participation

(As published in the Friday, October 3, 1980 Federal Register)

Female participation = 6.9% Statewide

County	Percentage	County	Percentage	County	Percentage
Adams	3.1%	Henry	4.6%	Perry	11.4%
Alexander	11.4%	Iroquois	18.4%	Piatt	4.8%
Bond	11.4%	Jackson	11.4%	Pike	3.1%
Boone	6.3%	Jasper	11.4%	Pope	5.2%
Brown	3.1%	Jefferson	11.4%	Pulaski	11.4%
Bureau	18.4%	Jersey	11.4%	Putnam	18.4%
Calhoun	11.4%	Jo Davis	0.5%	Randolph	11.4%
Carroll	3.4%	Johnson	11.4%	Richland	11.4%
Cass	4.0%	Kane	19.6%	Rock Island	4.6%
Champaign	7.8%	Kankakee	9.1%	Saline	3.5%
Christian	4.0%	Kendall	18.4%	Sangamon	4.5%
Clark	2.5%	Knox	3.3%	Schuyler	3.3%
Clay	11.4%	Lake	19.6%	Scott	4.0%
Clinton	14.7%	La Salle	18.4%	Shelby	4.0%
Coles	4.8%	Lawrence	3.5%	Stark	3.3%
Cook	19.6%	Lee	4.6%	St. Clair	14.7%
Crawford	2.5%	Livingston	18.4%	Stephenson	4.6%
Cumberland	4.8%	Logan	4.0%	Tazwell	4.4%
De Kalb	18.4%	Macon	7.6%	Union	11.4%
De Witt	4.0%	Macoupin	11.4%	Vermilion	4.8%
Douglas	4.8%	Madison	14.7%	Wabash	3.5%
Du Page	19.6%	Marion	11.4%	Warren	3.3%
Edgar	4.8%	Marshall	3.3%	Washington	11.4%
Edwards	3.5%	Mason	3.3%	Wayne	11.4%
Effingham	21.4%	Massac	5.2%	White	3.5%
Fayette	11.4%	McDonough	3.3%	Whiteside	3.4%
Ford	4.8%	McHenry	19.6%	Will	20.9%
Franklin	11.4%	McLean	2.5%	Williamson	11.4%
Fulton	3.3%	Menard	4.5%	Winnebago	6.3%
Gallatin	3.5%	Mercer	3.4%	Woodford	4.4%
Greene	11.4%	Monroe	14.7%		
Grundy	18.4%	Montgomery	11.4%		
Hamilton	3.5%	Morgan	4.0%		
Hancock	3.4%	Moultrie	4.0%		
Hardin	5.2%	Ogle	4.6%		
Henderson	3.4%	Peoria	4.4%		

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

41 CFR 60

60-4.1 Scope and Application.

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

[43 FR 49254, Oct. 20, 1978; 43 FR 51404, Nov. 3, 1978]

60-4.2 Solicitations

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

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

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

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

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

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

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

Time-tables	Goals for minority participation for each trade	Goals for female participation in each trade
	6.3 %	**6.9** %

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the contractor performs construction in a geographical area located outside of the covered area, it shall apply the goals established for such geographical are 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 established for the geographical area where the contract resulting form this solicitation is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR 60-4. Compliance with the goals will be measured against the total work hours performed.

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

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

[43 FR 49254, Oct. 20, 1978; 43 FR 51401, Nov. 3, 1978, as amended at 45 FR 65977, Oct. 3, 1980]

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60-4.3 Equal Opportunity Clauses.

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

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

1. As used in these specifications:
   a. "Covered area" means the geographical area described in the solicitation from which this contract resulted.
   b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority.
   c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.
   d. "Minority" includes:
      (i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin)
      (ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
      (iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
      (iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).
2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.
3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with the Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and

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compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

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

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

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

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

   a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

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

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

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

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

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

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

h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

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

j. Encourage present minority and female employees to recruit other minority persons and women, and where reasonable, provide after school, summer and vacation employment to

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minority and female youth both on the site and in other areas of the 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 practice, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

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

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

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

8. Contractors are encouraged to participate in voluntary associations, which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

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

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

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

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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 residents (e.g. those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

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

[43 FR 49254, Oct. 20, 1978; 43 FR 51401, Nov. 3, 1978, as amended at 45 FR 65978, Oct. 3, 1980]

60-4.4 Affirmative Action Requirements

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

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Conditions, the goals and timetables for minorities to be inserted in the Notice required by 41 CFR 60-4.2 shall be the goals and timetables contained in the Hometown Plan, Imposed Plan or Special Bid Conditions presently covering the respective geographical area or project involved.

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

60-4.5 Hometown Plans

(a) A contractor participating, either individually or through an association, in an approved Hometown Plan (including heavy highway affirmative action plans) shall comply with its affirmative action obligations under Executive Order 11246 by complying with its obligations under the plan: *Provided* that each contractor or subcontractor participating in an approved plan is individually required to comply with the equal opportunity clause set forth in 41 CFR 60-1.4; to make a good faith effort to achieve the goals for each trade participating in the plan in which it has employees; and that the overall good performance by other contractors or subcontractors toward a goal in an approved plan does not excuse any covered contractor's or subcontractor's failure to take good faith efforts to achieve the plan's goals and timetables. If a contractor is not participating in an approved Hometown Plan it shall comply with the specifications set forth in § 60-4.3 of this part and with the goals and timetables for the appropriate area as listed in the notice required by 41 CFR 60-4.2 with regard to that trade.

(b) For the purposes of this part 60-4, a contractor is not participating in a Hometown Plan for a particular trade if it:

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

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

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

(4) Is signatory to a Hometown Plan for that trade but is party to a collective bargaining agreement with a labor organization for that trade but the two have not jointly executed

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a specific commitment to minority and female goals and timetables and incorporated the commitment in the Hometown Plan for that trade;

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

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

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

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

60-4.6 Goals and Timetables

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

[45 FR 65978, OCT. 3, 1980]

60-4.7 Effect on Other Regulations

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

60-4.8 Show Cause Notice

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

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

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60-4.9 Incorporation by Operation of the Order

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

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U.S. Environmental Protection Agency
Certification of Non-segregated Facilities

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

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

_____ _____

Signature Date

_____

Name and Title of Signer (Please type)

_____

Firm Name

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

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Notice to Labor Unions or Other Organizations of Workers
Nondiscrimination in Employment

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

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

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

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

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

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

Dated this _____ day of _____, 20___.

_____
(Contractor or Subcontractor)

By: _____

Name: _____

Title: _____

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EPA Project Control #: L17-6576

United States Environmental Protection Agency
Washington, DC 20460

Certification Regarding Debarment, Suspension and Other Responsibility Matters

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

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

(b) Have not within a three year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property.

(c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1) (b) of this certification; and

(d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

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

_____

(Typed Name & Title of Authorized Representative)

_____

(Signature of Authorized Representative) (Date)

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

EPA FORM 5700-49 (11-88)

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Instructions

Under Executive Order 12549 an individual or organization debarred or excluded from participation in Federal assistance or benefit programs may not receive any assistance award under a Federal program, or a sub-agreement thereunder for $25,000 or more.

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

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

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

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

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

Additional copies/assistance may be requested from:

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

EPA Form 5700-19 (11-88)

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Construction Contracts of Loan Recipient and Other Sections from "Procedures for Issuing Loans from the Water Pollution Control Loan Program"

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Section 365.420(b)(2) Change Orders

A) When the loan recipient authorizes the contractor to add, delete, or revise the work within the general scope of the contract documents, or authorizes an adjustment in the contract price or contract time, the loan recipient shall submit a change order to the Agency.

B) For each change order, the loan recipient shall submit to the Agency for approval, the following documentation:

   i) One (1) copy of the fully executed change order signed by the loan recipient, construction engineer, and the contractor; and

   ii) A description of any changes, with justification for the changes.

C) Prior approval by the Agency of a change order is required when a change order results in:

   i) Alterations in design scope that require a modification to a construction permit; or

   ii) An increase in the amount of loan funds needed to complete the project.

D) Failure to give timely notice of proposed project changes or action by the loan recipient that is not consistent with the Agency's determination on those changes may result in disallowance of loan participation for costs incurred that are attributable to the change.

Section 365.620(f) Required Construction Contract Provisions

Each construction contract shall include the following provisions:

1) Audit; access to records:

   A) The contractor shall maintain books, records, documents and other evidence directly pertinent to performance on loan work in accordance with Generally Accepted Accounting Principles (GAAP). The contractor shall also maintain the financial information and data used by the contractor in the preparation of support of any cost submissions required under Section 365.420(b)(2) of the loan rules and a copy of the cost summary submitted to the owner. The Illinois Auditor General, the owner, the Agency, or any of their authorized representatives shall have access to the books, records, papers, documents, and other evidence for purposes of inspection, audit, examination, excerpts, transcriptions, and copying. The contractor shall provide facilities for access and inspection.

   B) For a formally advertised, competitively awarded, fixed price contract, the contractor shall include access to records as required by subsection (a)(1)(A) of the loan rules for all negotiated change orders and contract amendments in excess of $25,000 that affect the contract price. In the case of all other prime contracts, the contractor shall agree to include access to records required by subsection (a)(1)(A) in all contracts and all tier subcontracts and change orders in excess of $25,000 that was directly related to project performance.

   C) Audits shall be in accordance with auditing standards generally accepted in the United States.

D) The contractor shall agree to the disclosure of all information and reports resulting from access to records required by subsection (a)(1)(A). When the audit concerns the contractor, the auditing agency shall afford the contractor an opportunity for an audit exit conference and an opportunity to comment on the pertinent portions of the draft audit report. The final audit report shall include the written comments, if any, of the audited parties.

E) The records required by subsection (a)(1)(A) shall be maintained and made available during performance of the work under the loan agreement and for three (3) years after the date of the final loan audit. In addition, records that relate to any dispute or litigation or the settlement of claims arising out of any performance, costs or items which an audit exception has been taken, shall be maintained and made available for three (3) years after resolution of the dispute, appeal, litigation, claim or exception.

F) The right of access will generally be exercised with respect to financial records under:

i) Negotiated prime contracts;

ii) Negotiated change orders or contract amendments in excess of $25,000 affecting the price of any formally advertised, competitively awarded, fixed price contract; and

iii) Subcontracts or purchase orders under any contract other than a formally advertised, competitively awarded, fixed price contract.

G) The right of access will generally not be exercised with respect to a prime contract, subcontract, or purchase order awarded after effective price competition. In any event, the right of access shall be exercised under any type of contract or subcontract.

i) With respect to records pertaining directly to contract performance, excluding any financial records of the contractor; and

ii) If there is any indication that fraud, gross abuse, or corrupt practices may be involved in the award or performance of the contract or subcontract.

2) Covenant against contingent fees.

The contractor shall warrant that no person or selling agency has been employed or retained to solicit or secure the contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee. For breach or violation of this warranty, the owner shall have the right to annul the contract without liability or in its discretion to deduct from the contract price or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee.

3) Wage provisions.

The Contractor shall pay prevailing wages in accordance with the Davis-Bacon Act (40 USC 3141 through 3148) as defined by the US Department of Labor.

4) Disadvantaged Business Enterprise requirements.

The contractor shall provide evidence that the contractor has taken affirmative steps in accordance with 40 CFR 33 to assure that disadvantaged business enterprises are used when possible as sources of supplies, equipment, construction, and services, consistent with the provisions of the Agency's Operating Agreement with USEPA.

5) Debarment and suspension provisions.

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The contract shall require the successful bidders to submit a Certificate Regarding Debarment, Suspension, and Other Responsibility Matters (EPA Form 5700-49) showing compliance with federal Executive Order 12549.

6) Non-segregated facilities provision.

   The contractor shall be required to submit a Certification of Non-segregated Facilities on forms provided by the Agency.

7) American Iron and Steel

   The contractor shall be required to use American Iron and Steel, if required by USEPA for that fiscal year.

8) A clause that provides:

   "No contractor or subcontractor shall discriminate on the basis of race, color, national origin or sex in performance of this contract. The contractor or subcontractor shall carry out applicable requirements of 40 CFR 33 in the award and administration of contracts awarded under the WPCLP. Failure by the contractor or subcontractor 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."

Section 365.620(g) Subcontracts Under Construction Contracts

The award or execution of all subcontracts by a prime contractor and the procurement and negotiation procedures used by the prime contractor shall comply with:

1) All applicable provisions of federal, State, and local law;
2) All provisions of Part 365 regarding fraud and other unlawful or corrupt practices;
3) All provisions of Part 365 with respect to access to facilities, records, and audit of records; and
4) All provisions of subsection 365.620(f)(5) that require a Certification Regarding Debarment, Suspension and Other Responsibility Matters (EPA Form 5700-49) showing compliance with any controlling federal Executive Orders.

Section 365.620(h) Contractor Bankruptcy

In the event of a contractor bankruptcy, the loan recipient shall notify the Agency and shall keep the Agency advised of any negotiations with the bonding company, including any proposed settlement. The Agency may participate in those negotiations and will advise the loan recipient of the impact of any proposed settlement to the loan agreement. The loan recipient shall be responsible for assuring that every appropriate procedure and incidental legal requirement is observed in advertising for bids and re-awarding a construction contract.

Section 365.620(i) Access

Every contract entered by the loan recipient for construction work, and every subagreement, shall provide the Agency representatives with access to the work. The contractor or subcontractor shall provide facilities for such access and inspection.

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Section 365.640(c) Remedies

All claims, counter-claims, disputes, and other matters in question between the recipient and the contractor arising out of, or relating to, a subagreement or its breach shall be decided by arbitration if the parties agree, or in a court of competent jurisdiction within the State.

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Bidder Certification
In Compliance with Article 33E-11 to the
"Criminal Code of 2012"

I, _____, do hereby certify that:

1. I am _____ of the _____ and
   (Position) (Firm)

   have authority to execute this certification on behalf of the firm.

2. This firm is not barred from bidding on this contract due to either a Bid-rigging or Bid Rotating violation as set forth in Article 33E-11 to the "Illinois Criminal Code of 2012 [720 ILCS 5/33E-11]."

Name of Firm: _____

Signature: _____

Title: _____

Date: _____

Corporate Seal (where appropriate)

On this _____ day of _____, 20___, before me appeared (Name) _____ _____ to me personally known, who, being duly sworn, did execute the foregoing affidavit, and did state that he or she was properly authorized by (Name of Firm) _____ _____ to execute the affidavit and did so as his or her free act and deed.

Notary Public _____ Commission Expires _____

Notary Seal

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Specification for Disadvantaged Business Enterprise Participation

Name of Loan Recipient: Four Rivers Sanitation Authority (FRSA)

I. Disadvantaged Business Enterprise Policy

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

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

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

II. Pre-Contract Award Obligations

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

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

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

III. Evaluation of Disadvantaged Business Utilization and Affirmative Efforts

A. As a prerequisite to demonstrate compliance with FRSA's disadvantaged business policy, all bidders shall provide the following with its bid:

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

   OR

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

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

3. List of all DBE and non-DBE's that submitted proposals to the bidder along with the date of the proposal. Names, addresses, phone number and/or email are required.
4. List of disadvantaged businesses not being utilized and justification for non-utilization.
5. If DBE subcontractors will be utilized for the project, a completed and signed copy of IEPA DBE Form No. 3 (DBE Subcontractor Utilization Form) or an equivalent "Notice of Intent" is needed from each subcontractor.
6. If DBE subcontractors will be utilized for the project, a completed and signed certification from the bidder(s), attesting that the bidder has no controlling or dominating interest or conflict of interest with the disadvantaged business that will be utilized.
7. In instances where the bidder(s) does not receive any proposals from disadvantaged businesses prior to bid opening, the bidder(s) must provide a written certification attesting that no proposals were received.

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

IV. Sanctions

A. FRSA may reject one (1) or all bids when the information submitted by the bidder(s) fails to demonstrate compliance with the disadvantaged business requirements (i.e. the bidder fails to place their pre-bid advertisement in a daily newspaper, or approved website, at least 16 days prior to bid opening).

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

1. Declare the bidder and/or subcontractor non-responsible and therefore, ineligible for contract award.
2. Disallow the contract costs associated with non-compliance.
3. Refer matters which may be fraudulent to the Illinois Attorney General

V. Post-Contract Award Compliance

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

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

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

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Suggested Disadvantaged Business Enterprise (DBE) Advertisement for Construction Contractors

Notice to Disadvantaged Businesses

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

is seeking disadvantaged businesses for the Four Rivers Sanitation Authority project for subcontracting opportunities in the following areas: _____, _____ _____, _____.

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

All negotiations must be completed prior to bid opening _____ (date of bid opening).

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

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Summary Report of Disadvantaged Business Enterprise (DBE) Requirements for Contractors

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

OR

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

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

   Name of Company
   Name of Owner(s)
   Address of Company
   Email Address of Company
   Telephone Number
   Date of Proposal
   Type of Business
   Type of DBE
   Description of work to be performed

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

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

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

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

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

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

(To be completed by all Prime Contractors)

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

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

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

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

_____

_____

_____

_____

_____

_____

☐ This firm did not receive any inquiries from DBEs.

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

Dated this ___ day of _____, 20_____.

Contractor:

_____

By: _____
Name: _____
Title: _____
Address: _____
_____

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

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

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

Subcontractor Name:	Project Name BNR Improvements – Aeration Basin Modifications, FRSA Capital Project No. 2304
Contact Person's Name and Title:	
Address:	
Telephone:	Email:
DBE Certified By:	Select all that apply. At least one (1) is required: **MBE WBE SBE DBE**
Prime Contractor Name:	
Type of Work to be Performed	Cost Estimate of Work

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

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

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

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

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

Company Name & Contact Person	Address	Phone No. w/Area Code	Email	Proposed Work (supplies, paint, etc.)	DBE Status (MBE, WBE, DBE, SBE or N/A)
					___ Check if hired
					___ Check if hired
					___ Check if hired
					___ Check if hired
					___ Check if hired
					___ Check if hired
					___ Check if hired
					___ Check if hired

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Bidder Certification Regarding the Use of Iron, Steel, Manufactured Products, and Construction Materials Produced in the United States (Build America, Buy America Act)

I, _____, do hereby certify that:
Name

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

2. I am aware that all iron, steel, manufactured products, and construction materials used for this project must be produced in the United States per the federal Build America, Buy America Act (BABA) signed by President Biden on November 15, 2021. Pub. L. No. 117-58, §§ 70901-52.

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

4. I understand that all manufactured products used in the project must be produced in the United States. This means the manufactured product was manufactured in the United States, and the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than fifty-five percent (55%) of the total cost of all components of the manufactured product.

5. I acknowledge that all construction materials for this project must be manufactured in the United States. This means all manufacturing processes for the construction materials occurred in the United States.

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

Signature: _____

Date: _____

Corporate Seal (where appropriate)

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Requirements Specific to Buy America, Build America (BABA)

On November 15, 2021, President Biden signed into law the Infrastructure Investment and Jobs Act (IIJA), Pub. L. No. 117-58, which includes the Build America, Buy America Act (BABA). The purpose of BABA is to ensure that federally-funded Infrastructure projects only utilize iron, steel, manufactured products, and construction materials produced in the United States. The requirement to use products produced in the United States applies to all projects for the construction, alteration, maintenance, or repair or publicly owned treatment works (POTW) and Drinking Water State Revolving Fund (DWSRF) utilize federal funds, loan recipients must use iron, steel, manufactured products, and construction materials that are produced in the United States. Guidance is available on USEPA's website: https://www.epa.gov/cwsfr/build-america-buy-america-baba. Waivers from the requirements are available under certain circumstances. BABA requires the following:

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

BABA only applies to items that are consumed in, incorporated into, or affixed to an infrastructure project. It does not apply to tools, equipment, and supplies, such as temporary scaffolding, brought to the construction site and removed at project completion. BABA does not apply to equipment and furnishings, such as movable chairs, desks, and portable computer equipment that are used at or within the finished infrastructure project but are not an integral part of or permanently affixed to the structure. BABA requirements apply to an entire infrastructure project, even if it is funded by both Federal and non-Federal funds under one or more awards.

Construction Materials include an article, material, or supply that consists primarily of:

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

Construction Materials does not include items made primarily of iron or steel; manufactured products; cement or cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives.

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Requirements Specific to Iron and Steel

The existing American Iron and Steel (AIS) requirements will continue as part of BABA. An iron or steel product is one of the items listed below and is made primarily of iron or steel that is permanently incorporated into the public water system or treatment works.

- Pipes (lined or unlined) and pipe fittings
- Hydrants
- Pipe clamps and restraints
- Flanges
- Valves
- Tanks
- Structural Steel
- Reinforced precast concrete
- Manhole covers and other municipal castings such as valve boxes, drainage grates, bollards, etc.
- Construction Materials such as trusses, wire, grating, ductwork, fence tubing, wall panels, etc.

For one (1) of the listed iron or steel products to be considered subject to the BABA requirements, it must be made of greater than fifty percent (50%) iron or steel, measured by the material costs. "Steel" means an alloy that includes at least fifty percent (50%) iron, between .02 and 2 percent carbon, and may include other elements. Metallic elements such as chromium, nickel, molybdenum, manganese, and silicon may be added during the melting of steel for the purpose of enhancing properties such as corrosion resistance, hardness, or strength. The definition of steel covers carbon steel, alloy steel, stainless steel, tool steel, and other specialty steels. AIS Guidance is available at https://www2/illinois/gov/epa/topics/grants-loans/state-revolving-fund/guidance/Pages/american-iron-and-steel-requirements.aspx.

Recordkeeping and Documenting the Country of Origin for Iron, Steel, Manufactured Products, and Construction Materials Used in Loan-Funded Projects

Loan recipients with the assistance from their general contractor must be able to verify that products used in their projects comply with the BABA requirements. USEPA recommends loan recipients use a "Step Certification" process to ensure that producers adhere to the BABA requirements. Step Certification is a process under which each handler (supplier, fabricator, manufacturer, etc.) of the iron, steel, manufactured products, or construction materials certifies that that their step in the process was domestically performed. Each time a step in the manufacturing process takes place, the manufacturer delivers its work along with a certification of its origin.

A certification can be quite simple if it includes the name of the manufacturer, the location of the manufacturing facility (not company headquarters), a description of the product or item being delivered, and a signature by a manufacturer's responsible party. Certification could be achieved by other methods such as requiring the final manufacturer, who delivers the products to the worksite, to provide certification that all manufacturing processes occurred in the US. While this type of certification is easier and acceptable, it may not provide the same degree of assurance and

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additional documentation may be needed. USEPA auditors recommend keeping records of when and where the products were delivered. Records from the manufacturer should refer to specific items such as pipes, valves, and meters. Try to avoid records containing broad statements such as, "All products delivered were USA made."

Regardless of method, documents regarding the country of origin for all covered items should be collected and maintained by the loan recipients. Having a good paper trail is invaluable during an inspection or audit.

Sample Certification Letter

Below is a sample certification letter for BABA compliance. The completed letter provided to the construction contractor or loan recipient by the supplier, fabricator, manufacturer, etc. of covered products. Documentation must be provided on company letterhead.

Company Letterhead

Date

Company Name
Company Address
City, State Zip

Subject: Build America, Buy America Act Step Certification for BNR Improvements – Aeration Basin Modifications, FRSA Capital Project No. 2304, IEPA Project No. l17-6576

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

Item, Products and/or Materials: (list below)

1. _____
2. _____
3. _____

Such process took place at the following location (City and State must be included):

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

_____
Signed by Company Representative

_____
Name Clearly Typed

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Illinois Works Jobs Program Act – Apprenticeship Initiative Information for Contractors

Summary: The Illinois Works Jobs Program Act, 30 ILCS 559/Art. 20, is a statewide initiative to ensure that all Illinois residents have access to State capital projects and careers in the construction industry and building trades and to provide contracting and employment opportunities to historically underrepresented populations in the construction industry. This will be accomplished through three (3) programs created by the Illinois Works Jobs Program Act: The Illinois Works Apprenticeship Initiative, the Illinois Works Pre-Apprenticeship Program, and the Illinois Works Bid Credit Program. Additional information is available at the following website:

https://www2.illinois.gov/dceo/WorkforceDevelopment/Pages/IllinoisWorksJobProgramAct.aspx.

The goal of the Illinois Works Apprenticeship Initiative ("10% apprenticeship goal") is that for projects estimated to cost $500,000 or more, apprentices will perform either ten percent (10%) of the total labor hours actually worked in each prevailing wage classification or ten percent (10%) of the estimated labor hours in each prevailing wage classification, whichever is less. The ten percent (10%) apprenticeship goal applies to projects being paid for in whole or in part by appropriated capital funds to construct a public work either through a contract or grant issued by a State agency. A determination was made that this requirement also applies to IEPA loans. The $500,000 threshold applies to the total project cost and NOT the total cost or value of an individual construction contract.

Certification: Apprentices are required to be US Department of Labor certified (not limited to pre-apprentice program graduates).

Applicability

If a project is estimated to receive $500,000 or more of State Capital Funding for the project:

If the State's contribution of the project amount equals fifty percent (50%) or more of the cost for the project, the ten percent (10%) apprenticeship requirement applies to all prevailing wage eligible work performed by contractors on the public works project.

If the state's contribution to the project is less than fifty percent (50%) of the cost for the project, the ten percent (10%) apprenticeship requirement applies only to prevailing wage eligible work being funded from state funds.

The Project has less than $500,000 of State Capital Funding, by the Total Estimated Project Cost is $500,000 or more:

If the state's contribution to the project amount equals fifty percent (50%) or more of the estimated cost for the project, the ten percent (10%) apprenticeship requirement applies to all prevailing wage eligible work performed by contractors on the public works project.

If the state's contribution to the project is less than fifty percent (50%) of the estimated cost for the project, the ten percent (10%) apprenticeship requirement does not apply.

Total Estimated Project Cost is less than $500,000: The ten percent (10%) apprenticeship requirement does not apply. The $500,000 threshold applies to the total project cost and NOT the total cost or value of an individual construction contract.

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Waivers from the Requirements: If goals cannot be met, the state has discretion to grant waivers, reductions or to hold public hearings on the issue. Factors to be considered include the scale of the project and whether the contractor or subcontractor seeking the action has previously requested reductions or waivers. A waiver form is available on the IEPA website at:

https://www2.illinois.gov/epa/Documents/epa-forms/water/financial-assistance/apprenticeship/Waiver-Request.pdf

The form can also be obtained from DCEO.

Reporting: An example quarterly reporting form is attached. A fillable version is available on the IEPA website. Contractors should coordinate with the loan applicant and their consultant for further instructions regarding these forms. Loan applicants are ultimately responsible for reporting quarterly labor hours to the state, but coordination with their contractor is essential. All loan-funded projects are subject to payment of Davis-Bacon wages.

For general apprenticeship questions, please contact the Illinois Works Office at CEO.ILWorks@Illinois.gov.

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Illinois Works Apprenticeship Initiative
Periodic Grantee Report

Organization Name	Four Rivers Sanitation Authority (FRSA)	FEIN Number		UEIN Number	
Loan Awarding Agency	IEPA - Loan Department	Construction Start Date		Construction End Date	
Loan Number	Loan No. L17-6576	Estimated Total Project Costs		Estimated Total State Contribution	

Reporting Period: Period Start Date _____ Period End Date _____

Applicable Apprenticeship Goal (Select all that apply):

☐ 10% total project cost ☐ 10% total state contribution only

☐ Waiver Approved by IL DCEO IL DCEO Waiver Approval Date _____

(If a waiver was granted for any prevailing wage classification, the Grantee does not need to report on those classifications on this form.)

☐ Reduction Approved by IL DCEO IL DCEO Reduction Approval Date _____

(If selected, enter the applicable prevailing wage classification(s) and approved reduced percentage(s).)

Prevailing Wage Classification	Reduced Percentage	Prevailing Wage Classification	Reduced Percentage

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Illinois Works Apprenticeship Initiative
Periodic Grantee Report

Prevailing Wage Classification	Reduced Percentage		Prevailing Wage Classification	Reduced Percentage

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Illinois Works Apprenticeship Initiative
Periodic Grantee Report

As you work towards meeting the 10% apprenticeship goal, you will have to follow the new statutorily mandated Illinois Works compliance requirement (per State legislative update (30ILCS559/20-20(a)(2)) where half of the 10% apprenticeship goal for each wage classification is to be performed by apprentices who are graduates of the Illinois Works Pre-Apprenticeship Program, Climate Works Pre-Apprenticeship Program, or IDOT's Highway Construction Careers Program (graduates of one of the programs or a combination of graduates from the programs can be used for compliance).

Please provide information in this chart for the apprentices who are graduates of the Illinois Works Pre-Apprenticeship Program, Climate Works Pre-Apprenticeship Program, or IDOT's Highway Construction Careers Program who are being claimed for compliance.

A. Prevailing Wage Classification	B. Name of the Pre-apprenticeship Program the Apprentice Graduated from (Illinois Works, Climate Works, or IDOT's Highway Construction Careers Program)	C. First and Last Name of Apprentices who are Graduates of Illinois Works, Climate Works, or IDOT's Highway Construction Careers Program	D. Last Four Digits of Social Security # Number of Apprentices who are Graduates of Illinois Works, Climate Works, or IDOT's Highway Construction Careers Program	E. ID Number (Issued by the Pre-apprenticeship program) of Apprentices who are Graduates of Illinois Works, Climate Works, or IDOT's Highway Construction Careers Program

NOT TO BE USED FOR BIDDING PURPOSES

Illinois Works Apprenticeship Initiative
Periodic Grantee Report

A. Prevailing Wage Classification	B. Total Hours for Classification in Reporting Period	C. Total Apprenticeship Hours for Classification in Reporting Period	D. % of Apprenticeship Hours (Divide C by B)	E. Total Hours for Classification in Reporting Period Performed by Apprentices who are Graduates of Illinois Works, Climate Works, or IDOT's Highway Construction Careers Program	F. % of Apprenticeship Hours Performed by Apprentices who are Graduates of Illinois Works, Climate Works, or IDOT's Highway Construction Careers Program (Divide E by B)	G. Total Hours for Classification Cumulative from the Start of the Project	H. Total Apprenticeship Hours for Classification (Cumulative from Start of the Project)	I. % Apprenticeship Hours (Cumulative from Start of the Project) (Divide H by G)	J. Total Hours for Classification (Cumulative from Start of the Project) Performed by Apprentices who are Graduates of Illinois Works, Climate Works, or IDOT's Highway Construction Careers Program	K. % Apprenticeship Hours (Cumulative from Start of the Project) Performed by Apprentices who are Graduates of Illinois Works, Climate Works, or IDOT's Highway Construction Careers Program (Divide J by G)	L. If no Apprenticeship hours recorded, explain.

NOT TO BE USED FOR BIDDING PURPOSES

Illinois Works Apprenticeship Initiative
Periodic Grantee Report

Organization Certification and State Agency Acknowledgement

1. Organization Certification:

By signing this form, I certify to the best of my knowledge and belief that the form is true, complete and accurate and that any false, fictitious or fraudulent information or the omission of any material fact could result in the immediate termination of my grant award(s).

Institution/Organization Name:

Printed Name (Executive Director or equivalent):

Title (Executive Director or equivalent):

Signature (Executive Director or equivalent):

Date/Time Field

2. State Agency Acknowledgement:

State Agency

Printed Name

Title

Signature:

Date/Time Field

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Section IV

General Conditions and Supplementary Conditions

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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

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requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.

b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.

c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.

d. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

12. *Contract*—The entire and integrated written contract between Owner and Contractor concerning the Work.

13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.

14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.

15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any, (b) achieve Substantial Completion; and (c) complete the Work.

16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.

17. *Cost of the Work*—See Paragraph 13.01 for definition.

18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.

19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.

20. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.

21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the

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

22. *Engineer*—The individual or entity named as such in the Agreement.

23. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.

24. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.

    a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.

    b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.

    c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.

25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

27. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.

28. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.

29. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.

30. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.

31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.

32. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

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33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.

34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.

35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals.

36. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

38. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by Owner which are designated for the use of Contractor.

39. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

40. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.

41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers' instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.

42. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion of such Work.

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43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.

44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.

45. *Supplier*—A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.

46. *Technical Data*

    a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.

    b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.

    c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.

47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.

48. *Unit Price Work*—Work to be paid for on the basis of unit prices.

49. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

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1.02 *Terminology*

A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives*: The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

C. *Day*: The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective*: The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

1. does not conform to the Contract Documents;

2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

3. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).

E. *Furnish, Install, Perform, Provide*

1. The word "furnish," when used in connection with services, materials, or equipment, means to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, means to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, means to furnish and install said services, materials, or equipment complete and ready for intended use.

4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words "furnish," "install," "perform," or "provide," then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

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F. *Contract Price or Contract Times*: References to a change in "Contract Price or Contract Times" or "Contract Times or Contract Price" or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term "or both" is not expressed.

G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2—PRELIMINARY MATTERS

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

A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).

B. *Evidence of Contractor's Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.

C. *Evidence of Owner's Insurance*: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work

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

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 *Electronic Transmittals*

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.

B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

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ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one Contract Document is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents.

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.

D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.

E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

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

G. Nothing in the Contract Documents creates:

1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or

2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

3.02 *Reference Standards*

A. *Standards Specifications, Codes, Laws and Regulations*

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility

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

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

1. *Contractor's Verification of Figures and Field Measurements*: Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.

2. *Contractor's Review of Contract Documents*: If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:

   a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or

   b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

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

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B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

A. Contractor and its Subcontractors and Suppliers shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

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

4.02 *Starting the Work*

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

4.03 *Reference Points*

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

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

4.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.

B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times.

B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.

C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;

2. Abnormal weather conditions;

3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and

4. Acts of war or terrorism.

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D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:

1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.

2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.

3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.

E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:

1. The circumstances that form the basis for the requested adjustment;

2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;

3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;

4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and

5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.

Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.

F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.

G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

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

5.01 *Availability of Lands*

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

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B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

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

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

B. *Removal of Debris During Performance of the Work*: During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.

C. *Cleaning*: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment

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

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

5.03 *Subsurface and Physical Conditions*

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

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

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

3. Technical Data contained in such reports and drawings.

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

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

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

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;

3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or

4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

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5.04 *Differing Subsurface or Physical Conditions*

A. *Notice by Contractor*: If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;

2. is of such a nature as to require a change in the Drawings or Specifications;

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

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

B. *Engineer's Review*: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. *Owner's Statement to Contractor Regarding Site Condition*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

D. *Early Resumption of Work*: If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

E. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in

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

a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;

b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:

a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;

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

c. Contractor failed to give the written notice required by Paragraph 5.04.A.

3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.

4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

F. *Underground Facilities; Hazardous Environmental Conditions*: Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 *Underground Facilities*

A. *Contractor's Responsibilities*: Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:

1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;

2. complying with applicable state and local utility damage prevention Laws and Regulations;

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3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;

4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and

5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. *Notice by Contractor*: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.

C. *Engineer's Review*: Engineer will:

1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;

2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;

3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and

4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.

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

D. *Owner's Statement to Contractor Regarding Underground Facility*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.

E. *Early Resumption of Work*: If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

F. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown

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

a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;

b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and

c. Contractor gave the notice required in Paragraph 5.05.B.

2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.

3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 *Hazardous Environmental Conditions at Site*

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

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;

2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and

3. Technical Data contained in such reports and drawings.

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

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

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of construction to be employed by Contractor, and safety precautions and programs incident thereto;

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.

H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special

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

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

J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.

B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.

C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or

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

D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.

E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.

F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.

G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.

H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 *Insurance—General Provisions*

A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.

B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

C. Alternative forms of insurance coverage, including but not limited to self-insurance and "Occupational Accident and Excess Employer's Indemnity Policies," are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.

D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by

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

E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.

F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.

G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

H. Contractor shall require:

1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and

2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.

I. If either party does not purchase or maintain the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.

J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.

K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

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L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.

M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.

N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

6.03 *Contractor's Insurance*

A. *Required Insurance*: Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.

B. *General Provisions*: The policies of insurance required by this Paragraph 6.03 as supplemented must:

1. include at least the specific coverages required;

2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;

3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;

4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and

5. include all necessary endorsements to support the stated requirements.

C. *Additional Insureds*: The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:

1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;

2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;

3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

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4. not seek contribution from insurance maintained by the additional insured; and

5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 *Builder's Risk and Other Property Insurance*

A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.

B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.

C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.

D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.

E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 *Property Losses; Subrogation*

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

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

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.

2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.

1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.

C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.

D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

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6.06 *Receipt and Application of Property Insurance Proceeds*

A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

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

7.02 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.

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

7.03 *Labor; Working Hours*

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

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B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.

C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.04 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.05 *"Or Equals"*

A. *Contractor's Request; Governing Criteria*: Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that the proposed item:

1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

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2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;

3) has a proven record of performance and availability of responsive service; and

4) is not objectionable to Owner.

b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times; and

2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.

B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.

C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.

E. *Treatment as a Substitution Request*: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 *Substitutes*

A. *Contractor's Request; Governing Criteria*: Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

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3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:

   a. will certify that the proposed substitute item will:

      1) perform adequately the functions and achieve the results called for by the general design;

      2) be similar in substance to the item specified; and

      3) be suited to the same use as the item specified.

   b. will state:

      1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;

      2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and

      3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.

   c. will identify:

      1) all variations of the proposed substitute item from the item specified; and

      2) available engineering, sales, maintenance, repair, and replacement services.

   d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.

C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

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E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.

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

7.07 *Concerning Subcontractors and Suppliers*

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.

B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.

C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.

D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.

E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.

F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.

G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

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H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.

I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.

J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.

K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.

L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.

M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If an invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights will be disclosed in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

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7.09 *Permits*

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

7.10 *Taxes*

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

7.11 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.

C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 *Record Documents*

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

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7.13 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.

B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.

C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.

F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.

H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

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

J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 *Hazard Communication Programs*

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

7.15 *Emergencies*

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

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

1. Before submitting a Shop Drawing or Sample, Contractor shall:

a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

b. determine and verify:

1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;

2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;

c. confirm that the Submittal is complete with respect to all related data included in the Submittal.

2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

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3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.

B. *Submittal Procedures for Shop Drawings and Samples*: Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.

1. *Shop Drawings*

a. Contractor shall submit the number of copies required in the Specifications.

b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.

2. *Samples*

a. Contractor shall submit the number of Samples required in the Specifications.

b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Engineer's Review of Shop Drawings and Samples*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.

3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will

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

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.

6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. *Resubmittal Procedures for Shop Drawings and Samples*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.

2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

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

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:

   a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.

   b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.

   c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

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d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.

2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03. 2.04, and 2.05.

F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.

B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:

1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and

2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.

C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible, or

2. normal wear and tear under normal usage.

D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:

1. Observations by Engineer;

2. Recommendation by Engineer or payment by Owner of any progress or final payment;

3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. Use or occupancy of the Work or any part thereof by Owner;

5. Any review and approval of a Shop Drawing or Sample submittal;

6. The issuance of a notice of acceptability by Engineer;

7. The end of the correction period established in Paragraph 15.08;

8. Any inspection, test, or approval by others; or

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9. Any correction of defective Work by Owner.

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

7.18 *Indemnification*

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

B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

7.19 *Delegation of Professional Design Services*

A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.

B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.

C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

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D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.

E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:

1. Checking for conformance with the requirements of this Paragraph 7.19;

2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and

3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.

F. Contractor shall not be responsible for the adequacy or performance or design criteria specified by Owner or Engineer.

G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8—OTHER WORK AT THE SITE

8.01 *Other Work*

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.

C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.

D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

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E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

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

8.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;

2. An itemization of the specific matters to be covered by such authority and responsibility; and

3. The extent of such authority and responsibilities.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

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

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B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.

1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.

2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.

C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

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

9.02 *Replacement of Engineer*

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

9.03 *Furnish Data*

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

9.04 *Pay When Due*

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

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9.05 *Lands and Easements; Reports, Tests, and Drawings*

A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

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

B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

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ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

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

10.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Resident Project Representative*

A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.

B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 *Engineer's Authority*

A. Engineer has the authority to reject Work in accordance with Article 14.

B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.

C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.

D. Engineer's authority as to changes in the Work is set forth in Article 11.

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

10.05 *Determinations for Unit Price Work*

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

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

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

10.07 *Limitations on Engineer's Authority and Responsibilities*

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

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

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

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

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

10.08 *Compliance with Safety Program*

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

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ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.

C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 *Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders covering:

1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and

4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.

B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 *Work Change Directives*

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

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B. If Owner has issued a Work Change Directive and:

1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.

2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 *Field Orders*

A. Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.

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

11.05 *Owner-Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.

B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.

C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 *Unauthorized Changes in the Work*

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

11.07 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.

B. An adjustment in the Contract Price will be determined as follows:

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1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);

2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or

3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).

C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit will be determined as follows:

1. A mutually acceptable fixed fee; or

2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;

b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;

c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;

d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;

e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and

f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

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11.08 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.

B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 *Change Proposals*

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

B. *Change Proposal Procedures*

1. *Submittal*: Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.

2. *Supporting Data*: The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.

   a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.

   b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

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

3. *Engineer's Initial Review*: Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.

4. *Engineer's Full Review and Action on the Change Proposal*: Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change

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

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

C. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 *Notification to Surety*

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

ARTICLE 12—CLAIMS

12.01 *Claims*

A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:

1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;

2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;

3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and

4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.

B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge

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

C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.

D. *Mediation*

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.

2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.

E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding, then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

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

13.01 *Cost of the Work*

A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

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2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.

5. Other costs consisting of the following:

   a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

   b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are

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

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

c. *Construction Equipment Rental*

1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.

2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.

3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

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g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

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

1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. The cost of purchasing, renting, or furnishing small tools and hand tools.

3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

5. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

6. Expenses incurred in preparing and advancing Claims.

7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee*:

1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:

a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.

b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:

1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.

2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.

2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change

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

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

13.02 *Allowances*

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances*: Contractor agrees that:

1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.

C. *Owner's Contingency Allowance*: Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision

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

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:

   a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

   b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.

2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.

3. Adjusted unit prices will apply to all units of that item.

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

14.01 *Access to Work*

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

14.02 *Tests, Inspections, and Approvals*

A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

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D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;

2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;

3. by manufacturers of equipment furnished under the Contract Documents;

4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and

5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

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

E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

A. *Contractor's Obligation*: It is Contractor's obligation to assure that the Work is not defective.

B. *Engineer's Authority*: Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. *Notice of Defects*: Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. *Correction or Removal and Replacement*: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. *Preservation of Warranties*: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

F. *Costs and Damages*: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs,

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

14.04 *Acceptance of Defective Work*

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

14.05 *Uncovering Work*

A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.

C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

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

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

14.07 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

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

15.01 *Progress Payments*

A. *Basis for Progress Payments*: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. *Applications for Payments*

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.

2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation

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

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

   a. the Work has progressed to the point indicated;

   b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

   c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

   a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or

   b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

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4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

   a. to supervise, direct, or control the Work;

   b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;

   c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;

   d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or

   e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:

   a. the Work is defective, requiring correction or replacement;

   b. the Contract Price has been reduced by Change Orders;

   c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

   d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

   e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*

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

E. *Reductions in Payment by Owner*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:

   a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

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b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

c. Contractor has failed to provide and maintain required bonds or insurance;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

f. The Work is defective, requiring correction or replacement;

g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

h. The Contract Price has been reduced by Change Orders;

i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;

j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;

k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or

l. Other items entitle Owner to a set-off against the amount recommended.

2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

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

15.03 *Substantial Completion*

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

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

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

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

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

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.

2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

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

15.06 *Final Payment*

A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.

2. The final Application for Payment must be accompanied (except as previously delivered) by:

   a. all documentation called for in the Contract Documents;

   b. consent of the surety, if any, to final payment;

   c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

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d. a list of all duly pending Change Proposals and Claims; and

e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. *Engineer's Review of Final Application and Recommendation of Payment*: If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Notice of Acceptability*: In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.

D. *Completion of Work*: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.

E. *Final Payment Becomes Due*: Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 *Waiver of Claims*

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

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

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

15.08 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such adjacent areas;
2. correct such defective Work;
3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and
4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.

B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.

C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.

D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

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

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

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

16.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);

2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;

3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or

4. Contractor's repeated disregard of the authority of Owner or Engineer.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and

2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects,

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

F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate for Convenience*

A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The

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

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

A. *Disputes Subject to Final Resolution*: The following disputed matters are subject to final resolution under the provisions of this article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and
2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.

B. *Final Resolution of Disputes*: For any dispute subject to resolution under this article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;
2. agree with the other party to submit the dispute to another dispute resolution process; or
3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18—MISCELLANEOUS

18.01 *Giving Notice*

A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:

1. in person, by a commercial courier service or otherwise, to the recipient's place of business;
2. by registered or certified mail, postage prepaid, to the recipient's place of business; or
3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 *Computation of Times*

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

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18.03 *Cumulative Remedies*

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

18.04 *Limitation of Damages*

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

18.05 *No Waiver*

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

18.06 *Survival of Obligations*

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

18.07 *Controlling Law*

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

18.08 *Assignment of Contract*

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

18.09 *Successors and Assigns*

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

18.10 *Headings*

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

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SECTION 00 73 00 - SUPPLEMENTARY CONDITIONS

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

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

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

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ARTICLE 1 - DEFINITIONS AND TERMINOLOGY.

SC-1.01. Defined Terms. Delete and replace definitions 11, 16, 18, 20, 22, 28, 45, 47 and 48 in Paragraph 1.01.A with the following:

> 11. Constituent of Concern--Asbestos; petroleum; radioactive materials; polychlorinated biphenyls (PCBs); hazardous waste; Contaminated Environmental Media; Metal Bearing Protective Coatings, Paints, and Liners; metals such as but not limited to arsenic, cadmium, chrome, cobalt, lead, and mercury; and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. ("CERCLA"); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5101 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. ("RCRA"); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
>
> 16. Contractor--The individual or entity with which Owner has contracted for the performance of the Work. The terms Contractor and CONTRACTOR are interchangeable and shall have the same meaning in the Contract Documents.

18. Drawings --The part of the Contract Documents that graphically shows the scope, extent, and character of the Work to be performed by the Contractor, as defined in the Agreement.

22. Engineer--The term Engineer shall refer to the Director of Engineering of the Four Rivers Sanitation Authority or their assign. The terms Engineer and ENGINEER are interchangeable and shall have the same meaning in the Contract Documents.

24. Hazardous Environmental Condition--The presence at the Site of Constituents of Concern, including, but not limited to, Contaminated Environmental Media, asbestos, Metal Bearing Protective Coatings, Paints, and Liners, polychlorinated biphenyls (PCBs), petroleum, Hazardous Waste, radioactive material, metals such as but not limited to arsenic, cadmium, chrome, cobalt, lead, and mercury, and other Hazardous Substances; in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto or cause them to come under the application of a federal, state, or local regulation.

a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.

b. The presence of Constituents of Concern that are to be removed or remediated are 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.

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. The terms Owner and OWNER are interchangeable and shall have the same meaning in the Contract Documents.

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 reviewed or not, are not Drawings and are not Contract Documents.

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

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products, water, steam, waste wastewater, storm water, other liquids or chemicals or traffic of other control systems.

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 ordering an addition, deletion or revision in the Work.

SC-1.01. Defined Terms. Add the following definitions to Paragraph 1.01.A:

44.a Information and data regarding the presence or location of Underground Facilities are not intended to be categorizd, identified, or defined as Technical Data.

51. Contaminated Environmental Media--Soil, sediment, ground water, or air contaminated with Hazardous Substances.

52. Lump Sum--A single price quoted for completing the Work. Also known as a stipulated sum.

53. Project Manual--The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.

54. Startup--Coordinated operation of facilities by the Contractor, Subcontractor, Suppliers, and Owner after installation, testing, programming, and instructional services are complete and operation and maintenance data has been submitted and approved. Startup is considered complete when, in the opinion of the Engineer, the facilities have properly operated for seven (7) continuous days without signifcant interruption.

55. Float--The amount of time between the early start date and the late start date, or the early finish date and the late finish date, of any of the activities in the Progress Schedule.

56. Hazardous Substance--The term Hazardous Substance shall have the meaning provided in 29 CRF 1910.120 titled "Hazardous Waste Operations and Emergency Response," as amended from time to time.

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57. Hazardous Waste--The term Hazardous Waste shall have the meaning provided in 40 CFR 261 titled "Identification and Listing of Hazardous Waste," as amended from time to time.

58. Metal Bearing Protective Coatings, Paints, and Liners--Protective coatings, paints, and liners that contain measurable amounts of metals such as but not limited to arsenic, cadmium, chrome, cobalt, lead, or mercury. The terms liners and linings are interchangeable and shall have the same meanings in the contract documents.

59. Proposal--The terms "Proposal" and "Bid" are interchangeable and shall have the same meaning in the Contract Documents.

60. Engineer's Consultant -- The term Engineer's Consultant shall refer to Black & Veatch Corporation.

SC-1.02. Terminology. Delete 1.02.G in its entirety and insert the following in its place:

G. Without Exception.

1. The term "without exception", when used in the Contract Documents following the name of a Supplier or a proprietary item of equipment, product, or material, shall mean that the sources of the product are limited to the listed Suppliers or products and that no like, equivalent, or "or-equal" item and no substitution will be permitted.

H. 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.

SC-2.01. Delivery of Bonds and Evidence of Insurance. Delete Paragraph 2.01.C. in its entirety.

SC-2.02. Copies of Documents. Delete Paragraph 2.02.A in its entirety, and replace it with the following new paragraph:

A. Upon award of the bid, the Engineer shall compile for and deliver to the Owner and Contractor a set of conformed construction documents including relevant portions of addenda. The conformed construction documents are issued for convenience only. The Contract Documents shall consist of the original bid documents and addenda. Should discrepancies exist between the conformed

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construction documents and the Contract Documents, the Contract Documents shall take precedence.

SC-2.02. Copies of Documents. Add the following paragraph immediately after paragraph 2.02.B.:

A. Electronic files of the Drawings in AutoCAD format will not be provided.

SC-2.05. Initial Acceptance of Schedules. Replace the first sentence of Paragraph 2.05.A.1 with the following, and delete Paragraph 2.05.A.3 in its entirety.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times and a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE.

SC-3.01. Intent. Delete Paragraph 3.01.B. in its entirety and replace it with the following:

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. Any labor, documentation, services, materials or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provideed whether or not specificailly called for, at no additional cost to Owner.

SC-3.03. Reporting and Resolving Discrepancies. Delete Paragraph 3.03.A.3 in its entirety and insert the following in its place:

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 knew or reasonably should have known thereof.

ARTICLE 4 - COMMENCEMENT AND PROGRESS OF THE WORK.

SC-4.01. Commencement of Contract Times; Notice to Proceed. Delete the last sentence of Paragraph 4.01.A in its entirety and insert the following In its place:

In no event will the Contract Times commence to run later than the 90th day after the day of Bid opening or, if a Notice to Proceed is given, within one (1) calendar day after the Notice to Proceed, whichever date is earlier.

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SC-4.05. Delays in Contractor's Progress. Delete Paragraph 4.05.A. in its entirety, and replace with the following:

A. If Owner, Engineer, or other contractors or utility owners performing work for the Owner as contemplated by Article 8, or anyone for whom Owner is responsible for delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraphy. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Except as provided for in paragraph 17.01, Contractor shall make no Claim for damages as delay in the performance of the Work occasioned by acts or neglect by Owner or any of its representatives, including Engineer, or because of any injunction which may be brought against Owner or its representatives, including Engineer, and agrees that any such claim shall be fully compensated for by an extension of time in an amount equal to the time lost due to such delay, and that such time extension shall be Contractor's sole and exclusive remedy for such delay.

SC-4.05. Delays in Contractor's Progress. Add the following paragraph immediately after paragraph 4.05.C.4:

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

SC-4.05. Delays in Contractor's Progress. Delete Paragraph 4.05.D. in its entirety, and replace with the following:

D. Contractor's entitlement to an adjustment of Contract Times 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 Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.

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3. Adjustments of Contract Times are subject to the provisions of Article 11.

SC-4.05. Delays in Contractor's Progress. Delete paragraph 4.05.E. in its entirety and replace with the following:

E. Each Contractor request or Change Proposal seeking an increase in Contract Times 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.

   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.

SC-4.05. Delays in Contractor's Progress. Add the following paragraph immediately after paragraph 4.05.G.:

H. Contractor must submit notification to Owner and Engineer of a potential delay which results in an adjustment in Contract Times under this paragraph within 10 days of the commencement of the delaying, disrupting, or interfering event.

SC-4.05. Delays in Contractor's Progress. Add the following Paragraph immediately after Paragraph 4.05.H.:

I. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or 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) sustained by Contractor on or in connection with any other project or anticipated project.

ARTICLE 5 – SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS.

SC.5.03. Subsurface and Physical Conditions. Add the following new paragraphs immediately after 5.03.D.:

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

1. Report dated October 27, 2022, prepared by GEOCON Professional Services, titled "FINAL Geotechnical Engineering Report– Aerobic Granular Sludge (AGS) – Phase 1 Four Rivers Sanitation Authority" consisting of 101 pages.

   The report shall be considered Technical Data upon which Contractor may rely.

F. The report itemized in SC-5.03.E. is not part of the Contract Documents, but the "technical data" contained therein upon which Contractor may rely, as expressly identified and established above, are incorporated in the Contract Documents by reference. Contractor is not entitled to rely upon any other information and data known to or identified by Owner or Engineer.

SC-5.04. Differing Subsurface or Physical Conditions. Delete Paragraph 5.04.E.3. in its entirety and replace with the following:

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 shall be set forth in a Change Order. However, neither Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or 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) sustained by Contractor on or in connection with any other project or anticipated project.

SC-5.04. Differing Subsurface or Physical Conditions. Delete Paragraph 5.04.E.4. in its entirety and replace with the following:

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 10 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

SC-5.05. Underground Facilities. Delete Paragraph 5.05.B. in its entirety and replace with the following:

B. Notice by Contractor: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then

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Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.

SC-5.05. Underground Facilities. Delete Paragraph 5.05.C. in its entirety and replace with the following:

C. Engineer's Review: Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and advise Owner in writing of Engineer's findings, conclusions, and recommendations. During such time, Contactor shall be responsible for the safety and protection of such Underground Facility.

SC-5.05. Underground Facilities. Delete Paragraph 5.05.F.2. in its entirety and replace with the following:

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 shall be set forth in a Change Order. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or 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) sustained by Contractor on or in connection with any other project or anticipated project.

SC-5.05. Underground Facilities. Delete Paragraph 5.05.F.3. in its entirety and replace with the following:

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 10 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

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SC-5.05. Underground Facilities. Delete Paragraph 5.05.F.4. in its entirety and replace it with the following:

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 field investigations. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

SC-5.06. Hazardous Environmental Conditions at Site. Add the following new paragraphs immediately after Paragraph 5.06.A.3:

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

Report Title	Date of Report	Technical Data
NONE		

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

Drawings Title	Prepared by	Date of Drawings	Number of Pages	Technical Data
NONE				

SC-5.06. Hazardous Environmental Conditions at Site. Delete Paragraph 5.06.G in its entirely and insert the following in its place:

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 or 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 10 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.

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ARTICLE 6 - BONDS AND INSURANCE.

Delete Article 6 of the General Conditions in its entirety and insert the following:

ARTICLE 6 - BONDS AND INSURANCE.

Bonds and Insurance requirements shall be as identified in the Instructions To Bidders.

ARTICLE 7 - CONTRACTOR'S RESPONSIBILITIES.

SC-7.03. Labor; Working Hours. Delete Paragraph 7.03.C. in its entirety and replace it with the following:

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 shall be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent.

SC-7.04. Services, Materials, and Equipment. Add the following new paragraphs immediately after Paragraph 7.04.C:

D. Unless otherwise indicated, design of this Project is based upon the material and equipment named first in the list of Supplier's in a Specification section. Engineer has performed an evaluation of other listed Supplier's material and equipment and has determined it to be equal in quality, function and performance to that of the Supplier named first. When other Supplier's are listed, Contractor may be required to make modifications or adjustments, at Contractor's expense, to coordinate the installation of the furnished material and equipment with associated elements of Work, such as, but not limited to, piping and electrical connections, or support and mounting provisions.

E. For material or equipment listed on the Base Bid (Type I) Material and Equipment Schedule, Contractor shall provide material and equipment furnished by the Supplier circled on the Bid Form, except Owner may select identified substitute, in lieu of circled Supplier. Written application and supporting documentation for review of identified substitutes shall be submitted not later than 2 days after the Effective Date of the Agreement. If the Owner accepts any substitute, the substitute material and equipment shall be provided and the Contract Price will be adjusted by a Change Order executed within 30 days after the Effective Date of the Agreement, unless

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mutually agreed upon. The Change Order shall reflect the difference in cost between the installed price for material and equipment furnished by the Supplier as circled on the Bid Form, and the installed cost for the substitute. If Owner selects the substitute, the procedures for submission and consideration by Engineer for determining the acceptability of substitutes are set forth in the General Conditions and Supplementary Conditions. Should the substitute not be acceptable, Contractor shall provide material and equipment furnished by the Supplier as circled on the Bid Form for the price bid.

F. For material and equipment listed on the Base Bid (Type III) Material and Equipment Schedule, Contractor shall provide material and equipment furnished by Supplier A except Owner may select material and equipment furnished by identified substitute in lieu of Supplier A. Written application and supporting documentation for review of identified substitutes shall be submitted not later than 2 days after the Effective Date of the Agreement. Contractor agrees, upon notice of selection, to furnish and install the material and equipment selected. The Lump Sum Contract Price will be adjusted up or down as applicable, by Change Order, executed within 30 days after the Effective Date of the Agreement, unless mutually agreed upon. The Change Order shall reflect the difference in cost between the installed cost for material and equipment furnished by Supplier A and the installed cost for material and equipment furnished by the substitute as selected by Owner. If Owner selects the substitute, the procedures for submission and consideration by Engineer for determining the acceptability of substitutes are set forth in the General Conditions and Supplementary Conditions. Should the substitute not be acceptable, Contractor shall provide Item A for the price bid.

SC-7.05. "Or-Equals." Add the following as the last sentence to Paragraph 7.05.A:

Where the specification or description does not contain or is not followed by words reading "or equal", other items of material or equipment or material or equipment of other suppliers may be submitted to Engineer for review under the circumstances described for "substitute" items in GC – 7.06.

SC-7.05. "Or-Equals." Delete the fourth sentence of Paragraph 7.05.C "No "or-equal" will be ordered … other written communication." and insert the folllowing in its place:

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 accepted Shop Drawing or other written communication.

SC-7.06. Substitutes. Delete Paragraph 7.06.D in its entirety and insert the following in its place:

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D. Engineer's Cost Reimbursement: Contractor will not reimburse Owner for the charges of Engineer for evaluating substitutes. Contractor will reimburse Owner for the 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 any substitute.

SC-7.06. Substitutes. Add the following new subparagraph immediately after paragraph 7.06.D:

1. If a substitute item of material or equipment proposed by Contractor is approved by Engineer, and the substitution requires a change in any of the Contract Documents to adapt the design to the proposed substitute, Contractor shall notify Engineer of the changes and be responsible for the costs involved to revise the design and to make modifications or changes to the construction, including the costs associated with the Work of other contractors due to such variance in design or space requirements. Engineer will prepare redesign and revisions to Drawings and other Contract Documents. Contractor shall reimburse Owner for charges of Engineer for redesign and revisions to Drawings and other Contract Documents. Reimbursement of Engineer shall be based on Engineer's direct labor costs, indirect labor costs, profit on total labor, and any direct non-labor expenses such as travel and per diem.

SC-7.09. Permits. In the last sentence of paragraph 7.09.A. delete the word "Owner" and insert the word "Contractor" in its place.

SC-7.09. Permits. Add a new paragraph immediately after paragraph 7.09.A:

B. Owner is responsible for the Illinois EPA Water Pollution Control Permit to Construct & Own.

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

B. Owner is exempt from payment of sales and compensating use taxes of the State of Illinois and of cities and counties thereof on all materials to be incorporated into the Work.

1. Owner will furnish the required certificates of tax exemption to Contractor for use in the purchase of supplies and materials to be incorporated into the Work.

2. Owner's exemption does not apply to construction tools, machinery, equipment, or other property purchased by or leased by Contractor, or to supplies or materials not incorporated into the Work.

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SC-7.12. Record Documents. Delete Paragraph 7.12.A in its entirety and insert the following it its place:

A. Record Documents. 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 accepted 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 accepted Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

SC-7.13. Safety and Protection. Delete Paragraph 7.13.G. in its entirety.

SC-7.15. Emergencies. Add the following new Paragraph immediately after Paragraph 7.15.A.:

B. In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, and Contractor cannot be reached, Owner may act to attempt to prevent threatened damage, injury, or loss. Owner will give Contractor and Engineer prompt written notice of such action and the cost of the correction or remedy shall be charged against Contractor. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Owner in response to such an emergency, a Work Change Directive or Change Order will be issued.

SC-7.16. Shop Drawings, Samples, and Other Submittals. Delete Paragraph 7.16 in its entirety and replace it with the following:

7.16. Shop Drawings Samples, and Other Submittals. Requirements for shop drawings, samples, and submittal procedures shall be as specified in Division 1 Submittal Procedures section. Fabrication that proceeds prior to acceptance of submittals by Engineer shall be at Contractor's risk.

SC-7.17. Contractor's General Warranty and Guarantee. Delete Paragraph 7.17.D.5. and replace it with the following:

5. Any review and acceptance of a Shop Drawing or Sample submittal;

SC-7.19 Delegation of Professional Design Services. Delete Paragraph 7.19.D in its entirety, and replace with the following Paragraph 7.19.D:

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D. Pursuant to this Paragraph 7.19, Engineer's review and acceptance of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and acceptance of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Division 1 Submittal Procedures section.

ARTICLE 8 - OTHER WORK AT THE SITE.

SC-8.02. Coordination. In paragraph 8.02.A. delete the words "Supplementary Conditions" and insert the words "Specifications" in their place.

SC-8.03. Legal Relationships. Delete paragraph 8.03.A. in its entirety and insert the following paragraph as 8.03.A.:

A. If, in the course of performing other work at or adjacent to the Site for Owner, any other contractor working for Owner, or any utility owner causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall 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.

SC-8.03. Legal Relationships. Delete paragraph 8.03.C. in its entirety and insert the following paragraph as 8.03.C.:

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, the Contractor (without involving Owner, Engineer, or construction coordinator) 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.

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SC-8.03. Legal Relationships. Add the following new paragraph immediately after Paragraph 8.03.C:

D. Time limitations required by Owner shall be for the benefit of Owner and contractor under which Owner has entered into such contracts in reliance on the time limitations set forth in these Contract Documents.

ARTICLE 9 - OWNER'S RESPONSIBILITIES.

SC-9.11. Evidence of Financial Arrangements. Add the following paragraph immediately after Paragraph 9.11.A:

B. This Contract is subject on a continuing basis to availability and appropriation/encumberment of funds by Owner's governing body. In the event sufficient funds for this Contract are not appropriated, Owner may terminate this Contract upon seven days written notice to Contractor. In the event of such termination, Contractor shall be entitled to be paid in accordance with the provisions of Paragraph 16.03 of the General Conditions. Such termination by Owner shall not be deemed a breach of contract by Owner.

SC-9.13. Owner's Site Representative. Add the following new paragraph immediately after Paragraph 9.12:

9.13. Owners Site Representative. 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. Owner's Site Representative is not Engineer's consultant, agent, or employee. The authority and responsibilities of Owner's Site Representative follow:

A. Become familiar with the Contract Documents to observe the progress and quality of the executed Work, and to determine, in general, if the Work is proceeding in accordance with the Contract Documents.

B. Promptly forward to Engineer, reports from Contractor indicating conflict, error or discrepancy in the Contract Documents to enable Engineer to issue a written clarification or interpretation as provided for in paragraph 10.06 of the General Conditions.

C. Provide Engineer with copy of Owner's Site Represntatives' daily log.

ARTICLE 10 - ENGINEER'S STATUS DURING CONSTRUCTION.

SC-10.03. Resident Project Representative. Delete Paragraph 10.03.A. in its entirety and insert the following in its place:

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A. Owner will provide a Site Representative whose responsiblities and duties are described in SC-9.13.

SC-10.03. Resident Project Representative. Delete Paragraph 10.03.B. in its entirety and insert the following in its place:

10.03.B. Project Representative

1. The Resident Project Representative (RPR) will be Engineer's representative at the Site, will act as directed by and under supervision of Engineer, and will confer with Engineer regarding RPR's actions.
2. General: RPR's dealings in matters pertaining to the Work in general shall be with Engineer and Contractor. RPR's dealings with Subcontractors shall only be through or with the full knowledge and approval of Contractor. RPR shall generally communicate with Owner only with the knowledge of and under the direction of Engineer.
3. Schedules: Review the progress schedule, schedule of Shop Drawing and Sample submittals, and Schedule of Values prepared by Contractor and consult with Engineer concerning acceptability.
4. Conferences and Meetings: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings, and prepare and circulate copies of minutes thereof.
5. Liaison:
   a. Serve as Engineer's liaison with Contractor. Working principally through Contractor's authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.
   b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.
   c. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.
6. 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.
7. Shop Drawings and Samples:
   a. Record date of receipt of Samples and Contractor-approved Shop Drawings.
   b. Receive Samples which are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.
   c. Advise Engineer and Contractor of the commencement of any portion of the Work requiring a Shop Drawing or Sample submittal for which RPR believes that the submittal has not been approved by Engineer.

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8. Modifications: Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR's recommendations, if any, to Engineer. Transmit to Contractor in writing decisions as issued by Engineer.
9. Review of Work and Rejection of Defective Work:
    a. Conduct on-Site observations of Contractor's work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.
    b. Report to Engineer whenever RPR believes that any part of Contractor's work in progress is defective, will not produce a completed Project that conforms generally to the Contract Documents, or will impair 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.
10. Inspections, Tests, and System Start-ups:
    a. Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate Owner's personnel, and that Contractor maintains adequate records thereof.
    b. Observe, record, and report to Engineer appropriate details relative to the test procedures and systems start-ups.
11. Records:
    a. Prepare a daily report or keep a diary or log book, recording Contractor's hours on the Site, Subcontractors present at the Site, weather conditions, data relative to questions of Change Orders, Field Orders, Work Change Directives, or changed conditions, Site visitors, deliveries of equipment or materials, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to Engineer.
    b. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.
    c. Maintain records for use in preparing Project documentation.

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12. Reports:
    a. Furnish to Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the Progress Schedule and schedule of Shop Drawing and Sample submittals.
    b. Draft and recommend to Engineer proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.
    c. Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, force majeure or delay events, damage to property by fire or other causes, or the discovery of any Constituent of Concern or Hazardous Environmental Condition.
13. Payment Requests: Review applications for payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the Schedule of Values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.
14. 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.
15. Completion:
    a. Participate in Engineer's visits to the Site to determine Substantial Completion, assist in the determination of Substantial Completion and the preparation of a punch list of items to be completed or corrected.
    b. Participate in Engineer's final visit to the Site to determine completion of the Work, in the company of Owner and Contractor, and prepare a final punch list of items to be completed and deficiencies to be remedied.
    c. Observe whether all items on the final list have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the notice of acceptability of the work.
16. The RPR shall not:
    a. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).
    b. Exceed limitations of Engineer's authority as set forth in the Contract Documents.
    c. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.
    d. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor's work.

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e. 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.

f. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.

g. Accept Shop Drawing or Sample submittals from anyone other than Contractor.

h. Authorize Owner to occupy the Project in whole or in part.

SC-10.06. Decisions on Requirements of Contract Documents and Acceptability of Work.

Add the following new words at the end of the first sentence of Paragraph 10.06.A:

> …insofar as the subject matter of any pertinent claim, dispute, or other matter falls within the realm of the technical expertise of Engineer.

Add the following new sentence at the end of Paragraph 10.06.A:

> Engineer shall not render any decision on any matters the subject matter of which, at Engineer's sole discretion, requires legal, rather than technical, interpretation.

SC-10.08. Compliance with Safety Program. Add the following new paragraph immediately after Paragraph 10.08.A.:

B. In the event Engineer determines that Contractor's safety plans, programs, and procedures do not provide adequate protection for Engineer, Engineer may direct its employees to leave the Site or implement additional safeguards for Engineer's protection. If taken, these actions will be in furtherance of Engineer's responsibility to its own employees only, and Engineer will not assume any responsibility for protection of any other persons affected by the Work. In the event Engineer observes situations which appear to have potential for immediate and serious injury to persons, Engineer may warn the persons who appear to be affected by such situations. Such warnings, if issued, shall be given based on general humanitarian concerns, and Engineer will not, by the issuance of any such warning, assume any responsibility to issue future warnings or any general responsibility for protection of persons affected by the Work

ARTICLE 11 – CHANGES TO THE CONTRACT.

SC-11.02. Change Orders. Delete Paragraph 11.02.B. in its entirety and replace with the following:

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B. If Contractor refuses to execute a Change Order that is required to be executed under the terms of the Paragraph 11.02.A, it shall be deemed to be of full force and effect, as if fully executed.

SC-11.07. Change of Contract Price. Delete Paragraph 11.07.B.2. in its entirety and insert the following in its place:

2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum which includes an allowance for overhead and profit in accordance with Paragraph 11.07.C.2; or

SC-11.08. Change of Contract Times. Add the following new Paragraph immediately after Paragraph 11.08.B:

C. Time extensions provided under paragraph 4.05 of the General Conditions will only be allowed for controlling items of Work (critical path).

SC-11.09. Change Proposals. Amend the first sentence of Paragraph 11.09.B.1. by striking out the words "30 days" and inserting the words "10 days" in their place.

ARTICLE 12 – CLAIMS.

SC-12.01. Claims. Amend the first sentence of Paragraph 12.01.B. by striking out both instances of the words "30 days" and inserting the words "10 days" in their place.

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

SC-13.01. Cost of the Work. Delete Paragraph 13.01.B.5.c.2. in its entirety.

SC-13.01. Cost of the Work. Delete Paragraph 13.01.E. in its entirety and insert the following in its place:

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 minimum period of three years or as required by state law in which Work is performed 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.

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

E. Adjustments in Unit Price: Within 30 days of Engineer's written decision under the preceding paragraph, the unit price of an item of Unit Price Work shall be subject to reevaluation and adjustment under the following conditions:

1. If the total cost of a particular item of Unit Price Work amounts to 5% 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 25% 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 Contract Price 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-14.01. Access to Work. Add the following new paragraph immediately after Paragraph 14.01.A:

B. Authorized representatives of the Illinois Environmental Protection Agency shall have access to the Work wherever it is in preparation or progress. Contractor shall provide proper facilities for such access and inspection.

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

SC-15.01. Progress Payments. Amend the first sentence of subparagraph 15.01.B.1. by striking out the words "20 days" and inserting the words "30 days" in their place.

SC-15.01. Progress Payments. Add the following new subparagraphs immediately after paragraph 15.01.B.4.:

5. Payments requested for undelivered equipment or material specifically manufactured for this Project, excluding "off the shelf" or catalog items, will

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be made to Contractor for payment to the Supplier when the following conditions exist:

a. The equipment or material to be specifically manufactured for the Project could not be readily utilized on nor diverted to another project, and
b. A fabrication period of more than 6 months is anticipated.

6. Submission of a request for payment shall be accompanied by a certification furnished by the Supplier of the equipment or material that the amount of the payment claimed is in accordance with the progress of the fabrication of the equipment. The certification shall include a status report on the fabrication.

7. Payments for undelivered equipment or material meeting the requirements of subparagraph SC - 15.01.B.3. will be made in the following percentages of the Supplier's contract price of equipment or material with Contractor.
   a. 15% at the time the submittals, including shop drawings, product data, and operation and maintenance (O&M) data, are approved by Engineer.
   b. 5% additional each month thereafter until not more than 60% of the above noted price has been paid.
   c. Balance of payment, less retention, stipulated in the Agreement, upon delivery.

8. From the payment at submittal approval until delivery to the Project site, Contractor shall maintain in force multi-peril insurance to afford protection from losses that may occur to the equipment or material.

SC-15.01. Progress Payments. Amend the first sentence of paragraph 15.01.D.1. by striking out the words "Ten days" and inserting the words "Twenty days" in their place.

SC-15.03. Substantial Completion. Add the following new paragraphs immediately after Paragraph 15.03.A:

1. "Substantial Completion" means that the facilities are completed to the point that wastewater can be adequately treated and no nuisance is created, to the satisfaction of Engineer. All process equipment shall be installed and operational, or temporary arrangements satisfactory to Owner shall have been made. Milestone 7 work need not have been completed prior to the date of Substantial Completion.

2. To be considered substantially complete, the following portions of the Work must be operational and ready for Owner's continuous use as intended:

   Aeration Basin Nos. 1 and 2 Modifications

   Aeration Basin Nos. 3 and 4 Modifications

   Aeration Basin Nos. 5 and 6 Modifications

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Aeration Basin Nos. 7 and 8 Modifications

Blower Building Modifications

3. Portions of the Work not essential to plant operation, which can be completed without interruption of plant operation in the opinion of the Engineer, may be completed after the Work is accepted as substantially complete, and may include the following items:

   Seeding

4. Contractor's request for issuance of a Certificate of Substantial Completion shall occur after Contractor has, in the opinion of the Engineer, satisfactorily completed the systems demonstrations, and delivered all guarantees, operation and maintenance data, certificates of installation services, certificates of instructional services, a complete set of marked up Drawings as specified in Division 1, General Requirements, and other documents. Engineer will not prepare a tentative certificate of Substantial Completion until systems demonstrations are satisfactorily completed in accordance with Section 01 79 10, Demonstration and Training, all operation and maintenance (O&M) data has been submitted and approved in accordance with Section 01 33 00, Submittal Procedures, and a satisfactory set of marked up Drawings has been submitted in accordance with Section 01 77 00, Closeout Procedures.

SC-15.03. Substantial Completion. Add the following to the end of Paragraph 15.03.F.:

"The Contractor shall provide a listing of its property that it wishes to remove from the site and obtain Owner's approval before the property is removed. Only property approved by the Owner can be removed from the site. The Contractor shall schedule the removal of the property with the Owner, and shall obtain permission from the Owner to access the site. The Owner has the right to monitor the removal of the property."

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

E. Final Payment Becomes Due: Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer's recommendation, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and will be paid by Owner to Contractor.

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SC-15.06. Final Payment. Add the following new subparagraph immediately after Paragraph 15.06.E:

1. In addition to the liquidated damages set forth in the Agreement, Contractor shall be liable for all additional costs for Engineer's services beyond Substantial and Final Completion dates. Owner will deduct these costs from any monies due or that may become due Contractor or Surety and pay Engineer for said services.

ARTICLE 16 - SUSPENSION OF WORK AND TERMINATION.

SC-16.01. Owner May Suspend Work. Amend Paragraph 16.01.A. by striking out the words "30 days" and inserting the words "ten days" in their places.

SC-16.02. Owner May Terminate for Cause. Add the following to the end of Paragraph 16.02.D.:

"within no more than 30 days of receipt of said notice."

SC-16.04. Contractor May Stop Work or Terminate. Amend Paragraphs 16.04.A. and 16.04.B. by striking out the words "30 days" in four places and inserting the words "60 days" in their place and by striking out the words "seven days" in two places and inserting the words "ten days" in their place.

ARTICLE 17 - FINAL RESOLUTION OF DISPUTES.

SC-17.01. Methods and Procedures. Delete Paragraph 17.01.B in its entirety and replace it with the following:

B. Final Resolution of Disputes: For any dispute subject to resolution under this Article, Owner or Contractor may:
   1. agree with the other party to submit the dispute to another dispute resolution process; or

   2. give written notice of intent to the other party to submit the dispute to a court of competent jurisdiction.

C. Notwithstanding any applicable statute of limitations, a party giving notice under paragraph 17.01.B shall commence an action on the Claim within one year of giving such notice. Failure to do so shall result in the Claim being time-barred and the action or denial shall become final and binding.

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ARTICLE 18 - MISCELLANEOUS.

SC-18.01. Giving Notice. Delete Paragraph 18.01.A. in its entirety and replace it wih the following:

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, and addressed to the specific intended recipient;
2. by registered or certified mail, postage prepaid, to the recipient's place of business, and addressed to the specific intended recipient; or
3. by e-mail to the specific intended recipient, with the words "Formal Notice" or similar in the e-mail's subject line. Written notice shall not be considered accepted until receipt is acknowledged by the intended recipient.

SC-18.06. Survival of Obligations. Add the following new paragraph immediately after Paragraph 18.06.A of the General Conditions:

B. Contractor shall obtain from all Suppliers and manufacturers any and all warranties and guarantees of such Suppliers and manufacturers, whether or not specifically required by the Specifications, and shall assign such warranties and guarantees to Owner. With respect thereto, Contractor shall render reasonable assistance to Owner when requested, in order to enable Owner to enforce such warranties and guarantees. The assignment of any warranties or guarantees shall not affect the correction period or any other provisions of these Contract Documents.

SC-18.10. Headings. Add the following new paragraph immediately after Paragraph 18.10 of the General Conditions:

18.11 Lien Waivers:

A. Owner may at any time require Contractor to furnish lein waivers for labor and materials covered by specified Applications for Payment.

End of Section

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Section V

Technical Specifications

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DIVISION 1 - General Requirements

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SECTION 01 11 13 - WORK COVERED BY CONTRACT DOCUMENTS

PART 1 - GENERAL

1.1 GENERAL DESCRIPTION OF WORK.

A. The Work to be performed under these Contract Documents is generally described as follows:

BNR Improvements – Aeration Basin Modifications, Capital Project No. 2304, IEPA Project No. L17-6576, is comprised of all labor, materials, equipment, and supervision required to construct the following items:

1. Aeration Basin modifications which consist of:
   a. Relocation of existing hyperboloid mixers within Aeration Basin Nos. 1, 2, 3, 4, 5, and 6 anaerobic zones, including provision of new shortened shafts and new metal access platforms.
   b. Relocation of existing hyperboloid mixers within Aeration Basin Nos. 7 and 8 anaerobic zones, including relocation of the associated existing access platforms.
   c. Demolition of raised center concrete walkways within Aeration Basin Nos. 1, 2, 3, 4, 5, and 6 including removal, relocation and salvage of existing equipment on walkways as applicable.
   d. Creation of anaerobic, anoxic, and aerobic zones within Aeration Basin Nos. 1, 2, 3, 4, 5, 6, 7, and 8, including FRP and cast-in-place baffle walls, aeration supply piping, supports, valving, and fine pore diffuser grids.
   e. Divider wall walkway modifications including demolition of curb and guard railing, new overhead aeration supply piping and piping supports, concrete repairs and replacement, and new guardrail.
   f. Connection to existing air supply headers.
   g. Eight submersible horizontal propeller internal mixed liquor recycle (IMLR) pumps with VFDs and eight submersible mixers with piping, valving, and supports within Aeration Basins Nos. 1, 2, 3, 4, 5, 6, 7, and 8 anoxic zones.
   h. Connection to RAS piping, valving, grating, and wall penetrations within and at the existing divider wall walkways of Aeration Basin Nos. 1, 2, 3, 4, 5, and 6.
   i. Connection to RAS chamber, valving, and wall penetrations within and thru new baffle walls of Aeration Basins Nos. 7 and 8.
   j. Basin Drain Structure sluice and flap gate replacements for Aeration Basin Nos. 1, 2, 3, 4, 5, 6, 7, and 8. Basin Drain Structure concrete and floor door installation for Aeration Basin Nos. 1, 2, 3, 4, 5, and 6.
   k. All civil, structural, architectural, electrical, mechanical/HVAC, instrumentation and controls, and piping and valves for a complete, operable BNR system.
   l. Whenever an aeration train is off-line and drained, the Contractor will be required to supply pumps to keep the Drainage Structure dry as needed to perform work in it, consisting of replacing 2 sluice gates and one flap gate along with all new manual operators. One pump will be needed in each aeration basin's sump pit to keep the aeration basin dewatered and an additional pump in the drainage chamber. The pumps discharge may be routed to the next aeration basin in service, as directed by FRSA staff. The contractor is responsible for maintaining dewatering as needed to perform required work in aeration basins. The existing aeration basin pressure relief

NOT TO BE USED FOR BIDDING PURPOSES

valves in the basin slabs shall not be obstructed and shall remain fully functional whenever a basin is dewatered.

2. Blower Building modifications which consist of:
   a. Installation of two high speed gearless turbo blowers, air piping, existing filter room modifications, and appurtenances.
   b. Demolition of two existing blowers and select air piping.
   c. New Electrical Room 20-107 containing VFDs and associated access.
   d. Existing Electrical Room 20-102 modifications consisting of modifications to or the addition of MCCs, panels, and controls.
   e. Roof replacement, and access and safety improvements.
   f. Programming associated with new blowers and integrated with existing blowers to provide a complete, operable BNR aeration control system.
   g. All civil, structural, architectural, electrical, mechanical/HVAC, instrumentation and controls, and piping and valves for a complete, operable Blower Building.

3. Site work, electrical cable trench, and transformer improvements.

1.2 UNITS OF MEASUREMENT.

A. Both inch-pound (English) and SI (metric) units of measurement are specified herein; the values expressed in inch-pound units shall govern.

1.3 WORK BY OWNER.

A. Owner shall perform certain activities in connection with the Project with its own personnel as follows:

1. Operation of valves and existing equipment for plant shutdowns to isolate facilities or systems to facilitate work being performed by the Contractor.

2. Partial draining of pipelines and structures prior to final draw down and cleanout by Contractor.

   a. FRSA will remove, modify, and replace stop logs as needed in the Final Clarifiers and in the Aeration Basin effluent channels.
   b. FRSA will initially drain aeration basins and/or modify plant wet well levels so work can be performed in drainage chambers for sluice gate and flap valve replacements when each aeration train is taken off-line. Once sluice gate and flap valve installation is complete, wet well levels will be returned to normal operational set points. The contractor will be required to maintain dewatering of the aeration basins, after initial drainage performed by FRSA, until work in the tanks is complete, tested, and returned to duty.

3. Aeration Basin sampling to confirm stabilization performance requirements.

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1.4 PROCUREMENT CONTRACTS. Not used.

1.5 ITEMS FURNISHED BY OWNER. Not used.

1.6 RESPONSIBILITY FOR MATERIALS AND EQUIPMENT.

A. Items Furnished by Contractor.

1. Contractor shall be fully responsible for all materials and equipment which it has furnished.

1.7 OFFSITE STORAGE.

A. Offsite storage arrangements shall be approved by Owner for all materials and equipment not incorporated into the Work but included in Applications for Payment. Such offsite storage arrangements shall be presented in writing and shall afford adequate and satisfactory security and protection. Offsite storage facilities shall be accessible to Owner and Engineer.

1.8 SUBSTITUTES AND "OR-EQUAL" ITEMS.

A. Provisions for evaluation of proposed "or-equal" items of materials or equipment are covered in Paragraph 7.04 of the General Conditions. Provisions for evaluation of proposed substitute items of materials or equipment are covered in Paragraph 7.05 of the General Conditions. Requests for review of equivalency will not be accepted by Engineer from anyone except Contractor, and such requests will not be considered until after the Effective Date of the Agreement.

1.9 PREPARATION FOR SHIPMENT.

A. All materials shall be suitably packaged to facilitate handling and protect against damage during transit and storage. Painted surfaces shall be protected against impact, abrasion, discoloration, and other damage. All painted surfaces which are damaged prior to acceptance of equipment shall be repainted to the satisfaction of Engineer.

B. Each item, package, or bundle of material shall be tagged or marked as identified in the delivery schedule or on the Shop Drawings. Complete packing lists and bills of material shall be included with each shipment.

1.10 SALVAGE OF MATERIALS AND EQUIPMENT.

A. Existing materials and equipment removed shall become Contractor's property, except as indicated for salvage in Division 02 – Existing Conditions.

B. Contractor shall carefully remove, in a manner to prevent damage, all materials and equipment specified or indicated to be salvaged or to remain the property of Owner. Contractor shall store and protect salvaged items .

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C. Salvaged items to remain Owner's property shall be delivered by Contractor in good condition to Owner at a location within the facility in coordination with the Owner.

D. Any items specified or indicated to be salvaged which are damaged in removal, storage, or handling through carelessness or improper procedures shall be replaced by Contractor in kind or with new items.

E. Contractor may furnish and install new items instead of those specified or indicated to be salvaged, in which case such removed items will become Contractor's property.

F. Existing materials and equipment removed by Contractor shall not be reused in the Work.

1.11 LAND FOR CONSTRUCTION PURPOSES.

A. Contractor will be permitted to use available land belonging to Owner, on or near the Site, for construction purposes and for storage of materials and equipment.

B. The locations and extent of the areas so used shall be as indicated on the Drawings .

C. Contractor shall immediately move stored materials or equipment if any occasion arises, as determined by Owner, requiring access to the storage area. Materials or equipment shall not be placed on the property of Owner until Owner has agreed to the location to be used for storage.

1.12 EASEMENTS AND RIGHTS-OF-WAY. Not used.

1.13 OPERATION OF EXISTING FACILITIES.

A. The existing treatment plant must be kept in continuous operation throughout the construction period. No interruption will be permitted which adversely affects the degree of service provided. A backup power generator shall be provided as indicated in the Documents during to ensure the existing FRSA Lab is kept in continuous operation during construction. Provided permission is obtained from Owner in advance, portions of the existing facilities may be taken out of service for short periods corresponding with periods of minimum service demands.

1. The Blower Building shall remain in service at all times during construction, short period shutdowns for interconnections and electrical work shall not exceed 4 hours.

2. A minimum of six Aeration Basins shall remain in service at all times during construction. The maximum shutdown duration for a pair of Aeration Basins shall be 172 calendar days, except for Aeration Basin Nos. 7 and 8 which shall have a maximum shutdown duration of 162 calendar days.

a. Contractor cannot move from Work on one pair of Aeration Basins to the next pair of Aeration Basins without Engineer acceptance.

B. Contractor shall provide temporary facilities and make temporary modifications as necessary to keep the existing facilities in operation during the construction period.

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1.14 CONSTRUCTION AND SCHEDULE REQUIREMENTS

A. The following requirements shall be taken into consideration in preparing work sequencing plans for temporary shutdowns associated with tie-ins and Construction Schedule:

1. A shutdown shall be defined as a portion of the normal operation of a treatment plant unit that has to be suspended or taken out of service in order to perform the specified Work. The Contractor shall request, in writing from the Engineer, approval for each shutdown at the minimum number of calendar days prior to the proposed shutdown date stipulated herein. For each shutdown, the Contractor shall compile an inventory of labor and materials required to perform tasks, an estimate of the time required, and a written description of steps required to complete all tasks. The inventory, the estimate, and written procedures shall be submitted to the Engineer for review at the time of, or earlier than, the written request for approval for each shutdown. No shutdown shall be initiated until the inventory of materials and labor is verified by the Engineer onsite at least one week prior to the proposed start date.

2. Blower Building and Aeration Control System work shall include, but is not limited to, the following:

   a. Salvage of existing blowers to be replaced and installation of new gearless turbo blowers and controls. Work will also include all electrical work taking place in the Blower Building. This phase may be sequenced as needed with the other phases, subject to lead time on blowers and weather conditions permitting outdoor work. It is noted that the Blower Building Electrical Room work will need to be complete prior to the first pair of Aeration Basins coming online so that IMLR pump drives are installed.
   b. Existing blowers AB-1, -2, and -3 are to remain in operation and provide process air to the Aeration Basins throughout construction. The existing aeration controls will remain in place until all basins have been converted to BNR.
   c. The blower integrator will have responsibility for programming of the fully integrated blower system including new and existing blowers.

3. Aeration Basin work shall be done in pairs to allow structural modifications, installation of FRP and concrete baffles, mixing equipment, diffusers and associated piping. Contractor's sequence of construction shall consider the impacts of weather associated with the construction of new aeration grids.

   a. Aeration Basin pairs shall be as follows:
      1) Aeration Basin Nos. 7 and 8
      2) Aeration Basin Nos. 5 and 6
      3) Aeration Basin Nos. 3 and 4
      4) Aeration Basin Nos. 1 and 2

   b. Upon Contractor's notice and coordination with the Owner, Owner will drain aeration basins.
   c. Final Clarifiers 7 and 8 shall be taken offline in coordination with the Owner with Aeration Basin Nos. 7 and 8. Contractor's Work on Aeration Basin Nos. 7 and 8 shall only occur after the AGS Reactors and AGS Support Facilities of FRSA Capital Project No. 2207 are on-line, and between the months of November and February, inclusive.

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d. Owner will remove stop logs where necessary, repair or replace them as needed, and insert them as needed near the end of the project in Final Clarifiers 1-6N and 1-6S channels to allow for flow from Aeration Basin trains to reach any clarifiers. This will allow all rectangular clarifiers to remain online during Work in aeration Basin Nos. 1 though 6.

e. Contractor shall remove sludge and other residue in drained aeration basins after Owner takes aeration basins offline and pressure wash prior to concrete surface, crack and joint repair and restoration work. It is suggested the Contractor demolish diffuser grids prior to removing residue. Sludge and residue removed may be coordinated with the Owner for on-site dewatering and provided to the Owner for disposal. Demolition debris such as concrete, PVC piping, supports, diffusers, etc. shall be disposed of by the Contractor.

f. Contractor shall provide continuous dewatering of drained aeration basins and maintenance of existing aeration basin PRVs.

g. Contractor shall temporarily seal the aeration basin effluent weirs while a basin is off-line, to prevent effluent wastewater after leaving active basins from entering over the effluent weirs.

h. A mandatory stabilization period of 14 days, or fewer if performance requirements are met and a shorter period is agreed to by the Owner, shall be required after each pair of Aeration Basins is put back online and prior to shutdown of additional Aeration Basins. beginning work on. Performance requirements to define stabilization shall be as follows. The Owner shall be responsible for sampling to confirm stabilization:

1) Aeration Basins Effluent Ammonium < 1mg/L
2) Aeration Basins SRT > 8 days
3) MLSS > 2,000 mg/L

4. Substantial Completion - Following completion of all Aeration Basin improvements, control loop tuning of aeration system shall take place at conventional DO setpoints (2mg/L).

5. Final Completion - Full system start-up shall consist of operation of all Aeration Basins in BNR with new aeration controls and completed Blower Building modifications.

B. The following Project Milestones shall be included within the Contractor's Construction Schedule.

1. **Milestone 1:** Blower and Aeration Control System. Milestone 1 must be completed concurrently with Milestone 2 to ensure IMLR pump VFDs are installed within the Blower Building and operatable. Shutdown of the Blower Building to complete modifications and tie-ins is limited to maximum increments of four (4) hours. The Contractor shall provide at least 7 days notification of projected start date to allow scheduling of the outage.

2. **Milestone 2:** Aeration Basin Nos. 7 and 8 Improvements. Shutdown of the Aeration Basin Nos. 7 and 8 is limited to 162 calendar days. The Contractor shall provide at least 21 calendar days notification of projected start date to allow scheduling of the outage and coordinate continuous operation of the facility.

3. **Milestone 3:** Aeration Basin Nos. 5 and 6 Improvements. Shutdown of the Aeration Basin Nos. 5 and 6 is limited to 172 calendar days. The Contractor shall provide at least

NOT TO BE USED FOR BIDDING PURPOSES

21 calendar days notification of projected start date to allow scheduling of the outage and coordinate continuous operation of the facility.

4. **Milestone 4:** Aeration Basin Nos. 3 and 4 Improvements. Shutdown of the Aeration Basin Nos. 3 and 4 is limited to 172 calendar days. The Contractor shall provide at least 21 calendar days notification of projected start date to allow scheduling of the outage and coordinate continuous operation of the facility.

5. **Milestone 5:** Aeration Basin Nos. 1 and 2 Improvements. Shutdown of the Aeration Basin Nos. 1 and 2 is limited to 172 calendar days. The Contractor shall provide at least 21 calendar days notification of projected start date to allow scheduling of the outage and coordinate continuous operation of the facility.

6. **Milestone 6:** Control Loop Tuning is limited to two (2) months and a maximum of 738 calendar days from the Notice to Proceed.

7. **Milestone 7:** Full System Start-up is limited to a maximum of 799 calendar days from the Notice to Proceed.

1.15 NOTICES TO OWNERS AND AUTHORITIES.

A. Contractor shall, as provided in the General Conditions, notify owners of adjacent property and utilities when execution of the Work may affect them.

B. When it is necessary to temporarily deny access to property, or when any utility service connection must be interrupted, Contractor shall give notices sufficiently in advance to enable the affected persons to provide for their needs. Notices shall conform to any applicable local ordinance and, whether delivered orally or in writing, shall include appropriate information concerning the interruption and instructions on how to limit inconvenience caused thereby.

C. Utilities and other concerned agencies shall be notified at least 24 hours prior to cutting or closing streets or other traffic areas or excavating near underground utilities or pole lines.

1.16 LINES AND GRADES.

A. All Work shall be done to the lines, grades, and elevations indicated on the Drawings.

B. Basic horizontal and vertical control points will be established or designated by Engineer to be used as datums for the Work. All additional survey, layout, and measurement work shall be performed by Contractor as a part of the Work.

C. Contractor shall provide an experienced instrument person, competent assistants, and such instruments, tools, stakes, and other materials required to complete the survey, layout, and measurement work. In addition, Contractor shall furnish, without charge, competent persons and such tools, stakes, and other materials as Engineer may require in establishing or designating control points or in checking survey, layout, and measurement work performed by Contractor.

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D. Contractor shall keep Engineer informed, a reasonable time in advance, of the times and places at which it wishes to do Work, so that horizontal and vertical control points may be established, and any checking deemed necessary by Engineer may be done with minimum inconvenience to Engineer and minimum delay to Contractor.

E. Contractor shall remove and reconstruct work which is improperly located.

1.17 ALLOWANCES. Not used.

1.18 CONNECTIONS TO EXISTING FACILITIES.

A. Unless otherwise specified or indicated, Contractor shall make all necessary connections to existing facilities, including structures, drain lines, and utilities such as water, sewer, gas, telephone, and electric. In each case, Contractor shall receive permission from Owner or the owning utility prior to undertaking connections. Contractor shall protect facilities against deleterious substances and damage.

B. Connections to existing facilities which are in service shall be thoroughly planned in advance, and all required equipment, materials, and labor shall be on hand at the time of undertaking the connections. Work shall proceed continuously (around the clock) if necessary to complete connections in the minimum time. Operation of valves or other appurtenances on existing utilities, when required, shall be by or under the direct supervision of the owning utility.

1.19 UNFAVORABLE CONSTRUCTION CONDITIONS.

A. During unfavorable weather, wet ground, or other unsuitable construction conditions, Contractor shall confine its operations to work which will not be affected adversely by such conditions. No portion of the Work shall be constructed under conditions which would affect adversely the quality or efficiency thereof, unless special means or precautions are taken by Contractor to perform the Work in a proper and satisfactory manner.

1.20 CUTTING AND PATCHING.

A. As provided in General Conditions, Contractor shall perform all cutting and patching required for the Work and as may be necessary in connection with uncovering Work for inspection or for the correction of defective Work.

B. Contractor shall perform all cutting and patching required for and in connection with the Work, including but not limited to the following:

1. Removal of improperly timed Work.

2. Removal of samples of installed materials for testing.

3. Alteration of existing facilities.

4. Installation of new Work in existing facilities.

NOT TO BE USED FOR BIDDING PURPOSES

C. Contractor shall provide all shoring, bracing, supports, and protective devices necessary to safeguard all Work and existing facilities during cutting and patching operations. Contractor shall not undertake any cutting or demolition which may affect the structural stability of the Work or existing facilities without Engineer's concurrence.

D. Materials shall be cut and removed to the extent indicated on the Drawings or as required to complete the Work. Materials shall be removed in a careful manner, with no damage to adjacent facilities or materials. Materials which are not salvable shall be removed from the site by Contractor.

E. All Work and existing facilities affected by cutting operations shall be restored with new materials, or with salvaged materials acceptable to Engineer, to obtain a finished installation with the strength, appearance, and functional capacity required. If necessary, entire surfaces shall be patched and refinished.

1.21 HAZARDOUS ENVIRONMENTAL CONDITIONS AT SITE.

A. No Hazardous Environmental Conditions at the Site in areas that will be affected by the Work are known to the Owner.

1.22 CLEANING UP.

A. Contractor shall always keep the premises free from accumulations of waste materials and rubbish. Contractor shall provide adequate trash receptacles about the Site and shall promptly empty the containers when filled.

B. Construction materials, such as concrete forms and scaffolding, shall be neatly stacked by Contractor when not in use. Contractor shall promptly remove splattered concrete, asphalt, oil, paint, corrosive liquids, and cleaning solutions from surfaces to prevent marring or other damage.

C. Volatile wastes shall be properly stored in covered metal containers and removed daily.

D. Wastes shall not be buried or burned on the Site or disposed of into storm drains, sanitary sewers, streams, or waterways. All wastes shall be removed from the Site and disposed of in a manner complying with local ordinances and antipollution laws.

E. Adequate cleanup will be a condition for recommendation of progress payment applications.

1.23 APPLICABLE CODES.

A. Standard codes which apply to the Work are designated in the Specifications.

NOT TO BE USED FOR BIDDING PURPOSES

1.24 ALTERNATES. Not used.

1.25 PRECONSTRUCTION CONFERENCE.

A. Prior to the commencement of Work at the Site, a preconstruction conference will be held at a mutually agreed time and place. The conference shall be attended by:

1. Contractor and its superintendent.

2. Principal Subcontractors.

3. Representatives of principal Suppliers and manufacturers as appropriate.

4. Engineer.

5. Representatives of Owner.

6. Government representatives as appropriate.

7. Others as requested by Contractor, Owner, or Engineer.

B. Unless previously submitted to Engineer, Contractor shall bring to the conference a preliminary schedule for each of the following:

1. Progress Schedule.

2. Procurement schedule.

3. Schedule of Values for progress payment purposes.

4. Schedule of Shop Drawings and other submittals.

C. The purpose of the conference is to designate responsible personnel and establish a working relationship. Matters requiring coordination will be discussed and procedures for handling such matters established. The agenda will include:

1. Contractor's preliminary schedules.

2. Transmittal, review, and distribution of Contractor's submittals.

3. Processing Applications for Payment.

4. Maintaining record documents.

5. Critical Work sequencing.

6. Field decisions and Change Orders.

7. Use of premises, office and storage areas, security, housekeeping, and Owner's needs.

8. Major equipment deliveries and priorities.

NOT TO BE USED FOR BIDDING PURPOSES

9. Contractor's assignments for safety and first aid.

D. Engineer will preside at the conference and will arrange for keeping the minutes and distributing the minutes to all persons in attendance.

1.26 PROGRESS MEETINGS.

A. Contractor shall schedule and hold regular progress meetings at least monthly and at other times as requested by Engineer or required by progress of the Work. Contractor, Engineer, and all Subcontractors active on the Site shall be represented at each meeting. Contractor may at its discretion request attendance by representatives of its Suppliers, manufacturers, and other Subcontractors.

B. Contractor shall preside at the meetings. Meeting minutes shall be prepared and distributed by Contractor. The purpose of the meetings will be to review the progress of the Work, maintain coordination of efforts, discuss changes in scheduling, and resolve other problems which may develop.

1.27 SITE ADMINISTRATION.

A. Contractor shall be responsible for all areas of the Site used by it and by all Subcontractors in the performance of the Work. Contractor shall exert full control over the actions of all employees and other persons with respect to the use and preservation of property and existing facilities, except such controls as may be specifically reserved to Owner or others.

B. Contractor shall have the right to exclude from the Site all persons who have no purpose related to the Work or its inspection, and may require all persons on the Site (except Owner's employees) to observe the same regulations as Contractor requires of its employees.

1.28 USE OF PREMISES.

A. Contractor shall limit site disturbance within the area identified on the Drawings, including earthwork and clearing of vegetation, to 40 feet beyond building or other major structure perimeters, 10 feet beyond surface walkways, patios, surface parking, and trenches for utilities less than 12 inches in diameter; 15 feet beyond primary roadway curbs, main utility trenches, outdoor equipment pads, and electrical equipment yards; and 25 feet beyond constructed areas with permeable surfaces (such as pervious paving areas, stormwater detention facilities) that require additional staging areas in order to limit compaction in the constructed area.

1.29 NONSMOKING BUILDING.

A. Contractor’s personnel shall not smoke within any buildings or within 25 feet of entrances, operable windows, or outdoor air intakes for the building. This requirement shall be enforced from the beginning of construction of the super structure.

NOT TO BE USED FOR BIDDING PURPOSES

Work Covered by Contract Documents

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

End of Section

NOT TO BE USED FOR BIDDING PURPOSES

SECTION 01 29 76 - PROGRESS PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SCOPE

A. This section covers methods of measurement and payment for items of Work under this Contract.

B. Both inch-pound (English) and SI (metric) units of measurement are specified herein; the values expressed in inch-pound units shall govern.

1.2 GENERAL

A. The Contract Price shall cover all Work required by the Contract Documents. All costs in connection with the proper and successful completion of the Work, including furnishing all materials, equipment, supplies, and appurtenances; providing all construction plant, equipment, and tools; and performing all necessary labor and supervision to fully complete the Work, shall be included in the unit and lump sum prices bid. All Work not specifically set forth as a pay item in the Bid Form shall be considered a subsidiary obligation of Contractor and all costs in connection therewith shall be included in the prices bid.

B. Retention shall be withheld from each pay application at a rate of 10% of each pay application. Retention will be held until final completion but may be reduced after substantial completion depending upon the amount of work remaining.

1.3 ESTIMATED QUANTITIES

A. All estimated quantities stipulated in the Bid Form or other Contract Documents are approximate and are to be used only (a) as a basis for estimating the probable cost of the Work and (b) for the purpose of comparing the Bids submitted for the Work. The actual amounts of work done and materials furnished under unit price items may differ from the estimated quantities. The basis of payment for work and materials will be the actual amount of work done and materials furnished. Contractor agrees that it will make no claim for damages, anticipated profits, or otherwise on account of any difference between the amounts of work actually performed and materials actually furnished and the estimated amounts therefor.

1.4 EXCAVATION AND TRENCHING

A. Except where otherwise specified, the unit or lump sum price bid for each item of Work which involves excavation or trenching shall include all costs for such Work. No separate payment shall be made for excavation or trenching. All trenching shall be unclassified as to materials which may be encountered, and trenches shall be unclassified as to depth. All excavation work required for structures shall be unclassified as to materials which may be encountered; such excavation work shall be considered to be a subsidiary obligation of Contractor and the cost of such excavation shall be included in the prices bid for the structures.

NOT TO BE USED FOR BIDDING PURPOSES

PART 2 - PRODUCTS (Not used.)

PART 3 - EXECUTION (Not used.)

End of Section

NOT TO BE USED FOR BIDDING PURPOSES

SECTION 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 GENERAL

A. Units of Measurement. When both inch-pound (English) and SI (metric) units of measurement are specified herein, the values expressed in inch-pound units shall govern.

1.2 SCHEDULE OF VALUES

A. Contractor shall prepare and submit to Engineer a Schedule of Values covering each lump sum by 12:00 pm on the calendar day following the Bid Opening. The Schedule of Values, showing the value of each kind of work, shall be acceptable to Engineer before any Application for Payment is prepared.

B. The sum of the items listed in the Schedule of Values shall equal the Contract Price. Such items as Bond premium, temporary construction facilities, and plant may be listed separately in the Schedule of Values, provided the amounts can be substantiated. Overhead and profit shall not be listed as separate items.

C. The Schedule of Values shall have sufficient detail such that partial completion of separable items of work can easily be calculated. The Schedule of Values shall have separate lines for manufacturer's field services, O&M manuals, and performance testing for each item of equipment requiring such services.

D. An unbalanced Schedule of Values providing for overpayment of Contractor on items of Work which would be performed first will not be accepted. The Schedule of Values shall be revised and resubmitted until acceptable to Engineer. Final acceptance by Engineer shall indicate only consent to the Schedule of Values as a basis for preparation of applications for progress payments, and shall not constitute an agreement as to the value of each indicated item.

1.3 SCHEDULE OF PAYMENTS

A. Within 30 days after award of contract, Contractor shall furnish to Engineer a schedule of estimated monthly payments. The schedule shall be revised and resubmitted each time an Application for Payment varies more than 10 percent from the estimated payment schedule.

1.4 SURVEY DATA

A. All field books, notes, and other data developed by Contractor in performing surveys required as part of the Work shall be available to Engineer for examination throughout the construction period. All such data shall be submitted to Engineer with the other documentation required for final acceptance of the Work.

NOT TO BE USED FOR BIDDING PURPOSES

1.5 LAYOUT DATA

A. Contractor shall keep neat and legible notes of measurements and calculations made in connection with the layout of the Work. Copies of such data shall be furnished to the Resident Project Representative for use in checking Contractor's layout as provided in the project requirements section. All such data considered of value to Owner will be transmitted to Owner by Engineer with other records upon completion of the Work.

End of Section

NOT TO BE USED FOR BIDDING PURPOSES

SECTION 01 32 15 - CONSTRUCTION PROGRESS SCHEDULE

PART 1 - GENERAL

1.1 SUMMARY

A. Submit preliminary progress schedule in accordance with the General Conditions. Preliminary schedule may be in the form of a horizontal bar chart and shall outline construction activities in detail; the preliminary schedule shall be kept up to date until the Critical Path Method (CPM) schedule is completed and placed into use, as described herein.

B. Prepare and submit detailed CPM progress schedule within 60 days after Notice to Proceed.

1. During the 60-day period, Contractor and Owner shall meet to review and coordinate a draft of the CPM schedule.

1.2 SUBMITTALS

A. Submit the preliminary schedule and CPM schedule electronically to Owner at least 3 days prior to meetings for review.

B. Submit revised schedule electronically to Owner at least 3 days prior to monthly progress meetings. Submit revised schedule to subcontractors that are impacted by schedule updates.

C. Failure to submit schedules and schedule updates on a timely basis shall be considered cause for withholding progress payments.

1.3 QUALITY ASSURANCE

A. Progress schedule and revisions to the schedule shall be performed by the Contractor with input from their subcontractors and suppliers.

B. Engage the services of a firm specializing in preparation of progress schedules or demonstrate to Engineer experience and capabilities to prepare and revise CPM schedules.

1.4 WORKING HOURS

A. Comply with requirements of the General Conditions.

B. No work shall be scheduled between the hours of 6:00 pm and 6:00 am, nor on Saturdays, Sundays, or FRSA holidays, without permission from Owner at least 2 business days prior to each day of proposed off-hour work.

C. Permission to conduct off-hour work on the site may be revoked at any time by the Owner, to keep the plant operating properly or if the Contractor fails to maintain adequate equipment and supervision for proper execution and control of the work. Revocation of any off-hour work hours shall not entitle Contractor to a change in Contract Time or Contract Price.

NOT TO BE USED FOR BIDDING PURPOSES

D. FRSA holidays include the following days or the assigned day before or after, based on calendar: President's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Columbus Day, Veteran's Day, Thanksgiving Day, Friday after Thanksgiving, Christmas Eve Day, Christmas Day, and New Year's Day.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 FORM OF SCHEDULE

A. Use precedence diagramming method to present manner and timing in which Contractor intends to perform work. Resource and cost load the schedule in accordance with the payment schedule. Base CPM schedule on 5-day workweek with notations for specific known constraints.

B. Schedule shall cover on- and off-site activities. Detail individual activities to such a degree that path of construction can be easily followed for each item of work. Provide early and late start and completion dates with float times indicated for each. Present schedule as follows:

1. Logic diagram with critical path highlighted.
2. Listing of activity items by activity number.
3. Listing of activity items by early start dates.
4. Listing of activity items by late start dates.
5. Listing of activities on critical path.

C. Content:

1. Show complete sequence of construction by activity.
2. Show dates for beginning and completion of each major element of construction and installation dates for major equipment items. Include:
   a. Each individual task of construction.
   b. Procurement of equipment and systems including shop drawing submittals, Engineer's review of submittals, shop tests, and delivery dates.
   c. Identification of work that will affect existing plant operations.
   d. Services of manufacturer's representatives.
   e. Start-up dates for major equipment.
   f. Field tests.
   g. Dates of Substantial Completion and Final Completion.
   h. Subcontractor work items.
   i. Allowance for inclement weather.
   j. MBE, WBE, and SBE activities.
   k. O&M data activities.
   l. Contractor provided training.

NOT TO BE USED FOR BIDDING PURPOSES

3.2 REVISIONS TO SCHEDULE

A. Each month Contractor shall receive updated information from Subcontractors and suppliers which shall be included in the current schedule. Revised schedule shall indicate changes such as:

1. Major changes in scope.
2. Activities modified since previous submittal.
3. Revised projections of progress and completion.
4. Other identifiable changes.

B. Information supplied by Contractor shall include as a minimum, activities started during preceding period, activities completed during preceding period, starting and completing dates for each, status of completion of ongoing activities, and major logic changes.

C. Provide narrative report to define the following:

1. Problem area and anticipated delays and their impact on schedule.
2. Corrective action recommended and its effect.

3.3 MONTHLY PROGRESS MEETINGS

A. Once each month at required progress meetings, progress schedule will be reviewed. Progress will be reviewed:

1. To identify those activities started and completed during previous period.
2. For remaining duration required to complete each activity started, but not completed.
3. For durations of selected activities not yet started.
4. For effect of Change Orders and proposed sequencing.

B. During the meeting, logic diagram will be amended as needed and Contractor shall update the logic diagram and computer printouts accordingly.

3.4 DELAYS AND RECOVERY

A. If, at any time during the project, Contractor fails to complete activity by its latest scheduled completion date, Contractor shall, within five (5) working days, submit to Engineer written statement as to how and when work force will be reorganized to return to current progress schedule.

B. If, during schedule review meetings, it becomes apparent that milestone completion dates, or times established in Section 01 11 13, or Contract completion dates will not be met, Contractor shall take some or all of the following actions:

1. Increase construction staffing in such quantities and crafts as shall eliminate backlog of work.
2. Increase number of working hours per shift, shifts per day, work days per week, amount of construction equipment, or combination of foregoing sufficient to substantially eliminate backlog of work.
3. Reschedule work activities to achieve concurrency of accomplishment.

NOT TO BE USED FOR BIDDING PURPOSES

C. Under no circumstance will addition of equipment or construction forces, increasing working hours, or other method, manner, or procedure to return to current progress schedule be considered justification for Contract modification or treated as acceleration.

D. Contractor shall accept risk for delays caused by rate of progress of work to be performed under other Contracts. If Contractor is delayed in prosecution and completion of work because of such conditions, Contractor shall have no claim for damages to Contract adjustment other than extension of time and waiver of liquidated damages during period of time occasioned by delay.

End of Section

NOT TO BE USED FOR BIDDING PURPOSES

SECTION 01 32 33 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 CONSTRUCTION PHOTOGRAPHS BY CONTRACTOR.

A. Contractor shall be responsible for the production of digital-format construction photographs as provided herein. Engineer shall designate the subject of each photograph.

B. A minimum of 100 photographs of the entire site, or pertinent features thereof, shall be taken before the commencement of Work and promptly submitted to Engineer. Photographs shall be taken from three separate locations around Work and for each major structure. The same views shall be rephotographed upon completion of all construction activities and submitted with Contractor's application for final payment. 25 additional photographs shall be made each month throughout the progress of the Work at such times as requested by Engineer, and submitted with Contractor's application for progress payment.

C. All photographs shall be color digital, produced by a competent professional photographer. Contractor shall submit the photographs electronically and two copies of 4 by 5-inch prints. Digital images shall be compiled on CD and provided with a descriptive index of the images. Prints shall be mounted on linen with flap for binding or enclosed in clear plastic binders, and marked with the name and number of the Contract, name of Contractor, description and location of view, and date photographed.

D. Engineer will transmit the digital files and one copy of the prints to Owner.

End of Section

NOT TO BE USED FOR BIDDING PURPOSES

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NOT TO BE USED FOR BIDDING PURPOSES

SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SHOP DRAWINGS AND ENGINEERING DATA

A. General.

1. The Project has been designed by Engineer's Consultant and Engineer will perform design-intent reviews of submittals. Owner, Engineer, and Contractor may develop a protocol for the transmittal of shop drawings, samples, and other submittals.

2. Shop Drawings and engineering data (submittals) covering all equipment and all fabricated components and building materials which will become a permanent part of the Work under this Contract shall be submitted to Engineer for review, as required. Submittals shall verify compliance with the Contract Documents and shall include drawings and descriptive information in sufficient detail to show the kind, size, arrangement, and the operation of component materials and devices; the external connections, anchorages, and supports required; the performance characteristics; and dimensions needed for installation and correlation with other materials and equipment.

3. Each submittal shall cover items from only one section of the specification unless the item consists of components from several sources. Contractor shall submit a complete initial submittal including all components. When an item consists of components from several sources, Contractor's initial submittal shall be complete including all components.

4. All submittals, regardless of origin, shall be approved by Contractor and clearly identified with the name and number of this Contract, Contractor's name, and references to applicable specification paragraphs and Contract Drawings. Each copy of all submittals, regardless of origin, shall be stamped or affixed with an approval statement of Contractor. Each submittal shall indicate the intended use of the item in the Work. When catalog pages are submitted, applicable items shall be clearly identified, and inapplicable data crossed out. The current revision, issue number, and date shall be indicated on all drawings and other descriptive data.

5. Contractor shall be solely responsible for the completeness of each submittal. Contractor's stamp or affixed approval statement of a submittal, per Figure 1-01 33 00, is a representation to Owner and Engineer that Contractor accepts sole responsibility for determining and verifying all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto, and that Contractor has reviewed and coordinated each submittal with other Shop Drawings and with the requirements of the Work and the Contract Documents.

6. All deviations from the requirements of the Contract Documents shall be identified as deviations on each submittal and shall be tabulated in Contractor's letter of transmittal using Figure 2-01 33 00. Such submittals shall, as pertinent to the deviation, indicate

NOT TO BE USED FOR BIDDING PURPOSES

essential details of all changes proposed by Contractor (including modifications to other facilities that may be a result of the deviation) and all required piping and wiring diagrams.

7. For electronic submittals, drawings and the necessary data shall be submitted electronically to Engineer as specified below. Submittal documents shall be in color to facilitate use of red line markups.

   a. All electronic files shall be in Portable Document Format (PDF) as generated by Adobe Acrobat Professional Version 7.0 or higher.
   b. The PDF file(s) shall be fully indexed using the Table of Contents, searchable with thumbnails generated. PDF images must be at a readable resolution.
   c. For most documents, they should be scanned or generated at 300 dots per inch (dpi). Use of higher resolution is acceptable with Owner and Engineer approval.
   d. Optical Character Recognition (OCR) capture must be performed on these images so that text can be searched, selected, and copied from the generated PDF file.
   e. The PDF documents shall have a bookmark created in the navigation frame for each major entry ("Section" or "Chapter") in the Table of Contents.
   f. Thumbnails shall be generated for each page or graphic in the PDF file.
   g. The opening view for each PDF document shall be as follows:
      1) Initial View: Bookmarks and Page
      2) Magnification: Fit In Window
      3) The file shall open to Contractor's transmittal letter, with bookmarks to the left. The first bookmark shall be linked to the Table of Contents.
   h. PDF document properties shall include the submittal number for the document title and Contractor's name for the author.
   i. Electronic submittal file sizes shall be limited to 20 MB. When multiple files are required for a submittal the least number of files possible shall be created.

8. Contractor shall post submittals and retrieve Engineer's submittal review comments through the Project website accessible through the Internet. Instruction on procedures for posting and retrieving submittals will be provided after award of the Contract.

9. Facsimiles (fax) will not be acceptable. Submittals will not be accepted from anyone but Contractor. Submittals shall be consecutively numbered in direct sequence of submittal and without division by subcontracts or trades.

B. Engineer's Review of Submittals.

1. Engineer's review of submittals covers only general conformity to the Drawings and Specifications, external connections, and dimensions that affect the layout; it does not indicate thorough review of all dimensions, quantities, and details of the material, equipment, device, or item covered. Engineer's review shall not relieve Contractor of sole responsibility for errors, omissions, or deviations in the drawings and data, nor of Contractor's sole responsibility for compliance with the Contract Documents.

2. Engineer's submittal review period shall 21 consecutive calendar days and shall commence on the first calendar day following receipt of the submittal or resubmittal in Engineer's office.

NOT TO BE USED FOR BIDDING PURPOSES

3. The time required to mail the submittal or resubmittal back to Contractor shall not be considered a part of the submittal review period.

4. When the drawings and data are returned with review status "NOT ACCEPTABLE" or "RETURNED FOR CORRECTION", the corrections shall be made as instructed by Engineer .

   a. The corrected drawings and data shall be resubmitted through the Project website.
   b. Resubmittals by facsimile or e-mail will not be accepted. When the drawings and data are returned with review status "EXCEPTIONS NOTED", "NO EXCEPTIONS NOTED", or "RECORD COPY", no additional copies need be furnished unless specifically requested by Engineer .

C. Resubmittal of Shop Drawings and Data.

1. Contractor shall accept full responsibility for the completeness of each resubmittal. Contractor shall verify that all corrected data and additional information previously requested by Engineer are provided on the resubmittal. Resubmittals shall be in an organized and consistent format.

2. When corrected copies are resubmitted, Contractor shall direct specific attention to all revisions in writing and shall list separately any revisions made other than those called for by Engineer on previous submittals. Requirements specified for initial submittals shall also apply to resubmittals. Resubmittals shall bear the number of the first submittal followed by a letter (A, B, etc.) or a unique identification that indicates the initial submittal and correct sequence of each resubmittal.

3. If more than one resubmittal is required because of failure of Contractor to provide all previously requested corrected data or additional information, Contractor shall reimburse Owner for the charges of Engineer for review of the additional resubmittals. This does not include initial submittal data such as shop tests and field tests that are submitted after initial submittal.

4. Resubmittals shall be made within 60 days of the date of the letter returning the material to be modified or corrected, unless within 30 days Contractor submits an acceptable request for an extension of the stipulated time period, listing the reasons the resubmittal cannot be completed within that time.

5. The need for more than one resubmittal, or any other delay in obtaining Engineer's review of submittals, will not entitle Contractor to extension of the Contract Times unless delay of the Work is the direct result of a change in the Work authorized by a Change Order or failure of Engineer to review and return any submittal to Contractor within the specified review period.

D. Color Selection.

1. Contractor shall submit samples of colors and finishes for all accepted products before Engineer will coordinate the selection of colors and finishes with Owner. Engineer will prepare a schedule of finishes that includes the colors and finishes selected for both manufactured products and for surfaces to be field painted or finished and will furnish

NOT TO BE USED FOR BIDDING PURPOSES

this schedule to Contractor within 60 days after the date of acceptance of the last color or finish sample.

E. American Iron and Steel Certification.

1. This project is being partially funded by the Clean Water State Revolving Fund which requires that all "iron and steel products" used for a project for the construction, alteration, maintenance, or repair of a public water system or treatment works are produced in the United States. "Iron and steel products" means the following products made primary of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal casting, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, conduit, reinforced precast concrete, and construction materials.

2. Contractor shall provide a certification letter in their submittals from such suppliers documenting their compliance with American Iron and Steel requirements.

1.2 OPERATION AND MAINTENANCE DATA AND MANUALS

A. Adequate operation and maintenance information shall be supplied for all equipment requiring maintenance or other attention. The equipment Supplier shall prepare a Project specific operation and maintenance manual for each type of equipment indicated in the individual equipment sections or the equipment schedule.

B. Unless otherwise agreed by Engineer , the operation and maintenance manual for each type of equipment shall only be submitted for review following completion of review of all shop drawings and engineering data pertaining to that equipment.

C. Parts lists and operating and maintenance instructions shall be furnished for other equipment not listed in the individual equipment sections or the equipment schedule.

D. Operation and maintenance manuals shall include the following:

1. Equipment function, normal operating characteristics, and limiting conditions.

2. Assembly, installation, alignment, adjustment, and checking instructions.

3. Operating instructions for startup, routine and normal operation, regulation and control, shutdown, and emergency conditions.

4. Lubrication and maintenance instructions.

5. Guide to troubleshooting.

6. Parts lists and predicted life of parts subject to wear.

7. Outline, cross section, and assembly drawings; engineering data; and wiring diagrams.

8. Test data and performance curves, where applicable.

NOT TO BE USED FOR BIDDING PURPOSES

E. The operation and maintenance manuals shall be in addition to any instructions or parts lists packed with or attached to the equipment when delivered, or which may be required by Contractor.

F. Shipment of equipment will not be considered complete until all required manuals and data have been received.

G. Electronic Manuals for Review Submittals

1. Submit one electronic copy of complete O&M data for approval by Engineer within 30 days after Contractor receives approved Shop Drawings for equipment.

2. All material shall be marked with Project identification, and inapplicable information shall be marked out or deleted.

3. Manuals shall be submitted in electronic format to Engineer prior to the date of shipment of the equipment. The manuals shall be submitted, and Engineer's review comments retrieved, through the Project website accessible through the Internet. Instruction on procedures for posting and retrieving O&M submittals and review comments will be provided after award of the Contract. When the O&M manuals are returned with the review status "RETURNED FOR CORRECTION", the corrections shall be made as instructed by Engineer, and corrected manuals resubmitted to Engineer. When review by Engineer is complete, three copies of each electronic O&M manual shall be delivered on CD-ROM to Engineer. Each CD shall contain only one copy of one manual. The completed O&M manual shall also be filed to the Project website. Delivery of the final O&M shall be made 30 days prior to placing the equipment in operation.

4. Electronic manuals shall be in Adobe Acrobat's Portable Document Format (PDF) and shall be prepared at a resolution between 300 and 600 dots per inch (dpi), depending on document type.

5. Optical Character Recognition (OCR) capture shall be performed on these documents. OCR settings shall be performed with the "original image with hidden text" option in Adobe Acrobat Exchange.

6. File size shall be limited to 10 MB. A single PDF file greater than 10 MB may only be submitted if acceptable to Owner. When multiple files are required the least number of files possible shall be created.

7. File names shall be in the format OMXXXXXX-YYYZ-V.pdf, where XXXXXX is the six digit number corresponding to the specification section, YYY is a three digit O&M manual number, e.g. 001, Z is the letter signifying a resubmittal, A, B, C, etc., and V is a number used only when more than one 10 MB file is required for an O&M manual.

8. Documents prepared in PDF format shall be processed as follows:

   a. Pages shall be searchable (processed for optical character recognition) and indexed when multiple files are required.
   b. Pages shall be rotated for viewing in proper orientation.
   c. A bookmark shall be provided in the navigation frame for each entry in the Table of Contents.

NOT TO BE USED FOR BIDDING PURPOSES

d. Embedded thumbnails shall be generated for each completed PDF file.
e. The opening view for PDF files shall be as follows:
   1) Initial View: Bookmarks and Page
   2) Page Number: Title Page (usually Page 1)
   3) Magnification: Set to Fit in Window
   4) Page: Single Page

f. Where the bookmark structure is longer than one page the bookmarks shall be collapsed to show the chapter headings only.
g. When multiple files are required the first file of the series (the parent file) shall list every major topic in the Table of Contents. The parent file shall also include minor headings bookmarked based on the Table of Contents. Major headings, whose content is contained in subsequent files (children) shall be linked to be called from the parent to the specific location in the child file. The child file shall contain bookmark entries for both major and minor headings contained in the child file. The first bookmark of any child file shall link back to the parent file and shall read as follows "Return to the *Equipment Name* Table of Contents", e.g., Return to the Polymer Feed System Table of Contents.
h. Drawings shall be bookmarked individually.
i. Files shall be delivered without security settings to permit editing, insertion, and deletion of material to update the manual provided by the manufacturer.

H. Hard Copy and Electronic Manuals for Final Submittal.

1. After approval of the review submittal, submit three paper copies and one electronic media in PDF format of complete O&M data not later than 30 days prior to placing the equipment in operation.

2. The final hard copy of each manual shall be prepared and delivered in substantial, permanent, three-ring or three-post binders with a table of contents and suitable index tabs.

   a. Size: 8-1/2 inch by 11 inch, or 11 inch by 17 inch, folded, with standard 3-hole punching.
   b. Paper: 20-lb minimum, white.
   c. Text: Manufacturer's printed data or type written.
   d. Drawings:
      1) Bind in text.
      2) Where reduction in size is not practicable, fold larger drawings and place in text page size envelope bound into binder. Place identification on outside of envelope.

   e. Provide tabbed section dividers.
   f. Provide title of section on divider.
   g. Each volume containing data from three or more items of equipment shall include a table of contents and index tabs.

I. Labeling

1. As a minimum, the following information shall be included on all final O&M manual materials, including CD-ROM disks, jewel cases, and hard copy manuals:

NOT TO BE USED FOR BIDDING PURPOSES

a. Equipment name and/or O&M title spelled out in complete words.
b. Owner: Four Rivers Sanitation Authority
c. Project Name: BNR Improvements – Aeration Basin Modifications
d. Owner Project/Contract Number: Capital Project No. 2304
e. Specification Section Number. Example: "Section 43 25 60"
f. Manufacturer's name.
g. File Name and Date.

2. Label example:

Four Rivers Sanitation Authority

Submersible Horizontal Propeller Pumps Operation and Maintenance Manual

BNR Improvements – Aeration Basin Modifications

Capital Project No. 2304

Specification Section 43 25 60

Manufacturer

OM432560-001.pdf, 09/28/2024

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

End of Section

NOT TO BE USED FOR BIDDING PURPOSES

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NOT TO BE USED FOR BIDDING PURPOSES

SUBMITTAL No. _____
SECTION _____
Do not combine multiple sections together unless required by specifications.

(Contractor's Letterhead)

SUBMITTAL IDENTIFICATION & CONTRACTOR'S APPROVAL STATEMENT

NOT TO BE USED FOR BIDDING PURPOSES

DATE: _____ COPIES _____ DRAWING SHEET NO. _____

Description submittal contents:

_____

Location:

_____

Manufacturer:

_____

Subcontractor or Supplier (Optional): _____

REMARKS:

_____
_____
_____
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_____
_____

CONTRACTOR'S APPROVAL

(Construction Company) has reviewed and coordinated the submitted documentation and verifies that the equipment and material meet the requirements of the Work and the Contract Documents. We accept sole responsibility for determining and verifying all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data contained in the submittal as required by the Contract Documents.

Deviations: □ None □ Yes (See attached Figure 2-01 33 00 for written description)

Approved By: _____ Date: _____

This approval does not release subcontractor / vendor from the contractual responsibilities.

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NOT TO BE USED FOR BIDDING PURPOSES

SUBMITTAL No. _____
SECTION _____
Do not combine multiple sections together unless required by specifications.

(Contractor's Letterhead)

SUBMITTAL IDENTIFICATION & CONTRACTOR'S APPROVAL STATEMENT

DATE: _____ COPIES _____ DRAWING SHEET NO. _____

Description submittal contents:

_____

Location:

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Manufacturer: _____

Subcontractor or Supplier (Optional):_____

DEVIATIONS

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NOT TO BE USED FOR BIDDING PURPOSES

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NOT TO BE USED FOR BIDDING PURPOSES

SECTION 01 42 13 - ABBREVIATIONS AND ACRONYMS

PART 1 - GENERAL

1.1 LIST OF ABBREVIATIONS.

A. Abbreviations for standards and organizations used in the Contract Documents are defined as follows:

AA	Aluminum Association
AABC	Associated Air Balance Council
AAMA	Architectural Aluminum Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials
ABMA	American Bearing Manufacturers Association
ACI	American Concrete Institute
ACPA	American Concrete Pipe Association
AEIC	Association of Edison Illuminating Companies
AFBMA	Antifriction Bearing Manufacturers Association now recognized as the ABMA
AFPA	American Forest & Paper Association
AGA	American Gas Association
AGS	Aerobic Granular Sludge
AGMA	American Gear Manufacturers Association
AHA	American Hardboard Association
AHRI	Air-Conditioning, Heating and Refrigeration Institute
AIR	Aeration Air/Process Air
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction

NOT TO BE USED FOR BIDDING PURPOSES

AMCA	Air Movement and Control Association International
ANSI	American National Standards Institute
APA	Engineered Wood Association (formerly American Plywood Association)
API	American Petroleum Institute
AREMA	American Railway Engineers and Maintenance-of-Way Association
ASAHC	American Society of Architectural Hardware Consultants
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating, and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASSE	American Society of Sanitary Engineers
ASTM	ASTM International
AWG	American Wire Gauge
AWI	Architectural Woodwork Institute
AWPA	American Wood-Preservers' Association
AWS	American Welding Society
AWWA	American Water Works Association
BHMA	Builders Hardware Manufacturers Association
BIA	Brick Institute of America (formerly SCPI)
BNR	Biological Nutrient Removal
CDA	Copper Development Association
CISPI	Cast Iron Soil Pipe Institute
CMAA	Crane Manufacturers Association of America
CRA	California Redwood Association
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standard (U.S. Department of Commerce)

NOT TO BE USED FOR BIDDING PURPOSES

DHI	Door and Hardware Institute
DIPRA	Ductile Iron Pipe Research Association
EEI	Edison Electric Institute
EJCDC	Engineers' Joint Contract Documents Committee
EPA	Environmental Protection Agency
FCC	Federal Communications Commission
FCI	Fluid Controls Institute
Fed Spec	Federal Specification
FGMA	Flat Glass Marketing Association
FHWA	Federal Highway Administration
FIA	Factory Insurance Association
FM	Factory Mutual
FRSA	Four Rivers Sanitation Authority
FSA	Fluid Sealing Association
HEI	Heat Exchange Institute
HMI	Hoist Manufacturers Institute
HPMA	Hardwood Plywood Manufacturers Association
HTI	Hand Tools Institute
HSW	High Strength Waste
I-B-R	Institute of Boiler and Radiator Manufacturers
IEEE	Institute of Electrical and Electronics Engineers
IBC	International Building Code
IES	Illuminating Engineering Society
IFI	Industrial Fasteners Institute
IPCEA	Insulated Power Cable Engineers Association
IRI	Industrial Risk Insurers

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ISA	International Society of Automation
LEED	Leadership in Energy and Environmental Design
LSW	Low Strength Waste
MHI	Materials Handling Institute
MIL	Military Specification
MMA	Monorail Manufacturers Association
MSS	Manufacturers Standardization Society of Valve and Fitting Industry
NAAMM	National Association of Architectural Metals Manufacturers
NACE	NACE International
NBBPVI	National Board of Boiler and Pressure Vessel Inspectors
NBS	See NIST
NCSPA	National Corrugated Steel Pipe Association
NEBB	National Environmental Balancing Bureau
NEC	National Electrical Code
NECA	National Electrical Contractors Association
NEII	National Elevator Industry, Inc.
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NIST	National Institute of Standards and Technology (formerly NBS)
NLA	National Lime Association
NPC	National Plumbing Code
NPT	National Pipe Thread
NRMCA	National Ready Mixed Concrete Association
NSC	National Safety Council
NSF	NSF International (formerly National Sanitation Foundation)
NTMA	National Terrazzo and Mosaic Association

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NWMA	National Woodwork Manufacturers Association
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
PCI	Precast/Prestressed Concrete Institute
PF	Primary Filtration
PFE	Primary Filter Effluent
PRC	Primary Clarificaiton
PS	Product Standard, Pipe Support
RRWRD	Rock River Water Reclamation District
SAE	SAE International
SDI	Steel Door Institute
SFPA	Southern Forest Products Association
SI	Systéme International des Unites (International System of Units)
SIGMA	Sealed Insulating Glass Manufacturers Association
SJI	Steel Joist Institute
SMA	Screen Manufacturers Association
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SPFA	Steel Plate Fabricators Association
SPI	Society of the Plastics Industry
SPTA	Southern Pressure Treaters Association
SSFI	Scaffolding, Shoring & Forming Institute, Inc
SSPC	SSPC: The Society for Protective Coatings
TABB	Testing, Adjusting, and Balancing Bureau
UL	Underwriters' Laboratories
USBR	U.S. Bureau of Reclamation
USGBC	U.S. Green Building Council

NOT TO BE USED FOR BIDDING PURPOSES

WEF	Water Environment Federation

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

End of Section

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SECTION 01 45 00 - QUALITY CONTROL

PART 1 - GENERAL

1.1 TESTING SERVICES

A. Testing services shall be provided in accordance with Paragraph 14.02 of the General Conditions. All tests to determine compliance with the Contract Documents shall be performed by an independent commercial testing firm acceptable to Engineer and/or Authority Having Jurisdiction excluding testing as specified to be conducted directly by Contractor. The testing firm's laboratory shall be staffed with experienced technicians, properly equipped and fully qualified to perform the tests in accordance with the specified standards.

B. Testing services provided by Owner are for the sole benefit of Owner and/or as required by the governing building code; however, test results shall be available to Contractor. Testing necessary to satisfy Contractor's internal quality control procedures shall be the sole responsibility of Contractor.

C. Testing Services Provided by Contractor.

1. Unless otherwise specified, Contractor shall provide all testing and inspecting services in connection with the following:

   a. Any Work or part thereof specifically to be inspected, tested or approved by an employee or representative of an Authority Having Jurisdiction. Contractor shall assume full responsibility for arranging and obtaining such inspections, tests or approvals. Contractor shall pay all costs associated for these activities and shall provide the required certificates of inspection or approval.
   b. Any inspections, tests or approvals required for Owner or Engineer acceptance of materials or equipment to be incorporated in the Work. This includes any items required for acceptance of materials, concrete mix designs or equipment submitted for approval prior to Contractor’s purchase for incorporation in the Work.
   c. Testing, adjusting and balancing of mechanical, electrical and other equipment and systems as specified to be incorporated into the Work. This includes services required by manufacturers of equipment or other products such as concrete repair products, pipe, coatings, linings and roof membranes furnished under the Contract Documents.
   d. Any Work (or part thereof) required by the Contract Documents to be approved by Owner, Engineer or other designated individual or entity. Contractor shall assume full responsibility for arranging and obtaining such approvals, pay all costs in connection therewith and submit to Engineer the required certificates of approval.

2. Excluding those conducted directly by an Authority Having Jurisdiction or expressly specified to be conducted directly by Contractor, inspections and tests shall be performed by independent inspectors, approved agencies or other qualified individuals or entities acceptable to Owner and Engineer.

3. Perform additional tests as required by Engineer.

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4. Perform additional inspections, sampling, and testing required when initial tests indicate Work does not comply with Contract Documents.

5. Special inspections and/or tests may be waived only by the specific approval of Engineer, and such waivers will result in credit to the Owner equal to normal cost of such inspection and/or test.

D. Contractor shall provide access to the site and Work in accordance with 14.01 and 14.02 of the General Conditions. Contractor shall give timely notice of the readiness of the Work for inspection, tests or approvals and shall cooperate with the inspection and testing personnel to facilitate the required tests and inspections. Contractor shall furnish all sample materials and cooperate in the testing activities, including sampling. Contractor shall interrupt the Work when necessary to allow testing, including sampling, to be performed. Contractor shall have no Claim for an increase in Contract Price or Contract Times due to such interruption. When testing activities, including sampling, are performed in the field by Engineer or Agency personnel, Contractor shall furnish personnel and facilities to assist in the activities as required.

E. Transmittal of Test Reports.

1. Upon completion of each test and/or inspection, Contractor shall promptly submit written report of each test and inspection. Written reports of tests and engineering data furnished by Contractor for Engineer's review of materials and equipment proposed to be used in the Work shall be submitted as specified for Shop Drawings.

2. The Approved Agency retained by Contractor will furnish five copies of a written report of each test. Two copies of each test report will be transmitted to the Resident Project Representative, one copy to the Special Inspector, one copy to Engineer, and one copy to Contractor, within 3 days after each test is completed or as directed by the Statement of Special Inspections as applicable.

1.2 OFFSITE INSPECTION

A. Inspection of materials or equipment during the production, manufacturing, or fabricating process, or before shipment, will be performed by Engineer or an independent testing firm or Approved Agency acceptable to Engineer and Authority Having Jurisdiction as specified in the materials and equipment.

B. Except as otherwise specified in other sections, Contractor shall give appropriate written notice to Engineer not less than 10 days before offsite inspection services are required, and shall provide for the producer, manufacturer, or fabricator to furnish safe access and proper facilities and to cooperate with inspecting personnel in the performance of their duties.

C. The inspection organization will submit a written report to Engineer, with a copy to Contractor, at least once each week or as directed by the Statement of Special Inspections as applicable.

1.3 MANUFACTURER'S FIELD SERVICES

A. Manufacturer’s field services shall be as specified herein except as specifically specified in the respective equipment sections.

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B. Installation Supervision. An experienced, competent, and authorized representative of the manufacturer of each item of equipment for which field services are indicated in the respective equipment section or in the equipment schedule section shall visit the Site of the Work and inspect, check, adjust if necessary, and approve the equipment installation. The equipment manufacturer will provide written notification 10 days prior to the need for such services.

C. Installation Check. The equipment manufacturer's representative shall inspect, check, adjust if necessary, and approve the equipment installation prior to functional testing. Each manufacturer's representative shall furnish a certificate of installation and written report certifying that the equipment has been properly installed and lubricated; is in accurate alignment; is free from any undue stress imposed by connecting piping or anchor bolts, and has been operated under full load conditions and that it operated satisfactorily.

D. Functional Testing. Following issuance of the manufacturer's certificate of installation, the equipment manufacturer's representative shall observe and assist with the functional testing of the equipment. The representative shall be present when the equipment is placed in operation in accordance with the Startup Requirements section and shall revisit the job site as often as necessary until all trouble is correct and the equipment installation are satisfactory in the opinion of the Engineer. The representative shall acknowledge in writing that the equipment has operated under the full load conditions and that it operated satisfactorily.

E. Training. Requirements for training the Owner's personnel in the proper operation and maintenance of the equipment provided shall be as specified in the Demonstration and Training section.

F. Performance and Other Testing. Requirements for operational acceptance testing, performance testing, and any other field testing for the equipment provided shall be as specified in the respective equipment sections.

G. All costs for these services shall be included in the Contract Price.

End of Section

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SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 UNITS OF MEASUREMENT

A. When both inch-pound (English) and SI (metric) units of measurement are specified herein, the values expressed in inch-pound units shall govern.

1.2 OFFICE AT SITE OF WORK

A. During the performance of this Contract, Contractor shall maintain a suitable office at or near the Site which shall be the headquarters of its representative authorized to receive drawings, instructions, or other communication or articles.

B. Any communication given to the said representative or delivered at Contractor's office at the Site in the representative's absence shall be deemed to have been delivered to Contractor.

C. Copies of the Drawings, Specifications, and other Contract Documents shall be kept at Contractor's office at the Site and available for use at all times.

1.3 WATER FOR CONSTRUCTION

A. Owner will provide non-potable water source for construction. Contractor shall provide a backflow prevention device, but no metering is required. Volume of water available is limited to ensure that existing process needs are not hindered.

B. Use of water from the FRSA Plant Water System is limited to flow from one 2-inch hose connection at any one time, for the entire project. If FRSA experiences any plant process issues resulting from the Contractor’s Plant Water system use, the water will be shutdown and the Contractor shall provide their own water supply.

1.4 WATER FOR TESTING

A. Unless specifically stated otherwise in Specifications, Contractor shall provide water necessary for testing. Comply with requirements specified under WATER FOR CONSTRUCTION in this Section.

1.5 POWER

A. Power for lighting and operation of Contractor's plant and equipment in connection with the Work to be done under this Contract may be obtained from the Owner’s electrical system, subject to the following conditions:

NOT TO BE USED FOR BIDDING PURPOSES

1. Existing lighting systems may be utilized by Contractor to the extent available. Any necessary additional or temporary lighting systems shall be provided by Contractor at no additional cost to Owner.

2. 120 volt, 60 Hz, single phase power will be available provided arrangements with Owner are made for temporary electricity.

3. Owner supplied 480-volt power is not available.

4. Contractor at its own expense shall make authorized connections to the existing power sources and shall extend temporary service lines to the required areas. Temporary wiring shall conform to Article 590 of the NEC.

5. Contractor shall at all times provide adequately against waste and needless use of power. Electrical power shall be used only in such quantities as will not interfere with Owner's requirements, and care shall be taken not to overload the existing facilities. Provide electrical protection to prevent disruption of plant power from over-current, ground faults, and short circuits. Contractor shall provide any additional or temporary electrical power or power of other voltages it may require for prosecution of the Work.

6. If Contractor requires more than Owner's supply available, Contractor shall obtain additional source of power and pay all costs for power from additional source.

7. Facilities exposed to weather shall be weatherproof type.

8. Enclosures shall be locked to prevent unauthorized access.

9. Provide lamps, wiring, switches, sockets, and similar requirement required for temporary lighting and power tools.

B. These provisions shall not be construed as a guarantee by Owner of the uninterrupted continuation of power, and interruptions beyond the control of Owner shall not be reason for claims for additional costs nor for extensions of time. Contractor shall provide, at no additional cost to Owner, any necessary power required for prosecution of the Work during such interruptions.

1.6 VOICE SERVICES

A. Contractor shall make all necessary arrangements to provide temporary telephone service for Contractor's use and for Owner to contact project site. Mobile or cellular phones are acceptable. Contractor may not use Owner's system for telephone service.

1.7 SANITARY FACILITIES

A. Contractor shall not use existing sanitary facilities.

B. Contractor shall furnish temporary sanitary facilities at the Site, as provided herein, for the needs of all construction workers and others performing work or furnishing services on the Project.

NOT TO BE USED FOR BIDDING PURPOSES

C. Sanitary facilities shall be of reasonable capacity, properly maintained throughout the construction period, and obscured from public view to the greatest practical extent. If toilets of the chemically treated type are used, at least one toilet will be furnished for each 20 persons. Contractor shall enforce the use of such sanitary facilities by all personnel at the Site.

1.8 CONSTRUCTION AIDS

A. The Contractor may coordinate with the Owner for Contractor use of the overhead bridge crane within the Blower Building for the removal and installation of existing and new blowers. The Contractor assumes full responsibility for damage or injury to persons or property occasioned through the use, maintenance, and operation of the Owner's overhead bridge crane, including damage to the overhead crane itself; see 1.13 DAMAGE TO EXISTING PROPERTY.

B. These provisions shall not be construed as a guarantee by Owner of the uninterrupted availability of the bridge crane and shall not be reason for claims for additional costs nor for additional extension of Contract time. Contractor shall provide, at no additional cost to Owner, any necessary additional equipment required for completion of the Work.

1.9 MAINTENANCE OF TRAFFIC Not used.

1.10 BARRICADES AND LIGHTS Not used.

1.11 FENCES Not used.

1.12 PROTECTION OF PUBLIC AND PRIVATE PROPERTY Not used.

1.13 DAMAGE TO EXISTING PROPERTY

A. Contractor will be held responsible for any damage to existing structures, Work, materials, or equipment because of his operations and shall repair or replace any damaged structures, Work, materials, or equipment to the satisfaction of, and at no additional cost to, Owner.

B. Contractor shall protect all existing structures and property from damage and shall provide bracing, shoring, or other work necessary for such protection.

C. Contractor shall be responsible for all damage to streets, roads, curbs, sidewalks, highways, shoulders, ditches, embankments, culverts, bridges, or other public or private property, which may be caused by transporting equipment, materials, or workers to or from the Work. Contractor shall make satisfactory and acceptable arrangements with the agency having jurisdiction over the damaged property concerning its repair or replacement. Contractor shall have option of having Owner contract for such Work and have cost deducted from Contract Price.

NOT TO BE USED FOR BIDDING PURPOSES

1.14 TREE AND PLANT PROTECTION

A. All trees and other vegetation which must be removed to perform the Work shall be removed and disposed of by Contractor; however, no trees or cultured plants shall be unnecessarily removed unless their removal is indicated on the Drawings. All trees and plants not removed shall be protected against injury from construction operations.

B. Contractor shall take extra measures to protect trees, such as erecting barricades, trimming to prevent damage from construction equipment, and installing pipe and other Work by means of hand excavation or tunneling methods. Such trees shall not be endangered by stockpiling excavated material or storing equipment against their trunks.

C. When injuring or removal of trees cannot be avoided, or when removal and replacement is indicated on the Drawings, each tree injured beyond repair or removed shall be replaced with a similar tree of the nearest size possible.

D. All trimming, repair, and replacement of trees and plants shall be performed by qualified nurserymen or horticulturists.

1.15 SECURITY

A. Security will not be provided by Owner.

B. Contractor shall be responsible for protection of the Site, and all Work, materials, equipment, and existing facilities thereon, against vandals and other unauthorized persons.

C. No Claim shall be made against Owner by reason of any act of an employee or trespasser, and Contractor shall make good all damage to Owner's property resulting from Contractor's failure to provide security measures as specified.

D. Security measures shall be at least equal to those usually provided by Owner to protect Owner's existing facilities during normal operation, but shall also include such additional security fencing, barricades, lighting, and other measures as required to protect the Site.

1.16 ACCESS ROADS

A. Contractor shall establish and maintain temporary access roads to various parts of the Site as required to complete the Project. Such roads shall be available for the use of all others performing work or furnishing services in connection with the Project. Temporary roadways shall be maintained in snow free, ice free, drivable condition.

1. A minimum one-lane of traffic for regular plant operations, deliveries, and vehicular access to all facilities on the existing plant roads must be maintained throughout construction.

2. Gate number 9 may be used for construction traffic.

B. Maintain existing roads used during construction free from accumulation of dirt, mud and construction debris. Roads shall be considered “maintained” when material has been removed by a sweeper. Multiple sweeper passes may be required to clean the existing surfaces

NOT TO BE USED FOR BIDDING PURPOSES

sufficiently in Engineers opinion. Aggregate surfaced roads and drives will be considered "maintained" when dirt and soil contaminants in excess of 1" diameter have been removed and the total volume of contaminants remaining is estimated to be less than ¼ cubic foot. Contractor shall control dust from operations in all circumstances.

C. Temporary granular paving used prior to final paving shall be maintained in smooth condition. Ruts, holes, washboarding, or other surface deformities shall be corrected immediately by filling or scraping. All maintenance work to maintain traffic on existing roads shall be finished with a vibratory roller to recompact the surface.

D. Contractor shall repair or replace existing roads to original or better condition prior to Final Completion. Survey and record condition of existing roads prior to construction.

1.17 PARKING

A. Contractor shall provide and maintain suitable parking areas for the use of all workers and others performing work or furnishing services in connection with the Project, as required to avoid any need for parking personal vehicles where they may interfere with public traffic, Owner's operations, or construction activities.

B. Parking on plant roads and in areas interfering with Owner's activities are not allowed.

C. Do not allow heavy vehicles or construction equipment in parking areas.

D. Make arrangement for additional parking off site as required.

1.18 NOISE CONTROL

A. Contractor shall take reasonable measures to avoid unnecessary noise. Such measures shall be appropriate for the normal ambient sound levels in the area during working hours. All construction machinery and vehicles shall be equipped with practical sound-muffling devices, and operated in a manner to cause the least noise consistent with efficient performance of the Work.

B. During construction activities on or adjacent to occupied buildings, and when appropriate, Contractor shall erect screens or barriers effective in reducing noise in the building and shall conduct its operations to avoid unnecessary noise which might interfere with the activities of building occupants.

1.19 DUST CONTROL

A. Contractor shall maintain Owner's existing roads, and public roads used during construction operations in clean, dust free condition.

B. Contractor shall take reasonable measures to prevent unnecessary dust and maintaining temporary roads. Earth surfaces subject to dusting shall be kept moist with water or by application of a chemical dust suppressant. When practicable, dusty materials in piles or in transit shall be covered to prevent blowing dust.

NOT TO BE USED FOR BIDDING PURPOSES

C. Buildings or operating facilities which may be affected adversely by dust shall be adequately protected from dust. Existing or new machinery, motors, instrument panels, or similar equipment shall be protected by suitable dust screens. Proper ventilation shall be included with dust screens.

1.20 TEMPORARY DRAINAGE PROVISIONS

A. Contractor shall provide for the drainage of storm water and such water as may be applied or discharged on the Site in performance of the Work. Drainage facilities shall be adequate to prevent damage to the Work, the Site, and adjacent property.

B. Existing drainage channels and conduits shall be cleaned, enlarged, or supplemented as necessary to carry all increased runoff attributable to Contractor's operations. Dikes shall be constructed as necessary to divert increased runoff from entering adjacent property (except in natural channels), to protect Owner's facilities and the Work, and to direct water to drainage channels or conduits. Ponding shall be provided as necessary to prevent downstream flooding.

1.21 EROSION CONTROL

A. Contractor shall prevent erosion of soil on the Site and adjacent property resulting from its construction activities as indicated in Section 31 25 00 Erosion and Sedimentation Controls and shown on the Drawings. Effective measures shall be initiated prior to the commencement of clearing, grading, excavation, or other operation that will disturb the natural protection.

B. Work shall be scheduled to expose areas subject to erosion for the shortest possible time, and natural vegetation shall be preserved to the greatest extent practicable. Temporary storage and construction buildings shall be located, and construction traffic routed, to minimize erosion. Temporary fast-growing vegetation or other suitable ground cover shall be provided as necessary to control runoff.

1.22 POLLUTION CONTROL

A. Contractor shall prevent the pollution of drains and watercourses by sanitary wastes, sediment, debris, and other substances resulting from construction activities. No sanitary wastes shall be permitted to enter any drain or watercourse other than sanitary sewers. No sediment, debris, or other substance shall be permitted to enter sanitary sewers, and reasonable measures shall be taken to prevent such materials from entering any drain or watercourse.

1.23 PEST CONTROL Not used.

1.24 RODENT CONTROL Not used.

End of Section

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SECTION 01 61 00 - GENERAL EQUIPMENT STIPULATIONS

PART 1 - GENERAL

1.1 SCOPE

A. When an equipment specification section in this Contract references this section, the equipment shall conform to the general stipulations set forth in this section, except as otherwise specified in other sections.

1.2 COORDINATION

A. Contractor shall coordinate all details of the equipment with other related parts of the Work, including verification that all structures, piping, wiring, and equipment components are compatible. Contractor shall be responsible for all structural and other alterations in the Work required to accommodate equipment differing in dimensions or other characteristics from that contemplated in the Drawings or Specifications.

1.3 MANUFACTURER'S EXPERIENCE

A. Unless specifically named in the Specifications, a manufacturer shall have furnished equipment of the type and size specified which has been in successful operation for not less than the past 5 years.

1.4 WORKMANSHIP AND MATERIALS

A. Contractor shall guarantee all equipment against faulty or inadequate design, improper assembly or erection, defective workmanship or materials, and leakage, breakage, or other failure. Materials shall be suitable for service conditions.

B. All equipment shall be designed, fabricated, and assembled in accordance with recognized and acceptable engineering and shop practice. Individual parts shall be manufactured to standard sizes and thicknesses so that repair parts, furnished at any time, can be installed in the field. Like parts of duplicate units shall be interchangeable. Equipment shall not have been in service at any time prior to delivery, except as required by tests.

C. Except where otherwise specified, structural and miscellaneous fabricated steel used in equipment shall conform to AISC standards. All structural members shall be designed for shock or vibratory loads. Unless otherwise specified, all steel which will be submerged, all or in part, during normal operation of the equipment shall be at least 1/4 inch thick. When dissimilar metal components are used, consideration shall be given to prevention of galvanic corrosion.

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1.5 BUY AMERICA PREFERENCE

A. This project is being partially funded by the Clean Water State Revolving Fund which requires that all iron, steel, manufacturerd products, and construction materials used for a project for the construction, alteration, maintenance, or repair of a public water system or treatment works are produced in the United States in accordance with the Build America, Buy America Act.

B. Contractor shall provide a certification letter in their submittals from such suppliers documenting their compliance with Buy America requirements.

1.6 STRUCTURAL DESIGN REQUIREMENTS

A. All equipment, including non-structural components and non-building structures as defined in ASCE 7, and their anchorage, shall be designed and detailed in accordance with the Meteorological and Seismic Design Criteria section.

1.7 LUBRICATION

A. Equipment shall be adequately lubricated by systems which require attention no more frequently than weekly during continuous operation. Lubrication systems shall not require attention during startup or shutdown and shall not waste lubricants.

B. Lubricants of the types recommended by the equipment manufacturer shall be provided in sufficient quantities to fill all lubricant reservoirs and to replace all consumption during testing, startup, and operation prior to acceptance of equipment by Owner. Lubricants for equipment where the lubricants may come in contact with water before or during a potable water treatment process or with potable water, shall be food grade lubricants. This includes lubricants for equipment not normally in contact with water, but where accidental leakage of the lubricants may contaminate the water.

C. Lubrication facilities shall be convenient and accessible. Oil drains and fill openings shall be easily accessible from the normal operating area or platform. Drains shall allow for convenient collection of waste oil in containers from the normal operating area or platform without removing the unit from its normal installed position.

1.8 ELEVATION

A. The elevation of the site shall be as indicated in the Meteorological and Seismic Design Criteria section. All equipment furnished shall be designed to meet stipulated conditions and to operate satisfactorily at the specified elevation.

1.9 ELECTRIC MOTORS

A. Unless otherwise specified, motors furnished with equipment shall meet the requirements specified in Common Motor Requirements for Process Equipment section or specified in specific equipment sections.

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1.10 DRIVE UNITS

A. The nominal input horsepower rating of each gear or speed reducer shall be at least equal to the nameplate horsepower of the drive motor. Drive units shall be designed for 24 hour continuous service.

B. Gearmotors.

1. The use of gearmotors sharing an integral housing or cutgears into the motor output shaft, or that require removal of lubricant from the gear reducer to change out the motor will not be acceptable.

C. Gear Reducers.

1. Each gear reducer shall be a totally enclosed unit with oil or grease lubricated, rolling element, antifriction bearings throughout.

D. Unless superseded by individual specification requirements each helical, spiral bevel, combination bevel-helical, and worm gear reducers shall have a service factor of at least 1.50 based on the nameplate horsepower of the drive motor. Cycloidal gear reducers shall have a service factor of at least 2.0 based on the nameplate horsepower of the drive motor. Shaft-mounted and flange-mounted gear reducers shall be rated AGMA Class III. Helical gear reducers shall have a gear strength rating to catalog rating of 1.5. Each gear reducer shall be designed and manufactured in compliance with applicable most current AGMA standards, except the L_{10} bearing life shall be 200, 000 hours.

E. The thermal horsepower rating of each unit shall equal or exceed the nameplate horsepower of the drive motor. During continuous operation, the maximum sump oil temperature shall not rise more than 100°F above the ambient air temperature in the vicinity of the unit and shall not exceed 200°F.

F. Each grease lubricated bearing shall be installed in a bearing housing designed to facilitate periodic regreasing of the bearing by means of a manually operated grease gun. Each bearing housing shall be designed to evenly distribute new grease, to properly dispose of old grease, and to prevent overgreasing of the bearing. The use of permanently sealed, grease lubricated bearings will not be acceptable in large sized reducers. In small reducers, similar to basin equipment, permanently sealed grease lubricated bearings rated L_{10} 200,000 hour life may be provided at the manufacturer's option. An internal or external oil pump and appurtenances shall be provided if required to properly lubricate oil lubricated bearings. A dipstick or a sight glass arranged to permit visual inspection of lubricant level shall be provided on each unit.

G. Gear reducers which require the removal of parts or the periodic disassembly of the unit for cleaning and manual regreasing of bearings will not be acceptable.

H. Certification shall be furnished by the gear reducer manufacturer indicating that the intended application of each unit has been reviewed in detail by the manufacturer and that the unit provided is fully compatible with the conditions of installation and service.

NOT TO BE USED FOR BIDDING PURPOSES

I. Adjustable Speed Drives.

1. Each mechanical adjustable speed drive shall have a service factor of at least 1.75 at maximum speed based on the nameplate horsepower of the drive motor. Unless specifically permitted by the detailed equipment specifications, bracket type mounting will not be acceptable for variable speed drives.

J. V-Belt Drives.

1. Each V-belt drive shall include a sliding base or other suitable tension adjustment. V-belt drives shall have a service factor of at least 1.75 at maximum speed based on the nameplate horsepower of the drive motor.

1.11 SAFETY GUARDS

A. All belt or chain drives, fan blades, couplings, and other moving or rotating parts shall be covered on all sides by a safety guard. Safety guards shall be fabricated from 16 USS gage thick or thicker galvanized, aluminum-clad sheet steel, or stainless sheet steel or from 1/2 inch mesh galvanized expanded metal, or pultrusion molded UV resistant materials. Each safety guard shall be reinforced or shaped to provide suitable strength to prevent vibration and deflection and shall comply with OSHA. Each guard shall be designed for easy installation and removal. All necessary supports and accessories shall be provided for each guard. Supports and accessories, including bolts, shall be galvanized. All safety guards in outdoor locations shall be designed to prevent the entrance of rain and dripping water.

1.12 ANCHOR BOLTS

A. Equipment suppliers shall design and detail suitable anchor bolts for each item of equipment. Anchor bolts shall be designed for all operating conditions of the equipment, including wind and seismic loadings where applicable. Wind and seismic loads shall be as indicated in the Meteorological and Seismic Design Criteria section.

B. Requirements for anchor bolt type, material, and minimum diameter shall be as indicated in the Anchorage in Concrete and Masonry section.

C. Anchor bolts, together with templates or setting drawings, shall be delivered sufficiently early to permit setting the anchor bolts when the structural concrete or masonry grout is placed.

D. Unless otherwise indicated or specified, anchor bolts for items of equipment mounted on baseplates shall be long enough to permit 1-1/2 inches of grout beneath the baseplate and to provide adequate anchorage into structural concrete.

1.13 EQUIPMENT BASES

A. Unless otherwise indicated or specified, all equipment shall be installed on concrete bases at least 6 inches. Cast iron or welded steel baseplates shall be provided for pumps, compressors, and other equipment. Each unit and its drive assembly shall be supported on a single baseplate of neat design. Baseplates shall have pads for anchoring all components, and adequate grout

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holes. Baseplates for pumps shall have a means for collecting leakage and a threaded drain connection. Baseplates shall be anchored to the concrete base with suitable anchor bolts and the space beneath filled with grout as specified in the Grouting section.

1.14 SPECIAL TOOLS AND ACCESSORIES

A. Equipment requiring periodic repair and adjustment shall be furnished complete with all special tools, instruments, and accessories required for proper maintenance. Equipment requiring special devices for lifting or handling shall be furnished complete with those devices.

1.15 SHOP PAINTING

A. All iron and steel surfaces of the equipment shall be protected with suitable protective coatings applied in the shop. Surfaces of the equipment that will be inaccessible after assembly shall be protected for the life of the equipment. Coatings shall be suitable for the environment where the equipment is installed. Exposed surfaces shall be finished, thoroughly cleaned, and filled as necessary to provide a smooth, uniform base for painting. Electric motors, speed reducers, starters, and other self-contained or enclosed components shall be shop primed or finished with an epoxy or polyurethane enamel or universal type primer suitable for top coating in the field with a universal primer and aliphatic polyurethane system.

B. Surfaces to be coated after installation shall be prepared for painting as recommended by the paint manufacturer for the intended service, and then shop painted with one or more coats of a universal primer.

C. Machined, polished, and nonferrous surfaces which are not to be painted shall be coated with rust-preventive compound as recommended by the equipment manufacturer.

1.16 PREPARATION FOR SHIPMENT

A. Equipment shall be prepared for shipment as specified in the Product Delivery Requirements section.

1.17 STORAGE

A. Handling and storage of equipment shall be as specified in the Product Storage and Handling Requirements section.

1.18 INSTALLATION AND OPERATION

A. Installation and operation shall be as specified in respective equipment sections and the Startup Requirements section.

NOT TO BE USED FOR BIDDING PURPOSES

1.19 OBSERVATION OF PERFORMANCE TESTS

A. Where the Specifications require the presence of Engineer, initial tests shall be observed or witnessed by Engineer. Owner shall be reimbursed by Contractor for all costs of subsequent visits by Engineer to witness or observe incomplete tests, retesting, or subsequent tests.

1.20 PROGRAMMING SOFTWARE

A. Programming software shall be provided for any equipment which includes a programmable logic controller (PLC) or other digital controller that is user-programmable.

B. The software shall be suitable for loading and running on a laptop personal computer operating with a Windows-based operating system.

C. A copy of the manufacturer's original operating logic program shall be provided for use in maintaining and troubleshooting the equipment.

D. Where multiple pieces of equipment, from the same or different vendors, use the same programming software, only one copy of the software need be provided.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

End of Section

NOT TO BE USED FOR BIDDING PURPOSES

SECTION 01 65 00 - PRODUCT DELIVERY REQUIREMENTS

PART 1 - GENERAL

1.1 SCOPE

A. This section covers packaging and shipping of materials and equipment.

1.2 PREPARATION FOR SHIPMENT

A. All equipment shall be suitably packaged to facilitate handling and to protect against damage during transit and storage. All equipment shall be boxed, crated, or otherwise completely enclosed and protected during shipment, handling, and storage. All equipment shall be protected from exposure to the elements and shall be kept dry at all times.

B. Painted and coated surfaces shall be protected against impact, abrasion, discoloration, and other damage. Painted and coated surfaces which are damaged prior to acceptance of equipment shall be repainted to the satisfaction of Engineer.

C. Grease and lubricating oil shall be applied to all bearings and similar items.

1.3 SHIPPING

A. Before shipping each item of equipment shall be tagged or marked as identified in the delivery schedule or on the Shop Drawings. Complete packing lists and bills of material shall be included with each shipment.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

End of Section

NOT TO BE USED FOR BIDDING PURPOSES

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SECTION 01 66 00 - PRODUCT STORAGE AND HANDLING REQUIREMENTS

PART 1 - GENERAL

1.1 SCOPE

A. This section covers delivery, storage, and handling of materials and equipment.

1.2 DELIVERY

A. Contractor shall bear the responsibility for delivery of equipment, spare parts, special tools, and materials to the site and shall comply with the requirements specified herein and shall provide required information concerning the shipment and delivery of the materials specified in this Contract. These requirements also apply to any subsuppliers making direct shipments to the Site.

B. Contractor shall, either directly or through contractual arrangements with others, accept responsibility for the safe handling and protection of the equipment and materials furnished under this Contract before and after receipt at the port of entry. Acceptance of the equipment shall be made after it is installed, tested, placed in operation and found to comply with all the specified requirements.

C. All items shall be checked against packing lists immediately on delivery to the site for damage and for shortages. Damage and shortages shall be remedied with the minimum of delay.

D. Delivery of portions of the equipment in several individual shipments shall be subject to review of Engineer before shipment. When permitted, all such partial shipments shall be plainly marked to identify, to permit easy accumulation, and to facilitate eventual installation.

1.3 STORAGE

A. Upon delivery, all equipment and materials shall immediately be stored and protected until installed in the Work.

B. Stacked items shall be suitably protected from damage by spacers or load distributing supports that are safely arranged. No metalwork (miscellaneous steel shapes and reinforcing steel) shall be stored directly on the ground. Masonry products shall be handled and stored in a manner to hold breakage, chipping, cracking, and spalling to a minimum. Cement, lime, and similar products shall be stored off the ground on pallets and shall be covered and kept completely dry at all times. Pipe, fittings, and valves may be stored out of doors, but must be placed on wooden blocking. PVC pipe, geomembranes, plastic liner, and other plastic materials shall be stored off the ground on pallets and protected from direct sunlight.

C. Pumps, motors, electrical equipment, and all equipment with antifriction or sleeve bearings shall be stored in weathertight structures maintained at a temperature above 60°F . Electrical equipment, controls, and insulation shall be protected against moisture and water damage. All space heaters furnished in equipment shall be connected and operated continuously.

NOT TO BE USED FOR BIDDING PURPOSES

D. Equipment having moving parts, such as gears, bearings, and seals, shall be stored fully lubricated with oil, grease, etc., unless otherwise instructed by the manufacturer. Manufacturer's storage instructions shall be carefully followed by Contractor.

E. When required by the equipment manufacturer, moving parts shall be rotated a minimum of twice a month to ensure proper lubrication and to avoid metal to metal "welding". Upon installation of the equipment, Contractor shall, at the discretion of Engineer, start the equipment at one-half load for an adequate period of time to ensure that the equipment does not deteriorate from lack of use.

F. When required by the equipment manufacturer, lubricants shall be changed upon completion of installation and as frequently as required thereafter during the period between installation and acceptance. New lubricants shall be put into the equipment by Contractor at the time of acceptance.

G. Equipment and materials shall not show any pitting, rust, decay, or other deleterious effects of storage when installed in the Work.

H. In addition to the protection specified for prolonged storage, the packaging of spare units and spare parts shall be for export packing and shall be suitable for long-term storage in a damp location. Each spare item shall be packed separately and shall be completely identified on the outside of the container.

1.4 HANDLING

A. Stored items shall be laid out to facilitate their retrieval for use in the Work. Care shall be taken when removing the equipment for use to ensure the precise piece of equipment is removed and that it is handled in a manner that does not damage the equipment.

B. During handling, carbon steel constructed material including chains, straps, and forks on lifting equipment shall not directly contact any equipment or material constructed of stainless steel. It shall be the Contractor's responsibility to correct any carbon steel contamination of stainless steel.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

End of Section

NOT TO BE USED FOR BIDDING PURPOSES

SECTION 01 67 00.2 - METEOROLOGICAL AND SEISMIC DESIGN CRITERIA

PART 1 - GENERAL

1.1 SCOPE

A. Buildings, non-structural components and non-building structures shall be designed in accordance with this section. In the event of conflict with requirements in other sections, the more stringent criteria shall be followed.

1.2 DESIGN CRITERIA

A. Buildings, non-structural components, non-building structures including anchorage of such items, shall be designed in accordance with the following criteria.

1. General Design Data		
	Building code and references	IBC 2015, ASCE 7-10 "Minimum Design Loads for Buildings and Other Structures", AISC 360 "Specification for Structural Steel Buildings", AISC 341 "Seismic Provisions for Structural Steel Buildings"
	Site elevation, above mean sea level (ft)	703.00
	Design flood elevation (ft)	697.30
	Design groundwater elevation (ft)	688.00
2. Wind Design Data		
	Ultimate design wind speed, V_{ult} (mph)	120
	Nominal design wind speed, V_{asd} (mph)	93
	Exposure category	B
	Risk Category	III
	Building enclosure classification	Partially Enclosed
3. Snow Design Data		
	Ground snow load, P_g (psf)	30
	Importance factor (snow loads), I	1.1
	Exposure factor (C_e)	1.2
	Thermal factor (C_t)	1.0

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4. Ice Design Data		
	Nominal ice thickness, t (in)	0.75
	Concurrent wind speed, V_c (mph)	40
	Importance factor (ice loads – ice thickness), I_i	1.25
	Importance factor (ice loads – concurrent wind), I_w	1.0
5. Seismic Design Data		
	Mapped MCE short period spectral response acceleration, S_S	0.124g
	Mapped MCE one second period spectral response acceleration, S_1	0.058g
	Design short period spectral response acceleration, S_{DS}	0.132g
	Design one second period spectral response acceleration, S_{D1}	0.092g
	Risk Category	III
	Non-Structural Components Importance Factor, I_P	1.0
	Non-Structural Components Seismic Design Category	B

NOT TO BE USED FOR BIDDING PURPOSES

1.3 WIND ANCHORAGE

A. Equipment that is to be located outdoors shall have anchor bolts designed for the effects of wind forces, as determined in accordance with ASCE 7, Chapters 26-31.

B. Design of anchorage shall be in accordance with the Anchorage in Concrete and Masonry section.

1.4 SEISMIC DESIGN

A. General.

1. Structural systems shall provide continuous load paths, with adequate strength and stiffness to transfer all seismic forces from the point of application to the point of final resistance.

B. Non-Structural Components.

1. Non-structural components are architectural, mechanical, and electrical items that are permanently attached to and supported by a structure but are not part of the structural system, as indicated in Chapter 13 of ASCE 7.

2. General.

   a. Design of non-structural components shall be in accordance with all applicable provisions of ASCE 7, Chapter 13.
   b. "W_p" shall include the total operating weight of the component or system, including, but not limited to, any insulation, fluids, and concentrated loads such as valves, condensate traps, and similar components.

3. Anchorage Design.

   a. Every component shall have its anchorage to the supporting structure designed in accordance with ASCE 7, Chapter 13.
   b. Design of anchorage shall be in accordance with the Anchorage in Concrete and Masonry section.
   c. Components shall be attached so that seismic forces are transferred to the structural system. Curbs that support roof-mounted equipment shall be designed to transfer forces from the equipment into the main structural roof members. All structural attachments shall be bolted, welded, or otherwise positively fastened. Frictional resistance due to gravity shall not be considered in evaluating the required resistance to seismic forces.

4. Component Design.

   a. Components shall have sufficient strength and ductility to resist the specified seismic effects, and shall meet all of the design, proportioning, detailing, inspection, and quality assurance provisions of the specified building code and other referenced codes. Components shall withstand a design level seismic event without collapsing, breaking away from supports, creating an ignition hazard, or releasing any contents.
   b. Seismic effects that shall be analyzed in the design of piping systems include the dynamic effects of the piping system, contents, and supports. The interaction between piping systems and the supporting structures, including other mechanical and electrical equipment, shall also be considered. Where pipe supports are to be designed by Contractor, as required by the Pipe Supports section, both the piping and support systems shall be designed to meet the applicable requirements of ASCE 7, Chapter 13.

5. Submerged Components.

   a. Components that are to be submerged in water shall be designed to withstand loads from the effects of water sloshing during the seismic event.
   b. The calculation of the sloshing effects shall be in accordance with the latest edition of ACI 350.3.

6. Seismic Certification (Not used).

7. Construction Documents.

   a. Construction documents (fabrication or shop drawings) of non-structural components shall be sealed by a design professional that is registered in the state of the project.

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b. The sealing method shall clearly indicate that the anchorage system, and the component itself when applicable, have been designed for the code required seismic forces.

8. Submittals.

a. The construction documents, structural design calculations shall be submitted in accordance with the Submittal Procedures section.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

End of Section

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SECTION 01 68 00 - EQUIPMENT AND VALVE IDENTIFICATION

PART 1 - GENERAL

1.1 SCOPE

A. This section covers the furnishing and installation of nameplates and tags for identification of equipment, valves, panels, and instruments.

1.2 GENERAL

A. Except as otherwise specified in equipment, valve, and instrumentation sections, nameplates and tags shall be as specified herein. Nameplates or tags shall be provided for all equipment, valves, operator interfaces, control and electrical panels, cabinets, instruments, and instrument racks that have been named and/or tagged on the Drawings.

1.3 SUBMITTALS

A. Drawings and Data

1. Drawings and data shall be submitted in accordance with the requirements of the Submittal Procedures section for each type of tag provided including materials, colors, sizes, letter sizes, and installation instructions.

PART 2 - PRODUCTS

2.1 EQUIPMENT NUMBER PLATES

A. All equipment tagged on the drawings, except for submerged equipment shall be provided with number plates bearing the equipment tag number identified on the Drawings.

B. Number plates shall be bevelled, 1/8th inch thick laminated black phenolic plastic engraving stock with white core. Lettering on number plates shall be capitalized block letters 3/4 inch high.

C. Number plate height shall be twice the letter height. Number plate length shall be as needed, with suitable margins all around.

D. Lettering shall be placed in one row where practicable; however, where necessary due to excessive length, lettering shall be placed on more than one row and centered.

E. Number plates shall be attached with stainless steel panhead screws, rivets, or drive screws.

F. When a number plate cannot be installed due to the physical size, space, or mounting surface geometry of the equipment, the Contractor shall provide a 12-gauge stainless steel tag with

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engraved or imprinted equipment tag number. Lettering on tags shall be 1/4 inch high. Tags shall be rectangular with smooth edges and shall be fastened to the equipment with stainless steel mechanical fasteners or with a stainless steel chain.

2.2 EQUIPMENT INFORMATION PLATES

A. Equipment shall be provided with engraved or stamped equipment information plates securely affixed with mechanical fasteners to the equipment in an accessible and visible location.

B. Equipment information plates shall be in addition to the number plates specified.

C. Equipment information plates shall indicate the manufacturer's name, address, product name, catalog number, serial number, capacity, operating and power characteristics, labels of tested compliances, and any other pertinent design data.

D. Equipment information plates listing the distributing agent only will not be acceptable.

2.3 VALVE AND GATE TAGS

A. Temporary Tags.

1. Each valve and gate with an identifying number indicated on the Drawings or listed in the valve or gate schedule, shall be tagged or marked in the factory with the identifying number.

B. Permanent Tags.

1. All valves and gates, except buried or submerged valves, that have been assigned a number on the Drawings or in the valve or gate schedule, shall be provided with a permanent number plate.

2. Tags shall be permanently attached to valves and gates with stainless steel mechanical fasteners or with stainless steel chains. Numerals shall be ¾ inch 20 mm high and shall be black baked enamel on an anodized aluminum plate.

C. All buried valves shall be tagged with a brass plate cast into a 6-inch by 6-inch concrete pad at grade next to the valve box. The valve number shall be engraved in the brass plate with lettering and numerals at least 1 inch high.

2.4 PANEL NAMEPLATES

A. Nameplates shall be provided on the face of each panel and cabinet. Panel identification nameplates shall be mounted at the top of the panel shall include the panel descriptive name and tag number as indicated on the Drawings, in two or three lines of text. Lettering shall be 3/4 inch high.

B. Nameplates for devices mounted on or in the panel shall be inscribed with the text as indicated on the Drawings. Where nameplate information is not indicated on the Drawings, inscriptions shall be in accordance with information in the supplier's submittal drawings as guided by

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information in the relevant specification section. Panel device nameplates shall have engraved letters 3/16 inch high.

C. Nameplate material and size shall be as specified above for equipment number plates. Nameplates shall be secured to the panel with stainless steel panhead screws.

2.5 INSTRUMENT TAGS

A. Temporary Tags.

1. Where instruments are not provided with permanent tags furnished from the factory, instruments shall be tagged or marked in the factory with the instrument tag number indicated on the Drawings.

B. Permanent Tags.

1. Instruments shall be tagged with the instrument tag number indicated on the Drawings. Tags shall be 12 gauge stainless steel with engraved or imprinted symbols. Lettering on tags shall be 1/4 inch high. Tags shall be rectangular with smooth edges and shall be fastened to the instrument with stainless steel mechanical fasteners or with a stainless-steel chain.

PART 3 - EXECUTION (NOT USED)

End of Section

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SECTION 01 69 00 - EQUIPMENT SCHEDULE

PART 1 - GENERAL

1.1 SCOPE

A. This section consists of an equipment schedule for items for which a basic level of manufacturer's field services or operation and maintenance manuals are required, but not covered in other sections. When other sections indicate that manufacturer's field services and operation and maintenance manuals are required, the requirements shall be as specified in the other sections.

B. Additional Requirements may be found in other sections:

1. Requirements for manufacturer's field service representative qualifications are covered in the Startup Requirements section.

2. Requirements for manufacturer's field services are covered in the Quality Control section.

3. Requirements for operation and maintenance manuals are covered in the Submittal Procedures section.

4. Requirements for startup services are covered in the Startup Requirements section.

5. Requirements for training are covered in the Demonstration and Training section.

6. Requirements for performance testing are covered in the respective equipment sections.

1.2 SCHEDULE

A. Manufacturer's field services, including equipment installation checks and training, and operation and maintenance manuals shall be provided for the items of equipment indicated in Schedule 01 69 00-S01 or where called for in the respective equipment specification.

End of Section

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Schedule 01 69 00 - S01
Equipment Schedule

1.010	1.020	1.030	1.040	1.050	1.060	1.070	1.080	3.000
		Startup and Testing						
Specification Section	Type of Equipment	Installation Supervision	Installation Check	Functional Testing	Functional Acceptance Testing	Training Required (see Section 01 79 00 - S01)	Operation and Maintenance Manuals	Performance Testing
14 51 00	Portable Davit Crane	X	X	X		X	X	
23 80 00	Refrigeration Systems		X	X		X	X	
26 24 19	600 Volt Class Motor Control Centers		X	X	X		X	
26 29 24	Variable Frequency Drives	X	X	X		X	X	
40 05 57	Valve and Gate Actuators		X*	X*	X*	X	X	
40 05 59.23	Stainless Steel Slide Gates			X			X	
40 05 62.16	Eccentric Plug Valves		X*	X			X	
40 05 64.22	Industrial Butterfly valves		X	X			X	
40 05 64.23	BNR Control Valves, Operators, Flowmeters and Appurtenances	X	X	X		X	X	
40 05 78	Flap Gates			X			X	
40 61 11	Instrumentation and Control System	X	X	X	X	X	X	X
43 11 15	High Speed Gearless Turbo Blowers		X	X		X	X	X
43 25 60	Submersible Horizontal Propeller Pumps		X	X		X	X	
46 41 23	Submersible Mixers	X	X	X		X	X	
46 51 31	Fine Pore Diffused Aeration Equipment	X	X	X		X	X	X

* Electrically-actuated only.

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SECTION 01 73 19 - EQUIPMENT INSTALLATION

PART 1 - GENERAL

1.1 SCOPE

A. This section covers general installation requirements of new equipment units that have been purchased by Contractor as part of this Work. Equipment specific installation requirements are covered in the equipment sections.

1.2 GENERAL

A. Equipment installed under this section shall be erected and placed in proper operating condition in full conformity with Drawings, Specifications, engineering data, instructions, and recommendations of the equipment manufacturer, unless exceptions are noted by Engineer.

B. Any equipment identified as being provided by others will be furnished complete for installation by Contractor. Technical specifications under which the equipment will be purchased are available.

C. Any existing equipment which is removed and salvaged for reinstallation shall be handled as indicated in the Work Covered by Contract Documents and Selective Demolition sections.

D. Coordination.

1. When manufacturer's field services are provided by the equipment manufacturer, Contractor shall coordinate the services with the equipment manufacturer. Contractor shall give Engineer written notice at least 30 days prior to the need for manufacturer's field services furnished by others.

2. Flanged connections to equipment including the bolts, nuts, and gaskets are covered in the appropriate pipe specification section.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Storage.

1. Upon delivery, all equipment and materials shall immediately be stored and protected by Contractor in accordance with the Product Storage and Handling Requirements section until installed in the Work.

2. Equipment shall be protected by Contractor against damage and exposure from the elements. At no time shall the equipment be stored on or come into contact with the ground, grass, or any other type of vegetation.

3. Contractor shall keep the equipment dry at all times.

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PART 2 - PRODUCTS

2.1 MATERIALS

A. Materials shall be as follows:

1. Grout: As specified in the Grouting section.

2. Anti-Seize thread lubricant for SS bolts: As specified in the Anchorage in Concrete and Masonry section.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Equipment shall not be installed or operated except by, or with the guidance of, qualified personnel having the knowledge and experience necessary to obtain proper results as specified in the Startup Requirements section.

B. Each equipment unit shall be leveled, aligned, and shimmed into position. Installation procedures shall be as recommended by the equipment manufacturer and as required herein. Shimming between machined surfaces will not be permitted.

C. Anti-seize thread lubricant shall be liberally applied to the threaded portion of all stainless steel bolts during assembly. For equipment installed in drinking water facilities, the anti-seize lubricant shall meet requirements of NSF-61.

D. When specified in the equipment sections, the equipment manufacturer will provide installation supervision and installation checks. For installation supervision, the manufacturer’s field representative will observe, instruct, guide, and direct Contractor's erection or installation procedures as specified in the equipment specifications. For installation checks, the manufacturer’s field representative will inspect the equipment installation immediately following installation by Contractor, and observe the tests indicated in the Startup Requirements section. The manufacturer's representatives will revisit the site as often as necessary to ensure installation satisfactory to Owner.

E. All equipment shall be protected after installation, prior to final acceptance by Owner. Protection provisions shall be as recommended by the manufacturer, and shall include provisions to prevent rust, mechanical damage, and foreign objects entering the equipment.

3.2 STARTUP AND TESTING

A. Startup requirements, and tests associated with startup shall be as indicated in the Startup Requirements section. Other field tests shall be as indicated in the specific equipment sections. Startup and tests required shall occur in the order listed in the following paragraphs. Tests shall not begin until any installation supervision and installation checks by the equipment manufacturer have been completed.

NOT TO BE USED FOR BIDDING PURPOSES

End of Section

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SECTION 01 77 00 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUBSTANTIAL COMPLETION PROCEDURES

A. Procedures for achieving Substantial Completion on the Project shall be as indicated in the Division 00 Sections and as indicated below.

B. Contractor's List of Incomplete Items:

1. Contractor shall prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

C. Submittals

1. General.

a. Prior to Substantial Completion: Contractor shall complete the submittals listed in this section a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion.

2. Certificates of Release

a. Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

3. Division 00 and 01 Closeout Submittals

a. Submit closeout submittals specified in other Division 00 of Division 01 Sections, including project record documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.

4. Other Closeout Submittals

a. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.

5. Maintenance Material Submittals

a. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Engineer. Label with manufacturer's name and model number.

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6. Schedule of Maintenance Material Items

   a. Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Owner’s signature for receipt of submittals.

7. Testing, adjusting, and balancing records.

8. Sustainable design submittals not previously submitted.

9. Changeover Information

   a. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

1.2 PROCEDURES

A. Prior to Substantial Completion: Contractor shall complete the following activities a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion:

1. Advise Owner of pending insurance changeover requirements.

2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.

3. Complete startup and testing of systems and equipment.

4. Perform preventive maintenance on equipment used prior to Substantial Completion.

5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified elsewhere.

6. Advise Owner of changeover in utility services.

7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.

8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.

9. Complete final cleaning requirements.

10. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.

NOT TO BE USED FOR BIDDING PURPOSES

1.3 INSPECTION

A. Contractor shall submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests.

B. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Engineer, that must be completed or corrected before certificate will be issued.

C. Contractor shall request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

D. Results of completed inspection will form the basis of requirements for final completion.

1.4 FINAL COMPLETION PROCEDURES

A. Procedures for achieving Final Completion on the Project shall be as indicated in the Division 00 Sections and as indicated below. Prior to Final Completion: Contractor shall provide final completion procedures submittals to Engineering before requesting final inspection for determining final completion.

B. Submittals

1. General

2. Final Application for Payment

a. Submit a final Application for Payment according to Section 01 29 76 "Progress Payment Procedures."

3. List of Incomplete Items

a. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.

4. Certificate of Insurance

a. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

5. Pest-control final inspection report.

6. Final completion photographic documentation.

NOT TO BE USED FOR BIDDING PURPOSES

1.5 FINAL INSPECTION

A. Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

B. Contractor shall request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.6 SUBMITTAL OF PROJECT WARRANTIES

A. Submittals

1. General.

   a. Project Warranty information and documentation shall be submitted as indicated in the Division 00 Sections and as indicated below.
   b. Contractor shall submit written warranties on request of Engineer for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.
   c. Partial Occupancy: Contractor shall submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

2. Warranty Documentation

   a. Contractor shall organize warranty documents into an orderly sequence based on the table of contents of Project Specifications.
   b. Where warranty documentation is electronic, Contractor shall submit warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
   c. Where warranty documentation is in hard copy format, Contractor shall submit warranties and bonds as follows:
      1) Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
      2) Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
      3) Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

NOT TO BE USED FOR BIDDING PURPOSES

1.7 FINAL CLEANING AND REPAIR OF WORK

A. In addition to any specific cleaning or repair work identified in Lists of Incomplete Items for Substantial Completion or Final Completion, Contractor shall perform the following general final cleaning and repair of work:

1. General

   a. Contractor shall perform final and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

2. Cleaning

   a. Contractor shall employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

3. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

   a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
   b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
   c. Rake grounds that are not planted, mulched, or paved to a smooth, even-textured surface.
   d. Remove tools, construction equipment, machinery, and surplus material from Project site.
   e. Remove snow and ice to provide safe access to building.
   f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
   g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
   h. Sweep concrete floors broom clean in unoccupied spaces.
   i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
   j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
   k. Remove labels that are not permanent.
   l. Revise subparagraphs below to suit Project. Check for conflict or duplication with provisions in other Sections.
   m. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

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n. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
o. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
p. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
q. Clean luminaires, lamps, globes, and reflectors to function with full efficiency.
r. Leave Project clean and ready for occupancy.

B. Pest Control

1. Contractor shall complete all work and submit documentation to show compliance with pest control requirements specified elsewhere. Contractor shall prepare a written report documenting compliance.

C. Repair and Restoration Work

1. Contractor shall complete repair and restoration work before requesting inspection for determination of Substantial Completion.

2. Contractor shall repair, or remove and replace, defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

3. Contractor shall remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.

4. Contractor shall touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.

5. Contractor shall replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

End of Section

NOT TO BE USED FOR BIDDING PURPOSES

SECTION 01 79 00 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section contains requirements for training the Owner's personnel in the proper operation and maintenance of the equipment and systems installed under this contract.

1.2 GENERAL

A. Where indicated in the Demonstration and Training Schedule and as required by the specifications, the manufacturer's representative shall provide on-the job training of the Owner's personnel. The training sessions shall be conducted by qualified, experienced, factory trained representatives of the various equipment manufacturers. Training shall include instruction in both operation and maintenance of the subject equipment.

1.3 SUBMITTALS

A. General

1. The following information shall be submitted to the Engineer in accordance with the provisions of the Submittal Procedures section. The material shall be submitted not less than 30 days prior to the provision of training.

2. Overall Training Schedule Plan, identifying proposed dates and times of the required training sessions, consistent with the requirements for attendees, training topics, and day/time availability, coordinated with the progress of the Work and with initially proposed scheduling. This plan will be utilized for coordinating final scheduling and subject to revision as the Work progresses.

3. Lesson plans, training manuals, handouts, visual aids, and other reference materials for each training session to be conducted by the manufacturer's representatives.

4. Subject of each training session, identity and qualifications of individuals to be conducting the training, and tentative date and time of each training session in conjunction with the requirements of Article 3.2.A.

5. Classification of each training session by category(ies) as noted in Article 2.3.B and the Demonstration and Training Schedule, and list of training session attendees for approval by Owner as noted in Article 3.2.A.

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PART 2 - PRODUCTS

2.1 GENERAL

A. Where specified, the Contractor shall conduct training sessions for the Owner's personnel to instruct staff on the proper operation, care, and maintenance of the equipment and systems installed under this contract. Training shall take place at the site of the work and under the conditions specified herein. Approved operation and maintenance manuals shall be available at least 30 days prior to the date schedule for the individual training session.

2.2 LOCATION

A. Training sessions shall take place at the site of the work at a location designated by the Owner.

2.3 LESSON PLANS

A. Formal written lesson plans shall be prepared for each training session. Lesson plans shall contain an outline of the material to be presented along with a description of the visual aids to be utilized during the sessions. Each plan shall contain time allocation for each category.

B. Lessons plans shall identify the content of the training session into one or more of the following categories:

1. Operations.
2. Maintenance.
3. Maintenance/Operations.
4. Lab.
5. Lab/Operations.
6. System Controls/SCADA.
7. System Controls/Operations.

C. One complete set of originals of the lesson plans, training manuals, handouts, visual aids and reference materials shall be the property of the Owner and shall be suitable bound for proper organization and easy reproduction. The Contractor shall furnish 10 copies of necessary training manuals, handouts, visual aids, and reference materials at least 30 days prior to each training session.

2.4 FORMAT AND CONTENT

A. Each training session shall include classroom and time at the location of the subject equipment or system. As a minimum, training sessions shall cover the following subjects for each item of equipment or system:

NOT TO BE USED FOR BIDDING PURPOSES

1. Familiarization

   a. Review catalog, parts lists, drawings, etc., which have been previously provided for the plan files and operation and maintenance manuals.
   b. Guided inspection of the subject equipment.
   c. Demonstration of the subject equipment and how operation in accordance with the specified requirements.

2. Safety.

   a. Review and demonstration of safety procedures and related documentation.
   b. Inspection and discussion of hazardous components of the subject equipment.

3. Operation.

   a. Review of subject equipment operations literature and theory of operation.
   b. Overview of equipment operation and function.
   c. Explanation and demonstration of all modes of operation including start up, shut down, normal, and emergency operation, and manual and automatic operation through the plant control system.
   d. Explanation of all hardwired interlocks.
   e. Explanation and demonstration of equipment related valves and their purpose.
   f. Explanation of all equipment related instruments including primary element, instrument indicator, purpose, and interpretation of information.
   g. Check out of Owner's personnel on proper use of the equipment.

4. Preventive maintenance.

   a. Review preventative maintenance documentation and discussion of maintenance require at various intervals; e.g. daily, weekly, monthly, annually.
   b. Demonstrate performance of each preventive maintenance task.
   c. Identification of indicators of equipment problems.
   d. Discussion of corrosion protection and lubrication requirements.
   e. Requirements for periodic exercise of equipment and demonstration of equipment exercise where required.
   f. Identification of inspection points and demonstration of inspection covers removal and routine disassembly and assembly of equipment.

5. Corrective Maintenance and Equipment Repair.

   a. Discussion of common repairs and identification of special problems.
   b. Explanation and demonstration of equipment inspection and troubleshooting.
   c. Demonstration of calibration procedures.
   d. Demonstration of repair procedures where practical.

6. Parts.

   a. Discussion of the parts list and ordering of parts.
   b. Review of spare parts provided with the equipment and identification of other recommended spare parts.

NOT TO BE USED FOR BIDDING PURPOSES

7. Local Representatives.

   a. Name, address, telephone of local representative.
   b. Review of contact information for providers of routine and emergency repair and operational assistance.

8. Operation and Maintenance Manuals.

   a. Review of O&M manual content and organization.
   b. Update O&M material as required.

2.5 VIDEO RECORDING

A. The Contractor shall record each training session and shall give the Owner exclusive rights to each training session recording. The Contractor shall advise all manufacturers providing training sessions that the material will be recorded.

PART 3 - EXECUTION

3.1 GENERAL

A. Training shall be conducted in conjunction with the operational testing and commissioning periods. Classes shall be scheduled so that training is performed when equipment is available for operation in conjunction with the applicable categories identified in the Demonstration and Training Schedule and the training times listed in Article 3.2.

B. The Contractor shall arrange to have the training conducted on consecutive days. Concurrent scheduling of training sessions will only be permitted when there is no overlap of intended Owner training attendees.

3.2 SCHEDULING

A. Training workweek days, times, and participants based on the categories identified in Article 2.3.B. are provided herein. Final scheduling and list of attendees of training sessions shall be approved by Owner with at least 30 days notice prior to the session.

1. Operations.

   a. Monday – Tuesday, 1:30-2:30pm CT.
   b. Attendees.
      1) Eight Owner Operations/Engineering staff.

2. Maintenance.

   a. Monday – Friday, 7:00am-3:00pm CT with no more than 6 hours of class scheduled for any one day.
   b. Attendees.
      1) Eight Owner Maintenance staff.

NOT TO BE USED FOR BIDDING PURPOSES

3. Operations/Maintenance.

    a. Monday – Tuesday, 1:30-2:30pm CT.
    b. Attendees.
        1) All listed under Section 3.2.A.1.b and 3.2.A.2.b.

4. Lab.

    a. Monday – Friday, 10:00am-12:00pm CT.
    b. Attendees.
        1) Five Owner Lab staff.

5. Lab/Operations.

    a. Monday – Tuesday, 1:30-2:30pm CT.
    b. Attendees.
        1) All listed under Section 3.2.A.1.b and 3.2.A.4.b.

6. System Controls/SCADA.

    a. Monday – Friday, 7:00am-3:00pm CT with no more than 6 hours of class scheduled for any one day.
    b. Attendees.
        1) Two Owner System Controls/SCADA staff.
        2) FRSA IT lead.

7. System Controls/Operations.

    a. Monday – Tuesday, 1:30-2:30pm CT.
    b. Attendees.
        1) All listed under Section 3.2.A.1.b.
        2) FRSA IT lead.

End of Section

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Schedule 01 79 00 - S01
Demonstration and Training Schedule

Specification Section	Equipment	Training Category (Hours of Training Required for Each Category)							Total Training Hours Required**
		Operations	Maintenance	Operations/ Maintenance*	Lab*	Lab/Operations*	System Controls/SCADA	System Controls/ Operations*	
14 61 00	Portable Davit Crane	4	4	4					4
43 25 60	Submersible Horizontal Propeller Pumps	4	4	4					4
23 80 00	Refrigeration Systems	2	2	2					2
26 29 24	Variable Frequency Drives	4	4	4					4
40 05 57	Valve and Gate Actuators	4	4	4					4
40 05 64.23	BNR Control Valves, Operators, Flowmeters and Appurtenances	4	4	4					4
40 61 11	Instrumentation and Control System	12	12	12			12		12
43 11 15	High Speed Gearless Turbo Blowers	8	8	8			8		8
46 41 23	Submersible Mixers	4	4	4					4
46 51 31	Fine Pore Diffused Aeration Equipment	4	4	4				4	4

* Training category availability varies by category. If total number of required training hours cannot be met in one day due to availability constraints, multiple training sessions will be required. See Article 3.2.A for available timing of training scheduling.

** Multiple training categories may be required to be present for portions of training sessions. This column contains the total number of hours of training the Contractor will be required to provide.

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SECTION 01 91 00 – STARTUP REQUIREMENTS

PART 1 - GENERAL

1.1 SCOPE

A. This section includes the requirements for startup and testing all items of equipment and systems that form a part of this Contract.

B. The purpose of this section is to define the requirements for bringing individual equipment, systems, and facilities online and for proving proper operation and performance of that Work.

C. Contractor is required to develop, submit, and maintain detailed plans, including designation of management and staff, for these activities as specified herein.

D. Additional requirements such as training are specified in other sections.

E. The startup, testing, and commissioning services referenced or specified herein include the following:

1. Startup and Testing

   a. Pre-Startup Activities
   b. Startup checks
   c. Functional testing

2. Functional acceptance testing

3. Commissioning

4. Operational acceptance testing

5. Performance testing

F. Definitions.

1. Startup and Testing is the transitional phase between completion of construction and start of commissioning and includes the following:

   a. Pre-Startup Activities and Startup Checks - Inspections, tests and other activities necessary to determine that equipment, systems and subsystems have been properly manufactured and installed. Pre-startup activities shall include an audit of all factory testing of equipment and compiling the results for comparison to startup and commissioning testing.
   b. Functional Testing – Initial limited operation of equipment, to demonstrate capability of installed components to perform their intended functions, respond to controls, and safely interface with external systems, followed by operation of individual systems in manual and automatic mode to test full functionality of individual systems.

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c. Functional Acceptance Testing – Operation (by the Contractor) of each completed process system under the full range of conditions / operational modes specified to demonstrate that the system is fully-functional and operates as intended for each condition.
d. Commissioning - The establishment of the treatment processes for the plant.
e. Operational acceptance testing - Continuous testing of complete the treatment processes under specified operating conditions in accordance with the technical Specifications and applicable regulations to demonstrate proper performance of the facility. Operation performed by the Owner.
f. Performance testing - When specified, continuous testing in accordance with the requirements of the Contract Documents.

1.2 GENERAL

A. The Contractor shall be responsible for and furnish all labor, materials, instruments, incidentals, and equipment required for startup, testing, and commissioning.

B. Transition between Work on pairs of aeration basins shall occur as indicated in Section 01 11 13 Work Covered by Contract Documents.

C. Temporary facilities required to carry out the specified testing, including temporary pipe, pumps, and other appurtenances, shall be furnished and installed, and removed when no longer required for startup, testing, and commissioning. Refer to the Temporary Facilities section for requirements concerning water and power for startup and testing.

D. Chemicals required for startup and testing will be provided by the Owner. Contractor shall give the Owner 45 days notice before chemicals are required except as otherwise specified herein.

E. Wastewater, including treated or test water that cannot be delivered to the plant effluent for any reason, shall be disposed of at the expense of the Contractor, in a manner acceptable to the Owner, and in accordance with all laws, regulations, and permits.

F. Startup and testing shall be conducted during normal working hours during the workweek of Monday through Friday, unless otherwise approved by the Owner.

G. Where continuous long-term testing is required, testing may continue over the weekends and holidays with prior approval from the Owner.

1.3 CONSTRAINTS

A. Startup and testing shall be conducted in a manner that does not compromise operation of the existing facilities or the quality of treated products released from the facility.

B. Any startup and testing activities affecting operation of the existing facilities shall be coordinated with the Owner and shall be shown on the Progress Schedule. The Owner will cooperate with the Contractor to the extent possible, but will have sole authority in decisions affecting existing operations.

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1.4 SUBMITTALS

A. General.

1. Submittals shall be provided in accordance with the requirements of the Submittal Procedures section.

B. Manufacturer Representative Qualifications

1. Manufacturers' field services representative's qualifications and past project experience including contact names, addresses and current telephone numbers that can be used to verify the accuracy of the information. Qualification submittals shall be made 3 weeks before the manufacturer's representative is scheduled to be on Site.

C. Installation Certifications

1. Manufacturer's certification of proper installation of all equipment as specified in the equipment sections.

D. Plans and Schedules

1. Equipment and system startup, testing, and commissioning plans and schedule in accordance with the requirements of this section. Contractor shall coordinate with Subcontractors and include their information in the startup and testing plan.

E. Field Calibration Results

1. Unless otherwise specified in the equipment sections, preliminary copies of field calibration results. Submittal shall be made prior to the start of each test for associated systems.

F. Daily logs.

1.5 STARTUP AND TESTING REQUIREMENTS

A. Startup Checks.

1. Prior to field testing of all equipment, the Contractor shall perform the following:

a. Inspect and clean equipment, devices, and connected piping so they are free of foreign material.
b. Lubricate equipment in accordance with manufacturer's instructions.
c. Turn rotating equipment by hand.
d. Open and close valves by hand and operate other devices to check for binding, interference, or improper functioning.
e. Test and commission related electrical system components in accordance with the requirements specified in the Electrical and the Electrical Equipment Installation sections.
f. Calibrate all instruments associated with the equipment.

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g. Check for proper rotation, adjustment, alignment, balancing, mechanical and electrical connections, and any other conditions that may damage or impair equipment from functioning properly.
h. Inspect and verify proper anchorage.
i. Obtain manufacturer's certification of proper installation where specified in the equipment sections.

2. All equipment shall be confirmed ready to test by the Engineer based on the following:

a. Acceptance of Contractor's startup and testing plan.
b. Notification in writing by the Contractor that each piece of equipment or system is ready for testing.
c. Verification by the Engineer and Owner that all lubricants, tools, maintenance equipment, spare parts and approved equipment operation and maintenance manuals have been furnished as specified.
d. Cleanliness of equipment, devices, and connected work.
e. Adequate completion of work adjacent to or interfacing with equipment to be tested.
f. Confirmation of manufacturer's representative's availability to assist with testing, where specified, and satisfactory fulfillment of all other manufacturers' responsibilities as specified.
g. Engineer's inspection of all related civil construction, mechanical, and electrical installations.
h. Confirmation of completion of acceptable testing of all adjacent piping, duct work and other affected Work.

B. Functional Testing.

1. All startup checks shall be completed prior to functional testing. Functional testing shall be in accordance with relevant standards and in accordance with instructions of the manufacturers.

2. Ancillary and/or temporary facilities necessary to recycle, control, or discharge water, air, chemical, or gas from facilities being tested, shall be operational.

3. Functional testing shall include the functional operation of each piece of equipment. All moving parts of equipment and machinery shall be tested and adjusted so that they move freely and function satisfactorily. Functional testing shall demonstrate correct operation of all hardwired interlocks and controls.

4. Functional testing of power actuated valves shall include at least 4 full open-close operations. Testing shall demonstrate the maximum number of operations per hour as recommended by the actuator manufacturer without overheating.

5. Once functional testing of individual pieces of equipment is completed, individual systems functional testing shall commence. Individual system functional testing shall include startup of the complete system of mechanical, electrical, and instrumentation and control equipment as a functional process system. Field inspection prior to startup as specified in the Instrumentation and Control System section, other testing by the Instrumentation and Control System Supplier required to verify readiness for automatic

NOT TO BE USED FOR BIDDING PURPOSES

operation of the individual system, shall be completed before commencement of individual system functional testing.

6. Individual system functional testing shall include operation in manual and automatic modes, startup operation, and shutdown in normal and emergency modes. Individual systems shall be tested over their entire operating range and for sufficient time to demonstrate the intended functionality of each piece of equipment and the system. If any part of a system shows evidence of unsatisfactory or improper operation during the test period, correction or repairs shall be made and the functional testing shall be repeated until satisfactory results are obtained.

7. Functional testing of all process and pumping equipment and drive motors, including auxiliary equipment, shall be n accordance with the appropriate and approved test codes, such as those specified by the American Society of Mechanical Engineers, Hydraulic Institute Standards, and IEEE.

8. Qualified personnel from the electrical and mechanical trades responsible for installation of the equipment, shall be available during functional testing involving electrically operated equipment. Where appropriate, a representative of the Instrumentation and Control System Supplier shall also be available.

C. Functional Acceptance Testing.

1. Once the Contractor's functional testing is complete and associated documentation has been submitted and accepted by the Engineer, the Contractor shall conduct functional acceptance testing of each complete process system, to demonstrate individual systems meet the specified requirements. Acceptance testing shall include the successful demonstration of all operating functions and conditions that are specified for the equipment, system, and controls. The manufacturer's representative shall be on Site during acceptance testing when specified in the equipment specifications.

2. The Functional Acceptance Testing shall include the following submissions prior to commencement:

   a. Prerequisite checklist, to be acknowledged by the Engineer prior to initiating the test that demonstrates that all testing and other Work required to be completed prior to the test is complete.
   b. Listing of Owner's personnel necessary to operate the system and conduct any related monitoring of performance.
   c. A listing of Contractor's personnel designated to supervise and direct the Owner's operators as required herein.
   d. Listing of standby personnel, equipment, and materials that will be available if needed during the test period.
   e. Step-by-step procedures for operation of the facility showing how local and remote control of equipment will be demonstrated.
   f. Description of all data and other information to be reported in support of the completed test. Include any blank data logs that may be used for recording results.
   g. Descriptions of all necessary calculations that must be completed to verify the specified results are being achieved, including formulas.
   h. Blank sign-off form for the test acknowledging the Contractor's, Engineer's, Owner's, and the equipment manufacturer's acceptance of the test.

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3. Contractor shall provide Owner and Engineer 14 days notice prior to testing of any individual system.

4. Individual system acceptance testing shall continue for 48 hours without interruption for each system, and all parts shall operate satisfactorily in all respects under a range of conditions to simulate the full operating range of the equipment or system. If there are multiple parallel components or trains, then the testing duration will be 48 hours for each individual train.

5. If any part of a system shows evidence of unsatisfactory or improper operation during the testing period, correction or repairs shall be made and the test repeated until the test is successfully completed. Testing interrupted by power failure will not be required to be repeated, but the test shall be continued upon restoration of power and extended to the specified duration at no additional cost to the Owner.

6. During this testing period the Contractor shall operate all equipment.

1.6 COMMISSIONING

A. Once startup and testing is complete; documentation of all startup and testing activities shall be submitted for reviewed and accepted by the Engineer.

B. After acceptance, commissioning of the constructed facilities shall be conducted by the Contractor working with the Owner and Engineer.

C. The facility shall be operated in accordance with the operating permit, laws, and regulations.

D. The Contractor shall provide mechanics, electricians, and controls technicians during commissioning as required for troubleshooting and repair.

1.7 OPERATIONAL ACCEPTANCE TESTING

A. At the completion of the Individual System Acceptance Tests and when the overall process has stabilized sufficiently as determined by the Engineer, operational acceptance testing of the complete facility constructed or modified under the Contract shall be conducted. Operational acceptance testing shall not be conducted concurrently with other individual system acceptance or performance tests.

B. The test shall run at least 7 days with the entire facility operating in the intended manner. The test shall demonstrate to the satisfaction of the Engineer that the facilities are complete and meet all specified requirements and can be continuously operated for their full intended function. During the testing period, the plant shall operate under all control modes, including manual, remote-manual, and automatic. The Owner's staff shall operate the facility.

C. Duty and standby equipment shall be alternated so that all equipment is selected for duty operation for a period of at least 2 days during the test. Unless indicated otherwise, if any item malfunctions or a defect is found during the test, the item shall be repaired and the test either extended a duration to be determined by the Engineer and Owner depending on the severity of the malfunction or defect, or restarted at time zero with no credit given for the operating time

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before the malfunction or the defect was found. Malfunctions or defects meeting both of the following conditions may, at the Engineer's discretion, be considered grounds for not requiring restarting the test at time zero:

1. Malfunctions that do not cause an interruption to the operation of the facility because standby equipment can be placed into service.

2. Malfunctions that are corrected within four (4) hours of the time the malfunction is detected. Correction of a malfunction or defect will be considered complete only after the affected equipment is placed back into service and is operating as intended for a continuous period of 24 hours without additional failure.

D. All malfunctions, defects in materials or workmanship, or other flaws, which appear during this test period, shall be immediately corrected by the Contractor ,. If spare parts from the specified spare parts inventory are used to make repairs, they shall be replaced immediately and must be replaced prior to application for final payment.

E. The Contractor shall supply all oil, grease, lubricants, and ancillary equipment required for operational acceptance testing.

F. All plant control system coordination issues shall be resolved and data trending requirements shall be functional during this period.

G. During operational acceptance testing, plant effluent meeting permit requirements as determined by the Owner, will be discharged to the outfall.

1.8 PERFORMANCE TESTING

A. Performance testing shall be conducted in accordance with requirements specified in the respective equipment sections.

B. Chemicals, water, and power required for performance testing shall be as specified in Section 01 50 00 – Temporary Facilities and Controls.

1.9 STARTUP SCHEDULE AND STARTUP AND COMMISSIONING PLANS

A. Plans and schedules shall be developed to facilitate coordinated and efficient startup, testing, and commissioning of the Project equipment and systems.

B. The Contractor shall submit a startup, testing, and commissioning plan and schedule to the Engineer no later than 90 calendar days prior to the commencement of startup and testing. A minimum of 21 days shall be allowed for review by Engineer and Owner. The schedule and plan must be accepted a minimum of 30 days prior to commencement of startup and testing. The schedule and plan shall include sections for startup checks, functional testing, functional acceptance testing, commissioning, operational acceptance testing, and performance testing.

C. Forms for startup and testing shall include identification of equipment or system, startup/test date, nature of startup/test, startup/test objectives, startup/test prerequisites, startup/test results,

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instruments employed for the startup/test and signature spaces for the Engineer's witness (where applicable) and the Contractor.

1.10 REPORTS AND RECORDS

A. Records of all startup and testing shall be compiled by the Contractor and submitted to the Engineer.

B. Prior to being submitted to the Engineer, the Contractor shall certify that the results recorded and the tested systems comply with the Contract requirements.

C. Records shall include all documentation assembled for each piece of equipment or system involved in the startup and testing, including all certifications, forms, and check lists completed during the startup and test, and sign-off forms.

D. Records of all startup and testing shall be compiled as separate documents for each system tested, and shall be submitted within 48 hours of completion of the startup and testing for each system.

E. Testing samples that require analysis periods greater than 48 hours shall be clearly defined in the startup plan but shall not preclude delivery of the balance of the records within the 48 hour timeframe.

F. The Contractor shall provide formal reporting and documentation of failures, malfunctions or defects, and repairs made during the startup and/or testing activities.

End of Section

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DIVISION 2 - Existing Conditions

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SECTION 02 41 19 - SELECTIVE DEMOLITION

PART 1 – GENERAL

1.1 SCOPE

A. This section covers the demolition of existing concrete structures, piping, and equipment, and the salvage of existing materials and equipment as indicated on the Drawings.

1.2 GENERAL

A. Contractor shall be responsible for all work under this section.

B. Contractor shall provide minimum three (3) weeks written notice prior to beginning demolition activities except as modified here-in

C. Contractor shall provide minimum seven (7) days written notice prior to beginning Blower and Aeration Control System Work associated with Milestone 1 in Section 01 11 13.

D. Contractor shall provide minimum twenty-one (21) days written notice prior to beginning drainage of existing basins in association with Milestones 2, 3, 4, and 5 in Section 01 11 13.

E. Contractor shall limit duration of shutdowns and outages for completion of the Work as stipulated in Section 01 11 13.

F. Outage for Work required for demolition of the 42-inch inlet header cross-connection within the Blower Building shall be limited to 4 hours.

G. Owner shall operate all existing valves and equipment in relation to the Contractor's work unless Contractor requests and receives written approval from Owner.

H. All piping systems and facilities of the existing FRSA wastewater treatment facility which are not to be removed must remain in continuous operation during the work. Demolition and salvage work shall create minimum interference with Owner's operations and minimum inconvenience to Owner. Contractor shall provide protection and safety of all roadways, sidewalks, and all accessible areas during demolition activities.

I. Blasting will not be permitted.

J. Contractor shall provide Owner first refusal of existing materials and equipment removed or indicated to be demolished, and not reused as a part of the work. Following Owner review, items shall become Contractor's property, unless claimed by the Owner or otherwise specified, and shall be removed from the jobsite. The Contractor shall coordinate its operations with Owner to facilitate the work and to avoid damage to items indicated to be salvaged by Contractor for the Owner.

NOT TO BE USED FOR BIDDING PURPOSES

1.3 SUBMITTALS

A. Demolition and Salvage Plan.

1. Contractor shall submit a detailed demolition and salvage plan indicating the major demolition and salvage activities, planned dates, Owner coordination requirements, permit requirements (if any), and any special planning considerations that require coordination with third parties.

PART 2 - PRODUCTS (Not used.)

PART 3 – EXECUTION

3.1 DEMOLITION

A. Contractor shall conduct demolition activities in a manner that prevents damage to existing facilities which are indicated to remain and shall provide all necessary protection for existing facilities. Any remaining facilities damaged during demolition shall be repaired by Contractor to a condition equal to or better than the original condition.

B. Removal of equipment or facilities shall include removal of all accessories, piping, wiring, supports, associated electrical starters and devices, baseplates and frames, and all other appurtenances, unless otherwise directed. Existing materials and equipment removed, and not indicated to be reused as a part of the Work, and following Owner review, shall become Contractor's property unless otherwise specified, and shall be removed from the Site and properly disposed of or recycled in accordance with state laws.

C. When demolition is complete, all debris shall be removed from the site and the site graded to the lines and grades indicated on the Drawings. Where lines and grades are not indicated on the Drawings, the site shall be graded to match the conditions existing prior to demolition work.

D. Piping and Equipment Demolition.

1. Piping and equipment shall be removed from the locations indicated on the Drawings and shall become the property of Contractor. All such items shall be promptly removed from the jobsite.

E. Sitework and Structure Demolition.

1. Sitework and Structure demolition shall be as indicated on the Drawings and shall include the following:
   a. Removal of control wiring, conduit, devices, and duct bank as indicated on the Drawings.
   b. Removal of raised concrete walkways, remains of interior basin concrete supports, stair, and appurtenances within the limits indicated on the Drawings.
   c. Removal of divider wall walkway handrail, curb, cable and conduit embedded in curb, and devices as indicated on the Drawings.

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d. Partial removal of divider wall walkways and vertical walls beneath to the limits indicated on the Drawings.
e. Removal of remaining concrete divider walls within the interior of basins as indicated on the Drawings.
f. Removal of diffusers, piping, equipment, valving and ancillary items as indicated on the Drawings.
g. Removal of Aeration Basin Drainage Structure nos. 1-6 access covers and concrete plank or cast concrete as indicated on the Drawings.
h. Removal of Aeration Basin Drainage Structure nos. 1-8 slide and flap gates as indicated on the Drawings.

3.2 SALVAGE

A. Items to Be Salvaged by Owner. Not used.

B. Items to Be Salvaged by Contractor.

1. The following items shall remain Owner's property and shall be delivered to Owner by Contractor in good condition at the delivery points indicated:

Item	Location	Delivery Point
Blowers AB-4 and AB-5 and associated control panels, complete	Blower Building	Blower Building Overhead Door

2. The following existing materials and equipment shall be removed by Contractor, shall be reused as a part of the work, and shall remain the property of Owner:

Item	Location	Location of Reuse
Hyperboloid Mixers (8)	Aeration Basin Nos. 1-8	Aeration Basin Nos. 1-8
Hyperboloid Mixer Walkways (2)	Aeration Basin Nos. 7 & 8	Aeration Basin Nos. 7 & 8
Basin Air Header Piping (see Sheet Keynote 3 01-D-101)	Aeration Basin Nos. 1-6	Aeration Basin Nos. 1-6

3. Removed and salvaged equipment or facilities shall include removal and salvage of all accessories, piping, wiring, supports, associated electrical starters and devices, baseplates and frames, and all other appurtenances, unless otherwise directed.

4. Contractor shall provide Owner first refusal of existing materials and equipment removed or indicated to be demolished, and not reused as a part of the work. Following Owner review, items shall become Contractor's property, unless claimed by the Owner or otherwise specified, and shall be removed from the jobsite. The Contractor shall coordinate its operations with Owner to facilitate the work and to avoid damage to items indicated to be salvaged by Contractor for the Owner.

5. Contractor shall carefully remove, in a manner to prevent damage, all materials and equipment specified herein or indicated to be salvaged and to remain the property of Owner. Contractor shall store and protect salvaged items specified or indicated to be reused in the

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work. Any items damaged in removal, storage, or handling through carelessness or improper procedures shall be replaced by Contractor in kind or with new items.

6. Contractor may, at their option, furnish and install new items instead of those specified or indicated to be salvaged and reused, in which case such removed items will become Contractor's property.

End of Section

NOT TO BE USED FOR BIDDING PURPOSES

DIVISION 3 - Concrete

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SECTION 03 01 26.66 - CONCRETE CRACK REPAIR

PART 1 - GENERAL

1.1 SCOPE

A. This section covers the repair of concrete and shotcrete cracks and joints.

B. Both inch-pound (English) and SI (metric) units of measurement are specified herein; the values expressed in inch-pound units shall govern.

C. General Crack Repair.

1. General crack repair is applicable only to new construction, and shall include the following:

   a. Sealing of all cracks and crack networks that are wider than 10 mils (0.01 inch) as measured at the exposed surface.
   b. All necessary repairs to structures that have failed a tightness test, including sealing of construction joints.
   c. Any cracks developed in existing structures as a result of Contractor's work.

2. All costs for crack repair applicable to new construction shall be the responsibility of the Contractor and shall be made in accordance with the requirements of this section.

D. Engineer-Directed Crack Repair.

1. Engineer-directed crack repair is applicable to existing concrete structures where such cracks are identified on the Drawings or discovered in the course of the Work, but not caused by Contractor's new construction activities, and shall be performed when instructed by the Engineer. The work shall include, but is not limited to, the following:

   a. Sealing of construction joints that are not otherwise required to be sealed as the result of a failure of a leakage test.
   b. Sealing of cracks and crack networks with a width of 10 mils (0.01 inch) or less as measured at the exposed surface.

2. All costs for Engineer-directed crack repair shall be included in the Contract Price as indicated in the Adjustment Prices table of the Bid Form. The Engineer-directed crack repair may be either epoxy resin or foam resin, as determined by Engineer.

1.2 SUBMITTALS

A. Specifications and data covering physical properties, mixtures, application procedures, and curing procedures of the materials proposed shall be submitted in accordance with the Submittal Procedures section. Submittals shall include the approvals from the material manufacturer.

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1.3 QUALITY ASSURANCE

A. Manufacturer's Field Services.

1. The material manufacturer shall provide engineering field services to review the Work and the material application prior to any preparation; to approve the applicator, the material used, and the procedure to be used; to observe surface preparation; to approve surface preparation; and to observe application. The field representative of the material manufacturer shall submit, in writing through Contractor, approvals of proposed material, application procedures, applicator, and surface preparation. The field representative shall be an employee of the material manufacturer.

B. Applicator.

1. The applicator shall submit through Contractor a satisfactory experience record including references from previous application of the specified materials to structures of similar design and complexity.

C. Pre-Construction Meeting.

1. At least 30 days prior to concrete crack repairs Contractor shall conduct a meeting to review the detailed requirements for rehabilitation work. Site conditions, surface preparation, proposed equipment, procedures, material mixing, placing procedures, and curing methods shall be discussed and approved by Engineer and by the manufacturer's field representative. Contractor shall require the attendance of all involved parties, including but not limited to Contractor's superintendent, repair contractor, manufacturer's field representative and proposed equipment supplier representative. Minutes of the meeting shall be recorded, typed and printed by Contractor and distributed to all parties within 5 days after the meeting.

D. Quality Assurance Certification.

1. Material manufacturers shall be ISO 9001/9002 registered or shall provide proof of documented quality assurance. The documented quality assurance system shall be obtained through an independent auditing registrar.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Shipping shall be in accordance with the Product Delivery Requirements section. Handling and storage shall be in accordance with the Product Storage and Handling Requirements section.

PART 2 - PRODUCTS

2.1 PERFORMANCE AND DESIGN REQUIREMENTS

A. Unless otherwise specified or authorized, repairs shall conform to the requirements specified herein. Types of repairs not specified herein shall be as specified in other sections, as indicated on the Drawings, or, in the absence of any definite requirement, as recommended by the

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manufacturer's representative and subject to acceptance by Engineer. The following types of repairs shall be performed as required.

B. Epoxy Resin.

1. Unless indicated otherwise on the drawings, epoxy resin shall be used to seal construction joints and cracks. Epoxy resin shall be pressure-injected for vertical and overhead applications. Epoxy resin may be applied by gravity feed in lieu of pressure injections for cracks in floors, using a very low-viscosity material.

C. Foam Resin.

1. Foam resin shall be used to seal expansion joints. Otherwise, foam resin shall only be used to seal crack and joints when indicated on the drawings or when permitted by Engineer in lieu of epoxy resin. Foam resin shall be pressure-injected.

2.2 ACCEPTABLE PRODUCTS

A. Repair products/materials shall be as specified herein. Equivalent products of other manufacturers regularly producing high quality concrete crack repair products/materials, providing engineering field services, and meeting the specified quality assurance requirements may be furnished subject to review and acceptance by Engineer.

2.3 MATERIALS

A. Materials shall be approved by the manufacturer for the type of application, including temperature and moisture conditions encountered. Products used in structures containing potable water shall be certified for NSF/ANSI 61.

Epoxy Resin	ASTM C881, Type I or Type IV, moisture tolerant or moisture insensitive.
Crack Sealant	As recommended by the manufacturer of the epoxy resin product.
Foam Resin	Hydrophilic polyurethane foam; Prime Resins “Prime-Flex 900 XLV”, DeNeef "Sealfoam PURe", Euclid “Dural Aqua-Fil”, or Avanti “AV 333 Injectaflex”.
Foam Resin Accelerator	As recommended by foam resin manufacturer.
Water	Clean and free from deleterious substances.

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PART 3 - EXECUTION

3.1 INSPECTION

A. Prior to the placement of the repair materials, the crack to be repaired shall be inspected by the material manufacturer to assure that preparation and conditions are correct for the type of repair and the product/material being used as specified herein.

3.2 PREPARATION

A. All cracks and surfaces around the cracks shall be free of objectionable substances and shall conform to the requirements of the material manufacturer. Concrete and shotcrete to be repaired shall be cleaned by methods acceptable to the material manufacturer so that the cracks are free of dirt, oil, grease, laitance, and other foreign matter. All loose and deteriorated existing concrete and shotcrete shall be removed down to sound materials. All concrete and shotcrete surfaces shall be checked for delamination to ensure that all surfaces are sound. All edges shall be square cut to avoid feather edges.

B. Any other preparation recommended by the material manufacturer shall be brought to Engineer's attention and may be incorporated into the work if acceptable to Engineer.

C. Concrete and shotcrete surfaces in the area of a crack to be repaired shall be cleaned by wire brushing, blasting, or other acceptable methods.

D. Wall surfaces shall be sandblasted clean to expose crack networks and construction joints. If there is active water seepage in the repair area, the seepage shall be stopped as recommended by the injection material manufacturer and as acceptable to Engineer. Injection ports shall be installed, when recommended by the injection material manufacturer.

E. Injected Epoxy Resin.

1. Preparation for injected epoxy resin shall include sealing the surface at the crack, on both sides when possible, with crack sealant as recommended by the material manufacturer and as acceptable to Engineer for the pressure injection work. Injection ports for epoxy resin shall penetrate through the crack sealant into the cracks at spacings recommended by the material manufacturer.

F. Injected Foam Resin.

1. Preparation for injected foam resin shall include drilling offset injection holes at an angle that will intersect the crack, joint, or crack network at approximately one-half the thickness of the concrete or shotcrete up to a thickness of 36 inches . Spacing of injection ports shall be determined as recommended by the injection material manufacturer and as acceptable to Engineer. When the injection material manufacturer certifies, in writing, that spacing of injection ports and installation procedures are acceptable, the injection ports may be installed directly into the crack, subject to review by Engineer.

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3.3 APPLICATION

A. Concrete and shotcrete repair work shall be performed in accordance with the following requirements.

B. Crack Sealant.

1. Crack sealant shall be trowel-applied to a minimum dried thickness of 1/8 inch , or thicker if directed by manufacturer's literature. The concrete surface where the sealant is applied shall be smooth, uniform, and free from irregularities. Crack sealant shall be removed after the injection of resin is completed, except for portions of wall faces that will be at least 12 inches below the finished grade.

C. Pressure-Injected Resin.

1. The injected areas shall be prepared as specified and as recommended by the manufacturer.

2. After the joints and cracks are prepared and before the injection of the resin, the joints shall be flushed with water. The water flush shall be terminated when the turbidity of the expelled water is equal to that of the flush water. Unless otherwise acceptable to resin manufacturer and Engineer, cracks shall be dry prior to injecting resin.

3. The pumping equipment used for the pressure injection of resin shall have pressure metering. Written procedures for use and quality control of the injection equipment shall be furnished to Engineer for review and acceptance. The pump shall be electric. The material and process used for the pressure injection of the resin shall have been in use a minimum of 5 years.

4. The joints and crack networks shall have a minimum of 90 percent penetration of resin into the joint or crack network. Core samples may be taken at Engineer's discretion.

5. Epoxy Resin.

a. Epoxy resin shall be injected into the structure in accordance with the material manufacturer's recommendations and as acceptable to Engineer. Epoxy resin shall be injected until the resin appears at the next injection port.

6. Foam Resin.

a. Foam resin shall be premixed and injected into the structure in accordance with the material manufacturer's recommendations and as acceptable to Engineer. Foam resin shall be injected into the structure until the resin appears at the next injection port.
b. Surfaces of cracks and joints may need to be sealed with crack sealant.

D. Gravity Fed Resin.

1. A bead of the epoxy resin shall be placed over the entire surface of the crack. Enough resin shall be applied so that there is a visible heaping above the floor surface.

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2. The applicator shall periodically inspect the resin to verify that it has penetrated the crack and flattened against the floor surface.

3. After the resin has flattened, another bean shall be applied, and the process repeated until the crack cannot receive additional resin.

E. Cold Weather

1. When ambient temperatures below 40° F are expected during the curing period, the repair materials shall be maintained at a temperature of at least 50° F for 14 days or 75° F for 7 days after placement. Sudden cooling of the repair materials shall not be permitted.

3.4 PROTECTION

A. Post-placement curing and protection shall be as specified herein and in accordance with the manufacturer's recommendations.

3.5 CLEANING

A. Work areas shall be cleaned each day in accordance with the Project Requirements section. Upon completion of the final cleanup, Contractor shall restore all areas affected by the repair procedures to their original condition, leaving no trace of material piles or other wasted materials.

End of Section

NOT TO BE USED FOR BIDDING PURPOSES

SECTION 03 01 26.76 - CONCRETE SURFACE REPAIR

PART 1 - GENERAL

1.1 SCOPE

A. This section covers the repair of existing concrete surfaces as required to complete the Work. This specification covers the furnishing of all labor, equipment and materials required to repair, rehabilitate or reconstruct spalled, deteriorated, or structurally damaged concrete surfaces. Depth of repairs shall be adequate to restore concrete members to original dimensions and surface profiles.

B. The Work covered by this section includes, but is not limited to, the following locations:

1. Any new construction by Contractor requiring repair of any damage to existing construction caused by Contractor's new construction activities. Cost of such repairs shall be the responsibility of the Contractor.

2. Engineer-directed surface repair in existing structures identified on the Drawings or discovered during the Work.

a. All costs for Engineer-directed concrete surface repair shall be included in the Contract Price as indicated in the Adjustment Prices table of the Bid Form.

1.2 SUBMITTALS

A. Drawings and Data.

1. Specifications and data covering physical properties, the mixtures, application procedures, and curing procedures of the materials proposed shall be submitted in accordance with the Submittal Procedures section. Submittals shall include the approvals required from the material manufacturer.

1.3 QUALITY ASSURANCE

A. Manufacturer's Field Services

1. The material manufacturer shall provide engineering field services to review the project and the selected material application prior to any preparation; to approve the applicator, the material used, and the procedure to be used; to observe and approve surface preparation; and to observe application and curing procedures. The field representative of the material manufacturer shall submit, in writing through Contractor, approvals of proposed materials, surface preparation, applicator, and application procedures. The field representative shall instruct the applicator, as needed, to assure that handling, mixing, placing, finishing, and curing of materials are in accordance with specifications and manufacturer's requirements. The field representative shall be an employee of the material manufacturer.

NOT TO BE USED FOR BIDDING PURPOSES

B. Applicator.

1. The repair contractor shall have experience and proficiency specific to the repair type and shall be acceptable to Engineer and the material supplier. The applicator shall submit, through Contractor, a satisfactory experience record including references for previous application of the specified materials to concrete structures of similar design and complexity.

C. Pre-construction Meeting.

1. At least 30 days prior to planned performance of the Work, Contractor shall conduct a meeting to review the detailed requirements for the Work. Site conditions, surface preparation, proposed equipment, procedures, material mixing, placing and finishing procedures, and curing methods shall be discussed and approved by Engineer and by the manufacturer's field representative. Contractor shall require the attendance of all involved parties, including but not limited to Contractor's superintendent, repair contractor if applicable, manufacturer's field representative and proposed equipment supplier representative. Minutes of the meeting shall be recorded, typed and printed by Contractor and distributed to all parties, including Engineer, within 5 days after the meeting.

D. Site Conditions.

1. Job conditions shall be maintained at standards that allow material placement within temperature and cleanliness requirements. Unusual conditions or unexpected additional deterioration uncovered during the course of Work by Contractor shall be brought to Engineer's attention for analysis and disposition. These conditions include but are not limited to poor quality base concrete, severely corroded reinforcing steel, random cracks, deep oil penetration and any other condition which would prevent completion of the Work in accordance with manufacturer's recommendations and this specification.

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PART 2 - PRODUCTS

2.1 ACCEPTABLE PRODUCTS

A. Concrete repair products shall be manufactured by the Euclid Chemical Company, Master Builders Solutions, Sika Corporation, or equal as specified herein. Equivalent products of other manufacturers regularly producing high quality concrete repair materials, providing engineering field services, and meeting the specified quality assurance requirements may be furnished subject to acceptance by Engineer.

2.2 MATERIALS

A. Unless otherwise specified or authorized, materials shall conform to the requirements specified herein. Types of materials or concrete repair not specified herein shall be as specified in other sections, as indicated on the drawings or, in the absence of any definite requirement, as recommended by the manufacturer's field representative and acceptable to Engineer.

B. Products shall not exceed VOC limits established by the federal, state, or local regulatory agency having jurisdiction over the project site.

C. Floor Surface Repairs, Thickness of 1/4 inch or Less.

1. One or two component, polymer modified, cementitious material.

a. Compressive strength
1) 6,000 psi at 28 days using 2 inch cubes, per ASTM C109.

b. Products
1) Master Builders Solutions "MasterEmaco N 300CI"
2) Euclid "Thin-Top Supreme"
3) Sika "SikaTop 121 Plus

c. Bonding agent
1) Repair mortar scrub coat per manufacturer's instructions

D. Floor Surface Repairs, Thickness between 1/4 inch and 1 incl.

1. One or two component, polymer modified, cementitious material containing a corrosion inhibitor.

a. Compressive strength
1) 7,000 psi at 28 days using 2 inch cubes, per ASTM C109.

b. Flexural Strength
1) 1100 psi at 28 days, per ASTM C348

c. Bond Strength
1) 2000 psi at 28 days, per ASTM C883

d. Products
1) Master Builders Solutions "MasterEmaco T 310Cl"
2) Euclid "VersaSpeed LS100"
3) Sika "SikaTop 122 Plus

e. Bonding agent
1) Repair mortar scrub coat per manufacturer's instructions

E. Floor Surface Repairs, Thickness Greater Than 1 inch.

1. One component, polymer modified, cementitious material containing a corrosion inhibitor.

a. Compressive strength
1) 6,750 psi at 28 days using 2 inch cubes, per ASTM C109.

b. Flexural Strength
1) 1100 psi at 28 days, per ASTM C348

c. Bond Strength

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1) 2400 psi at 28 days, per ASTM C882

d. Products
1) Master Builders Solutions “MasterEmaco N 425”
2) Euclid “VersaSpeed LS100”
3) Sika “SikaTop 122 Plus”

e. Bonding agent
1) Repair mortar scrub coat per manufacturer’s instructions

F. Vertical and Overhead Surface Repairs, Trowel Applied.

1. One or two-component, polymer modified, cementitious mortar containing a corrosion inhibitor.

a. Compressive strength
1) 5,500 psi at 28 days using 2 inch cubes, per ASTM C109.

b. Flexural Strength
1) 600 psi at 28 days, per ASTM C348

c. Bond Strength
1) 1800 psi at 28 days, per ASTM C882

d. Products
1) Master Builders Solutions “MasterEmaco N 400”
2) Euclid “Eucorepair V100” or “Tamms Structural Mortar”
3) Sika “SikaTop 123 Plus

e. Bonding agent
1) Repair mortar scrub coat per manufacturer’s instructions

G. Vertical Repairs, Form and Pour, Thickness 6 inches or Less.

1. One-component, cementitious material containing a corrosion inhibitor. Shrikage compensated or polymer modified.

a. Compressive strength
1) 6,500 psi at 28 days using 2 inch cubes, per ASTM C109.

b. Flexural Strength
1) 770 psi at 28 days, per ASTM C348

c. Bond Strength
1) 2500 psi at 28 days, per ASTM C882

d. Rapid Chloride Permeability
1) Maximum 650 coulombs at 28 days, per ASTM C1202

e. Products
1) Master Builders Solutions “MasterEmaco S 466Cl”
2) Euclid “Eucorepair SCC Fast”

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3) Sika “Sikacrete 211 SCC Plus”

f. Bonding agent
1) Extended open time type; three component, epoxy modified, with corrosion inhibitor, minimum bond strength of 2000 psi at 7 days per ASTM C882.
a) Master Builders Solutions “MasterEmaco P 124”
b) Euclid “Duralprep A.C.”
c) Sika “Armatec 110 EpoCem”

H. Vertical Repairs, Thickness Greater Than 6 inches.

1. Cast-in-place concrete, per the concrete specification.

a. Bonding agent
1) Extended open time type; three component, epoxy modified, with corrosion inhibitor, minimum bond strength of 2000 psi at 7 days per ASTM C882.
a) Master Builders Solutions “MasterEmaco P 124”
b) Euclid “Duralprep A.C.”
c) Sika “Armatec 110 EpoCem”

b. Water
1) Clean and free from deleterious substances.

I. Reinforcement Anti-Corrosion Coating.

1. Extended open time type; three component, epoxy modified, with corrosion inhibitor, minimum bond strength of 2000 psi at 7 days per ASTM C882.

a. Master Builders Solutions “MasterEmaco P 124”
b. Euclid “Duralprep A.C.”
c. Sika “Armatec 110 EpoCem”

J. Penetrating Sealer.

1. Silane-based sealer with minimum 40% active ingredient. Minimum water repellency of 85% by ASTM C642.

a. Master Builders Solutions “MasterProtect H 400”
b. Euclid “Baracada Silane 40 WB”
c. Sika “Sikagard 740 W”

K. Coarse Aggregate Extension of Cementitious Mortar.

1. In areas where depth of repair exceeds manufacturer’s recommended limits for neat repair mortar, repair mortar may be extended with washed, graded, rounded, high-density, low-absorption coarse aggregate meeting ASTM C33. Aggregate shall be in size and volumes recommended by the product manufacturer. Aggregate extension shall not be permitted unless approved by Engineer.

NOT TO BE USED FOR BIDDING PURPOSES

PART 3 - EXECUTION

3.1 GENERAL

A. Unless otherwise specified, all materials shall be prepared and applied in strict accordance with the manufacturer's printed installation instructions.

3.2 INSPECTION

A. Prior to the placement of repair material, the surface to be repaired shall be inspected by the material manufacturer's field representative to assure the surface conditions are correct for the type of repair and the material is being used as specified.

3.3 PREPARATION

A. Cleaning.

1. The surface of existing concrete shall be clean and the pores free of any dirt or material that will be detrimental to the bond of the repair material. All oil, dirt, debris, paint, and unsound concrete shall be removed. Cleaning shall include complete removal of all dust, dirt, and residue by high pressure washing.

B. Surface Preparation.

1. All prepared surfaces shall conform to the requirements of the material manufacturer. All edges shall be square cut to avoid feather edges. As required, surfaces shall be prepared mechanically using a scabbler, bushhammer, chipping hammer, shotblast, scarifier or hydrodemolition equipment which will give the specified surface profile. Means and methods selected, subject to acceptance by Engineer, shall minimize surface micro-cracking (i.e."bruising") and impact on areas surrounding the Work area. Contractor shall provide a minimum Concrete Surface Profile (CSP) equal to that recommended by the material manufacturer.

2. Remove all loose and unsound concrete per International Concrete Repair Institute (ICRI) Guideline 310.1R "Guide for Surface Preparation." Repair areas shall be saw cut around the perimeter in a square or rectangular shape. For thin repairs of 1/4 inch or less, the saw cut depth shall not exceed 1/4 inch deep. For thicker repairs, the saw cut depth shall be a minimum of one-half inch but shall be limited to prevent the saw from damaging embedded reinforcement. Saw cuts shall be made perpendicular to the concrete surface and all concrete removal boundaries shall be straight.

3. Concrete shall be removed within repair boundaries to depth that is as uniform as practicable, and within the minimum and maximum layer thicknesses recommended by the material manufacturer. Exposed concrete surfaces shall be visually examined and tested with a mason's hammer to confirm soundness of the base material. If delamination, cracking, or otherwise unsound material exists, Contractor shall notify Engineer for direction before continuing with the work.

NOT TO BE USED FOR BIDDING PURPOSES

C. Cracks.

1. Cracks shall be located and repaired, if required, in accordance with Section 03 01 26.66 Concrete Crack Repair. All cracks located within or adjacent to Work covered under this specification shall be repaired prior to performance of the Work covered under this specification.

D. Inspection and Replacement of Reinforcement.

1. If reinforcement is exposed so that more than half the circumference of the bar is visible, the remaining concrete shall be removed to provide 1 inch of clear space all around the bar.

2. Reinforcement that has lost more than 20 percent of its original cross-sectional area shall be repaired by adding new reinforcement. The new reinforcement shall be spliced or connected to the existing reinforcement on both ends of the damaged portion of the original bar. Splices shall be Class B, and mechanical connectors shall be ACI 318 Type 2.

3. Contractor shall clean all exposed reinforcing steel to a bare metal finish prior to installation of repair materials.

4. Repaired reinforcement shall be inspected by Engineer or Owner's representative prior to placement of concrete repair materials.

3.4 APPLICATION

A. Concrete repair work shall be performed in accordance with the following requirements.

B. Bonding and Priming.

1. Bonding agent shall be applied per manufacturer's recommendations. The manufacturer's coverage rate shall be followed. For rough surfaces, scrub bonding agent into the surface with a stiff broom.

2. Apply all prepackaged bonding agent materials within recommended ambient and substrate temperatures published in the manufacturer's printed installation instructions. Materials shall not be applied over frozen or liquid filled surfaces.

3. Upon completion of all concrete and reinforcing steel demolition, surface preparation, and cleaning operations, apply specified bonding agent to substrate. Provide complete and thorough coverage of surface assuring that bonding agent has been fully worked into profile of surface.

4. For repair mortar scrub coat bonding agents, the concrete surface shall be saturated with water one hour prior to placement of the scrub coat to provide a saturated substrate. Just prior to application of the scrub coat, water shall be removed by compressed air blasting. Compressed air shall be maintained free of oil and contaminants by filtration as needed. The mortar scrub coat shall be wet and not yet stiffened when repair material is applied.

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5. For extended open time bonding agents, mix bonding agent and apply two uniform coats at manufacturer's published recommended coverage rates to properly prepared surfaces. Allow adequate time between coats per manufacturer's recommendations. The repair material shall be applied within the allowable open time of the bonding agent.

C. Treatment of Reinforcement and Other Metal Embedments.

1. All existing and new reinforcement shall be secured and properly positioned by tying to other secured bars or supplemental anchoring pins as needed.

2. All exposed reinforcement and other metal embedments within the repair area shall be treated with two coats of anti-corrosion coating.

D. Forming.

1. Forms shall be water-tight and constructed with sufficient rigidity to withstand head pressure and prevent excessive deflection during material placement. For pumped applications without open top forms, provide a port connection or birdmouth of sufficient size to allow pumping into the form. After forms are removed, all birdmouths and other protrusions resulting from the placement method shall be carefully removed and the surface smoothed.

2. Tolerances for formed work shall be as stipulated in ACI 117 for cast-in-place concrete, unless otherwise indicated. Formed surfaces shall meet Class C requirements for both abrupt and gradual irregularities.

E. Shoring and Support.

1. When removal and repair of deteriorated concrete may cause temporary weakness, excessive deflections, structural instability, or other unacceptable damage, shoring or other suitable supports shall be provided until completion of the repair work is complete and the material has reached its design compressive strength.

F. Cold Weather Conditions.

1. Repair materials shall not be applied without protection in temperatures below 45 degrees F, nor when the temperature is expected to fall below 45 degrees F during the curing period, unless more stringent requirements are provided by the material manfacturer's printed installation instructions.

3.5 FINISHING

1. All surfaces shall be finished to match the surrounding concrete.

3.6 CURING

A. General.

1. Immediately following placement and finishing procedures, cure cementitious repair mortars for a minimum of 72 hours. Curing procedures shall be in accordance with

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ACI 308.1 and the manufacturer's printed installation instructions. The more stringent requirements shall control.

2. When ambient temperatures below 45 degrees F are expected during the curing period, the repair material shall be maintained at 50 degrees F for the full period. Sudden cooling shall not be permitted. Gradual temperature drop shall be maintained at not more than 20 degrees F in any 24 hour period. Carbon dioxide or exhaust gases from combustion heaters shall not be allowed within enclosures or allowed to contact the repair material. Repair materials shall not be exposed to freezing temperatures until at least 24 hours after the end of the curing period..

3. Unless specified otherwise, one or more of the following methods shall be used.

   a. Water Curing.
      1) Keep concrete surfaces continuously wet with water during the curing period. The method used shall limit water runoff and any runoff shall be directed and controlled. The difference in temperature between the water used for curing and the concrete surface shall not exceed 20 degrees.

   b. Wet Coverings Curing
      1) Cover the surfaces with moisture retaining curing blankets, burlap, cotton mats, or other suitable moisture retaining materials. The coverings shall not stain or otherwise discolor the repair material or the surrounding surfaces, and shall keep the repair products fully saturated during the curing period. Lap all coverings at least 3 inches at joints.

   c. Membrane Curing
      1) Membrane curing compounds shall only be used if the repair material manufacturer's printed installation instructions recommend a compound be used instead of water or wet coverings. Membrane curing compounds shall not be used on surfaces to receive a penetrating sealer.

3.7 SEALING

A. Provide a penetrating sealer over the concrete repair product when recommended by the repair product manufacturer, or when no other sealer is specified on the drawings or other specifications. The penetrating sealer shall be applied in accordance with the manufacturer's instructions.

3.8 FIELD QUALITY CONTROL

A. Material Storage and Handling.

1. The material shall be delivered in original, unopened containers. Containers shall be labeled with the manufacturer's name, product name, and lot number. Materials shall be stored at the job site under dry conditions and at temperatures between 50 degrees F and 90 degrees F unless more stringent limitations are required by the manufacturer.

NOT TO BE USED FOR BIDDING PURPOSES

B. Protection.

1. Repair areas shall be protected from other trades and weather for a minimum of 10 days after material is placed.

C. Cleaning.

1. Work areas are to be cleaned each day in accordance with the Project Requirements section. Upon completion of the final cleanup, Contractor shall restore all areas affected by repair procedures to their original condition, leaving no trace of material piles or other wasted materials.

End of Section

NOT TO BE USED FOR BIDDING PURPOSES

SECTION 03 30 53 - MISCELLANEOUS CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SCOPE

A. This section covers all cast-in-place concrete, including reinforcing steel, forms, finishing, curing, and appurtenant work.

B. Both inch-pound (English) and SI (metric) units of measurement are specified herein; the values expressed in inch-pound units shall govern.

1.2 SUBMITTALS

A. All submittals shall be made in accordance with the Submittal Procedures section.

B. The following items shall be submitted, as a minimum.

Manufacturer's information for all products and concrete ingredients supplied under this section, in the form of technical data sheets, certificates of compliance, test data, or reports.

Items required to verify the concrete mixture:

Aggregate reports (ASTM C33 and ASTM C1778)

Source and type

Gradation

Deleterious materials

Alkali-aggregate reactivity

Cement mill report

Fly ash or slag cement test report

Admixture data sheets

Proposed mixture proportions

Concrete compressive strength at 28 days

Bar lists and drawings for the fabrication and placing of reinforcement, with sufficient plans, elevations, and sections to adequately detail and label all reinforcement. Bar drawings shall also include a reference to the structure where the reinforcement is to be installed and the relevant contract drawings showing the reinforcement.

NOT TO BE USED FOR BIDDING PURPOSES

PART 2 - PRODUCTS

2.1 LIMITING REQUIREMENTS

A. Unless otherwise specified, concrete shall be controlled within the following limiting requirements:

Cement Content	Suitable for meeting the performance requirements of this specification.
Maximum Water-Cement Ratio	The maximum water-cement ratio shall be 0.45 on a weight basis, or, if fly ash or slag cement are used, the combined mass of cement plus fly ash or slag cement shall be used to determine the water-cementitious materials ratio.
Fly Ash or Slag Cement Content	At the option of Contractor, fly ash or slag cement may be substituted for portland cement, on the basis of 1.0 lb added for each 1.0 lb of cement reduction. Fly ash replacement shall be within a range of 15 to 25 percent. Slag cement replacement shall be within a range of 25 to 50 percent.
Concrete Strength	4,500 psi minimum compressive strength at 28 days.
Air Content	6 percent ±1.5 percent.
Coarse Aggregate	Maximum nominal coarse aggregate size, 1 inch. Recycled aggregates, or aggregates created from crushed concrete, will not be acceptable.
Admixtures	A water-reducing admixture, water-proofing admixture, and an air-entraining admixture shall be included in all concrete. No calcium chloride or admixture containing chloride from sources other than impurities in admixture ingredients will be acceptable.
Consistency	Workable, without segregation, with slump not more than 5 inches when concrete is placed.

2.2 MATERIALS

Cement	ASTM C150 Type II or l/ll, or ASTM C595 Type IL(MS). ASTM C595 cements that incorporate C1157 cements will not be acceptable.
Fly Ash	ASTM C618, Class F, except loss on ignition shall not exceed 4 percent.
Slag Cement	ASTM C989, Grade 100 or Grade 120.

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Fine Aggregate	Non-reactive, clean, natural sand, ASTM C33.
Coarse Aggregate	Non-reactive crushed rock, washed gravel, or other inert granular material conforming to ASTM C33, class 4S, except that clay and shale particles shall not exceed 1 percent.
Water	Potable. Water from concrete mixing operations shall not be used.
Admixtures	
Water-Reducing	ASTM C494, Type A or D.
Air-Entraining	ASTM C260.
High-Range Water Reducing	ASTM C494, Type F or G.
Water-proofing Admixture	Xypex (C-500, C-500NF, C-1000, C-1000NF), Penetron Admix SB or Aqua in IC Admix.
Reinforcing Steel	
Bars	ASTM A615, Grade 60, deformed.
Welded Wire Fabric	ASTM A185 or A497.
Bar Supports	CRSI Class 1, plastic protected; or Class 2, stainless steel protected.
Mechanical Connectors	Splicing system meeting Type 2 tensile requirements of ACI 318. Products shall have a current evaluation report verifying testing per ICC-ES AC 133. Use only where indicated on the drawings.
Form Coating	Nonstaining and nontoxic after 30 days. Product shall not exceed VOC limits established by the federal, state, or local regulatory agency having jurisdiction over the project site.
Evaporation Reducer	Dayton Superior “AquaFilm Concentrate J74”, Euclid "Eucobar", L&M Chemical "E-Con", Master Builders Solutions "MasterKure ER50", or Sika "SikaFilm".
Membrane Curing Compound and Floor Sealer	ASTM C1315, Type I, Class A, minimum 25 percent solids, acrylic, non-yellowing, unit moisture loss 0.40 kg/m^2 maximum in 72 hours. Product shall not exceed VOC limits established by the federal, state, or local regulatory agency having jurisdiction over the project site.
Polyethylene Film	Product Standard PS17 or ASTM D4397, 6 mils or thicker.

NOT TO BE USED FOR BIDDING PURPOSES

2.3 MIXTURE DESIGN AND TESTING

A. All reports and tests required for Engineer acceptance of materials and concrete mixtures shall be made at the expense of Contractor. Mixtures shall be adjusted in the field as necessary, within the limits specified, to meet the requirements of these specifications. If the source of any concrete materials is changed during the contract, concrete work shall pause until the new materials and the new mixture design are acceptable to Engineer.

B. Review of Materials

1. The source and quality of concrete materials shall be submitted to Engineer for review before concrete is placed.

C. Proposed Mixture Proportions

1. Proposed proportions of concrete shall meet the limiting requirements indicated herein.

D. Field Test Record Data

1. Concrete mixtures may be qualified based on field test record performance data. Field test data records shall be from the production facility being used on the current Project and shall have been performed in the past 24 months. Field test records shall represent a single group of at least 10 consecutive strength tests for one mixture, using the same materials, under the same conditions, and encompassing a period of not less than 45 days.

2.4 FORMS

A. Forms shall be designed to produce hardened concrete having the shape, lines, and dimensions indicated on the drawings. Forms shall be substantial and sufficiently tight to prevent leakage of mortar and shall be maintained in proper position and accurate alignment.

B. Forms shall be thoroughly cleaned and coated before concrete is placed.

C. Form-facing materials shall be selected in accordance with ACI 347.3R, based upon the applicable formed concrete surface category. Formed concrete surface categories vary by structure and application, and shall be as indicated in the Finishing Formed Surfaces paragraph.

2.5 REINFORCEMENT

A. Reinforcement shall be accurately formed and positioned, and shall be maintained in proper position while the concrete is being placed and compacted. Reinforcement shall be free from dirt, loose rust, scale, and contaminants. Mechanical connectors shall be used only as indicated on the drawings.

NOT TO BE USED FOR BIDDING PURPOSES

PART 3 - EXECUTION

3.1 BATCHING, MIXING, AND DELIVERY

A. Concrete shall be furnished by a ready-mixed concrete manufacturer (plant) and trucks which are certified by the National Ready Mixed Concrete Association's (NRMCA) Plant and Truck Certification Program, and shall conform to ASTM C94 except as indicated otherwise in this specification. The time from start of concrete mixing to completion of discharge from the truck shall not exceed 1-1/2 hours.

3.2 PLACEMENT

A. Concrete shall be conveyed to the point of final deposit and placed by methods which will prevent segregation or loss of the ingredients. During and immediately after placement, concrete shall be thoroughly compacted and worked around all reinforcement and embedments and into the corners of the forms. Unless otherwise authorized, compaction shall be by immersion-type vibrators. The use of "jitterbug" tampers to compact concrete flatwork will not be permitted.

B. Polyethylene Film

1. Where concrete is placed against gravel or crushed rock which does not contain at least 25 percent material passing a No. 4 sieve, such surfaces shall be covered with polyethylene film. Joints in the film shall be lapped at least 6 inches and taped.

C. Cold Weather Concreting

1. Except as modified herein, cold weather concreting shall comply with ACI 306.1.

D. Hot Weather Concreting

1. Except as modified herein, hot weather concreting shall comply with ACI 305.1.

3.3 TOLERANCES

A. Tolerances for cast-in-place concrete work shall be as indicated in ACI 117, and ACI 347.3R based upon the relevant formed concrete surface category.

B. Formed concrete surfaces that are to have a face-mounted flat steel or FRP member attached, including but not limited to items such as weir plates or shelf angles, shall have more stringent flatness requirements. The surface profile shall permit the installation of the flat member without grinding the concrete surface (except for removal of fins), deforming the flat member, or requiring usage of backer rods or shims.

NOT TO BE USED FOR BIDDING PURPOSES

3.4 FINISHING

A. Finishing Formed Surfaces

1. Formed concrete surfaces shall meet all criteria of the relevant formed concrete surface category (CSC), as defined in ACI 347.3R, except as indicated otherwise herein. Surfaces shall be assigned to CSC's as indicated.

Formed Concrete Surface Category	Applicable Surfaces	Mockup Required
CSC1	Formed concrete surfaces that will be in permanent contact with earth backfill.	No
CSC2	All other formed concrete surfaces not designated otherwise.	No

2. Fins, form seams, and construction joints shall be ground flush on all surfaces in formed concrete surface category CSC2, and in CSC1 surfaces that are required to be dampproofed.

3. All tie holes in formed surfaces, regardless of the relevant CSC, shall be cleaned, wetted, and filled with patching mortar. The patches shall be finished flush and cured and shall match the texture and color of the adjacent concrete.

4. Concrete surfaces to be dampproofed shall have fins removed and tie holes filled, but no additional finishing will be required.

5. Concrete surfaces to be painted shall have sharp edges and projections removed to provide an acceptable condition for painting. The concrete surfaces shall have bug holes filled per the Protective Coatings section.

B. Unless otherwise specified, unformed surfaces shall be given a float finish.

C. Application of Evaporation Reducer

1. Concrete flatwork subject to rapid evaporation due to hot weather, drying winds, and sunlight shall be protected with an evaporation reducer. The evaporation reducer shall form a continuous film on the surface of fresh, plastic concrete to reduce evaporation.

2. Immediately following screeding, evaporation reducer shall be sprayed over the entire surface of fresh, plastic concrete flatwork at a rate of not less than 200 square feet per gallon, in accordance with the manufacturer's recommendations. The spray equipment shall have sufficient capacity to continuously spray the product at approximately 40 psi with a suitable nozzle as recommended by the manufacturer.

3. The sprayable solution shall be prepared as recommended by the manufacturer.

4. Under severe drying conditions, additional applications of evaporation reducer may be required following each floating or troweling, except the last finishing operation.

NOT TO BE USED FOR BIDDING PURPOSES

D. Sidewalks

1. Concrete surfaces shall be screeded to the proper elevation and contour. All aggregates shall be completely embedded in mortar. Screeded surfaces shall be given an initial float finish as soon as the concrete has stiffened sufficiently for proper working. Any piece of coarse aggregate which is disturbed by the float or which causes a surface irregularity shall be removed and replaced with mortar. Initial floating shall produce a surface of uniform texture and appearance, with no unnecessary working of the surface. Initial floating shall be followed by a second floating at the time of initial set.

2. Floated surfaces shall be given a light broom finish, using a horsehair broom to provide a nonslip surface. Brooming shall be done at right angles to the length of the walk.

3. Sidewalks shall be edged using a 3 or 4 inch wide edging tool with a 1/8 inch corner radius. Edger lap marks at corners of each slab shall be carefully removed. False joints shall be provided at right angles to the length of the walk, using a grooving tool with 1/8 inch radius. The finished edge on each side of the joint shall be the same width as the edging tool used. False joints shall divide each sidewalk into square sections.

4. The finished surface of all sidewalks shall be neat in appearance, shall be sloped to drain, and shall not pond water.

E. Curb and Gutter

1. Curb and gutter shall be finished to the shape indicated on the drawings. After the forms have been removed, all exposed edges shall be rounded, using an edging tool with a 1/8 inch corner radius. Exposed surfaces shall be float finished and given a light broom finish applied at right angles to the curb at the time of initial set, using a horsehair broom.

3.5 CURING

A. Concrete shall be protected from loss of moisture for at least 7 days by membrane curing or by water curing, except that when concrete is being protected from low temperatures, the duration of water curing may be shortened to one day less than the duration of the cold weather protection. Membrane curing compound shall be applied as recommended by the manufacturer. Water curing shall be in accordance with ACI 308.1.

End of Section

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SECTION 03 60 00 – GROUTING

PART 1 - GENERAL

1.1 SCOPE

A. This section covers procurement and installation of grout. Unless otherwise specified, only nonshrink grout shall be furnished.

B. Epoxy grouting and adhesive anchoring of anchor bolts, threaded rod anchors, and reinforcing bars is covered in the Anchorage in Concrete and Masonry section. Grouting of masonry is covered in the Masonry section.

1.2 SUBMITTALS

A. Drawings and Data.

1. Complete manufacturers' data and product information shall be submitted in accordance with the Submittal Procedures section.

B. Certification Letter.

1. A letter of certification indicating the types of grout to be supplied and the intended use of each type shall be submitted in accordance with the Submittal Procedures section.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Materials shall be handled, transported, and delivered in a manner which will prevent damage of any kind. Materials shall be protected from moisture.

PART 2 - PRODUCTS

2.1 MATERIALS

Nonshrink Grout	Precision cementitious grout with demonstrated non-shrinking properties, minimum 28 day compressive strength of 9000 psi; L&M "Crystex," Master Builders Solutions "Masterflow 928," Sika "SikaGrout 328," Euclid "Hi-Flow Grout," Dayton Superior "Sure-Grip High Performance Grout," or SpecChem "SC Precision Grout."
Water	Clean and free from deleterious substances.

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2.2 CEMENTITIOUS GROUT

A. Cementitious grout shall be furnished factory premixed so that only water is added at the jobsite.

2.3 EPOXY GROUT

A. Epoxy grout shall be used in lieu of cementitious grout when required by the equipment manufacturer for performance or warranty requirements. Epoxy grout shall be a three component system consisting of a Part A (resin), Part B (hardener) and Part C (aggregate). All three components shall be products of the same manufacturer and be compatible. Epoxy grout products and installation procedures shall be submitted to Engineer for approval.

PART 3 - EXECUTION

3.1 CEMENTITIOUS GROUT INSTALLATION

A. Preparation.

1. The concrete foundation to receive cementitious grout shall be saturated with water for at least 12 hours preceding grouting unless additional time is required by the grout manufacturer.

B. Mixing.

1. Grout shall be mixed in a mechanical mixer. No more water shall be used than is necessary to produce a flowable grout, nor shall water content exceed the amount recommended by the manufacturer.

C. Temperature Restrictions.

1. Grout shall be placed in accordance with the manufacturer's published temperature restrictions. Ambient temperature and grout temperature shall be a minimum of 40 degrees F and rising at time of placement. Grout shall not be placed on frost covered surfaces. Grout shall be protected from freezing until it has reached a minimum strength of 4,000 psi. Grout shall not be placed when the ambient or grout temperature exceeds 90 degrees F.

D. Placement.

1. Unless otherwise specified or indicated on the Drawings, grout under baseplates shall be 1-1/2 inches thick. Grout shall be placed in strict accordance with the directions of the manufacturer so that all spaces and cavities below the baseplates are completely filled without voids. Forms shall be provided where structural components of baseplates will not confine the grout.

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E. Edge Finishing.

1. In all locations where the edge of the grout will be exposed to view, the grout shall be finished smooth after it has reached its initial set. Except where shown to be finished on a slope, the edges of grout shall be cut off flush at the baseplate.

F. Curing.

1. Grout shall be protected against rapid loss of moisture by covering with wet cloths or polyethylene sheets. After edge finishing is completed, the grout shall be wet cured for at least 3 days and then an acceptable membrane curing compound shall be applied.

3.2 EPOXY GROUT INSTALLATION

A. Epoxy grout shall be installed in accordance with ACI 351.5.

End of Section

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DIVISION 5 - Metals

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SECTION 05 31 00 - STEEL DECKING

PART 1 - GENERAL

1.1 SCOPE

A. This section covers the fabrication and erection of steel decking, including flashings, fastening devices, and other accessories and appurtenances as required and as indicated on the Drawings.

1.2 DELIVERY, STORAGE, AND HANDLING

A. Materials shall be handled, transported, delivered, and stored in a manner which will prevent bends, dents, scratches, or damage of any kind. Damaged deck units shall be promptly replaced.

1.3 SUBMITTALS

A. General

1. Detailed fabrication and erection drawings covering the steel deck shall be submitted in accordance with the Submittal Procedures section.

2. Drawings shall indicate locations of framing supports and the depths, profiles, thicknesses, locations, lengths, and markings of decking units to correspond with the sequence of installation. Drawings shall indicate fastening methods for decking units, accessories, closure pieces, fittings, and auxiliary supports.

PART 2 - PRODUCTS

2.1 PERFORMANCE AND DESIGN REQUIREMENTS

A. Except as modified or supplemented herein, or as otherwise indicated on the Drawings, steel decking work shall in accordance with the following standards.

Steel Roof Decking	ANSI/SDI-RD1.0.

B. Joints in the decking shall be centered on supporting members, with typical lengths extending over a minimum number of spans as indicated on the Drawings.

2.2 MATERIALS

A. Materials used in the manufacture and installation of steel roof deck shall be as follows.

Steel Deck (galvanized)	ASTM A653, min F_y = 50,000 psi, depth and gauge as indicated on the Drawings. Canam Steel

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	Corporation, or Nucor.
Galvanizing	ASTM A653, thickness as indicated on the Drawings.
Prime Painting	Baked-on acrylic primer, manufacturer's standard.
Fasteners at Supports	Products shall have a current manufacturer's research report confirming testing per ICC-ES AC43 or IAPMO UES EC 007.
Power-Actuated	Knurled shank, minimum 1/2 inch diameter steel washer. Pin diameter and length to suit deck type and flange thickness of steel support member. Acceptable products: Hilti "X-ENP 19" or "X-HSN 24", as appropriate for support member thickness. Pneutek "K66075", "K64075", "SDK61075", or "SDK63075", as appropriate for support member thickness.
Fasteners at Sidelaps	Products shall have a current manufacturer's research report confirming testing per ICC-ES AC43 or IAPMO UES EC 007.
Screws	Size shall be #10. Self-drilling, self-tapping screws with hexagonal washer head and corrosion resistant finish. Acceptable products: Hilti "S-SLC 01 M HWH" or "S-SLC 02 M HWH". Simpson "XM #12 Screw" or "XL #12 Screw"
Compressible Filler	Preformed soft rubber.

2.3 ACCESSORIES

A. All accessories, such as flashings and closure pieces and other items as indicated or required, shall be fabricated of the same material and finish as decking units, in the thicknesses indicated or recommended by the deck manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Steel decking shall be installed in accordance with the following standards.

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Steel Roof Decking ANSI/SDI-RD1.0.

B. Steel decking shall be secured to the supporting steel, including miscellaneous framing around openings and at side joints as follows.

C. Fasteners at Supporting Members.

1. Decking panels shall be secured to each supporting member as indicated on the Drawings.

D. At Side Joints.

1. Decking panels shall be secured to each other at supporting members and between supports as indicated on the Drawings.

E. Finishing.

1. The installed roof deck shall be smooth, unbroken, and free of unnecessary openings, holes, or crevices which might allow leakage of adhesive or bitumen. Any such openings shall be repaired to the satisfaction of Engineer.

2. Field-cut openings for piping or other projections shall be neatly cut and adequately flashed. Openings larger than three ribs in width shall be supported by structural members or otherwise reinforced.

3. Unless otherwise indicated on the Drawings, steel decking shall not be used to support ceilings, light fixtures, ducts or other utility devices.

3.2 CLEANUP

A. At the completion of installation, all surplus materials, rubbish, and other debris shall be removed from the surface of the roof deck.

End of Section

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SECTION 05 50 00 - MISCELLANEOUS METAL FABRICATIONS

PART 1 - GENERAL

1.1 SCOPE

A. This section covers the fabrication and erection of miscellaneous metal items not covered in other sections.

B. The items covered by this section include, but are not limited to, the following:

1. Pipe supports.
2. Deformed bar anchors.
3. Basin weir plates.
4. Metering weirs.
5. Ladders.
6. Spiral Stair.

C. Both inch-pound (English) and SI (metric) units of measurement are specified herein; the values expressed in inch-pound units shall govern.

1.2 SUBMITTALS

A. Drawings and Data

1. Complete data, fabrication drawings, and setting or erection drawings covering all miscellaneous metal items shall be submitted in accordance with the Submittal Procedures section.

B. Connection and Welding Details

1. All bolted connections and welds shall be properly identified on the shop drawings. Welding procedures, welding procedure qualification records and welder qualifications shall be submitted.

C. Ladder / Stair Data and Calculations

1. Submittals for ladders that are designed by the fabricator shall include drawings sealed by a professional engineer registered in the state of the project. Data shall include confirmation that the design meets all applicable code requirements. Calculations shall be submitted when requested by Engineer.

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1.3 DELIVERY, STORAGE, AND HANDLING

A. Materials shall be handled, transported, and delivered in a manner which will prevent bends, dents, significant coating damage, or corrosion. Damaged materials shall be promptly replaced. Miscellaneous metal work shall be stored on blocking so that no metal touches the ground and water cannot collect thereon. The material shall be protected against bending under its own weight or superimposed loads.

PART 2 - PRODUCTS

2.1 GENERAL

A. All miscellaneous metals shall be detailed and fabricated to facilitate installation as indicated on the drawings. All required field connection materials shall be furnished.

2.2 PERFORMANCE AND DESIGN REQUIREMENTS

A. Ladders/stairs shall be designed by a professional engineer registered in the state of the project. The design shall meet the requirements of OSHA Section 1910.27 and ANSI A14.3. Ladders with climbing heights greater than 24 feet, or where the length of climb is less than 24 feet but the top of the ladder is more than 24 feet above the ground, floor, or roof level, shall be provided with a fall protection safety system as indicated on the Drawings. Ladders with fall protection safety systems shall have the ladder and anchorage designed to resist the associated design level impact forces. Rest platforms shall be provided to limit straight climb lengths to 30 feet.

2.3 MATERIALS

Steel

Shapes, Plates, and Bars	ASTM A36.
Sheets	ASTM A1008 CS Type B or A1011 CS Type B.
Pipe	ASTM A53, Type E or S, Grade B (F_y = 35 ksi).
Round Structural Tubing	ASTM A500, Grade C (F_y = 46 ksi).
Square and Rectangular Structural Tubing	ASTM A500, Grade C (F_y = 50 ksi).
Fasteners	
Bolts, Unfinished	ASTM A307.

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Nuts, Heavy-Hex	ASTM A563, grade and finish compatible with bolts.
Washers	Flat, hardened, ASTM F436, Type 1.
Forged Steel Clevises and Turnbuckles	AISI C-1035.
Forged Steel Eyebolts and Eyenuts	AISI C-1030, ANSI B 18.15 Type 2 shoulder pattern unless otherwise required.
Stainless Steel	
Shapes	ASTM A1069 or A276, Type 316L.
Plates	ASTM A240, Type 316L.
Pipe	ASTM A312, Grade TP316L.
Tube	ASTM A269, Grade TP316L.
Fasteners	
Bolts	ASTM F593, Alloy Group 1 or 2, minimum yield strength of 45 ksi.
Nuts	ASTM F594, Alloy Group shall match that of the bolts. Nuts shall have a minimum proof stress equal to or greater than the minimum full-size tensile strength of the bolts
Washers	Flat, ANSI/ASME B18.22.1, Type 316.
Cast Iron	ASTM A48, Class 35B or better.
Aluminum	
Sheet and Plate	ASTM B209, Alloy 6061-T6.
Rolled Sections	ASTM B308, Alloy 6061-T6.
Rod and Bar (Rolled or Drawn)	ASTM B211, Alloy 6061-T6 or 2017-T4.
Extrusions	ASTM B221, Alloy 6063-T5 or T6.
Pipe	ASTM B429, Alloy 6061-T6.
Castings	ASTM B26 or B85.
Brass or Bronze	

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Plate and Strip	ASTM B36.
Casting	ASTM B61 or B584.
Fasteners	
Bolts and Nuts	IFI-104, Grade 462 or 464.
Washers	Flat, ANSI/ASME B18.22.1.
Silicon Bronze	
Sheet and Plate	ASTM B96, American Brass "Everdur 1010".
Castings	ASTM B584, American Brass "Everdur 1000".
Fasteners	
Bolts and Nuts	IFI-104, Grade 655.
Washers	Flat, ANSI B18.22.1.
Weld Metal (Steel Connections)	ANSI/AWS D1.1, Table 3.1, filler metal with minimum 70 ksi tensile strength unless otherwise required.
Deformed Bar Anchors	ASTM A496 with a minimum 70,000 psi yield strength and minimum 80,000 psi tensile strength. TRW/Nelson division or equal.
Ladders	
Aluminum	Siderails shall be continuous and spaced as indicated on the Drawings. Rungs shall be extruded aluminum tubes, with shape and minimum size as indicated on the Drawings.
Extending Ladder Safety Post	Furnish and install extending ladder safety post underneath all hatches. 3M Lad Safety System or approved equal.

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Fall Protection Safety System	OSHA approved system consisting of a carrier, safety sleeve, lanyard, and connectors. The same fall protection system shall be used for all ladders on the project. The system shall be suitable for operation with a body harness. Body harness provided by Owner. Miller Saf-T-Climb with Removable Hatch Dismount or equal.

Shop Coatings

Universal Primer	As indicated in the Protective Coatings section.
Galvanizing	ASTM A123, A153, A385, and F2329 as applicable.

2.4 FABRICATION

A. General.

1. Items shall be preassembled in the shop to greatest extent possible. Metals shall be cut, drilled, and punched cleanly and accurately. Sharp or rough edges on exposed surfaces shall be removed.

B. Fasteners.

1. Unless indicated otherwise on the Drawings, stainless steel fasteners shall be used for fastening aluminum or stainless steel, steel fasteners shall be used for fastening steel, and bronze fasteners shall be used for fastening bronze.

C. Bearing and Leveling Plates.

1. Loose bearing and leveling plates for steel items bearing on masonry or concrete shall be hot dip galvanized.

D. Ladders.

1. Unless otherwise indicated on the Drawings, all ladders provided under this section shall be of the same type and design.

2. Ladders, fall protection safety systems, and rest platforms shall be provided as indicated on the Drawings. Ladder rails intersecting guardrailing shall be configured to provide an aesthetically pleasing transition, although ladder rails need not be physically attached to the guardrailing. There shall be no gaps between ladder rails and adjacent guardrailing that would allow passage of a sphere greater than 4 inches in diameter.

3. Ladders exiting through hatchways shall be furnished with extending ladder safety posts.

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E. Basin Weir Plates.

1. Basin weir plates shall be fabricated to dimensions indicated on the Drawings, with top surface cut to shape. The top edge of each weir plate shall be straight within 1/8 inch. Particular care shall be taken in cutting operations. Burrs or irregularities on cut edges shall be removed by grinding. Carbon steel weir plates shall be hot dip galvanized after fabrication.

F. Metering Weirs.

1. Metering weir plates shall be fabricated to the dimensions indicated on the Drawings. Top edges and sides shall be machined and shall have sharp corners. Carbon steel metering weir plates shall be hot-dip galvanized after fabrication.

2.5 SHOP COATING

A. All miscellaneous metal items shall be shop coated as specified herein, except as otherwise indicated. The requirements for field painting are covered in the Protective Coatings section.

B. Contact surfaces of miscellaneous metals that are to be field welded shall be masked so that no shop primer or galvanizing will be applied in the vicinity of the weld.

C. Cleaning.

1. Surfaces shall be dry and of proper temperature when coated, and shall be free of grease, oil, dirt, dust, grit, rust, loose mill scale, weld flux, slag, weld spatter, and other objectionable substances. Articles to be galvanized shall be pickled before galvanizing. All other ferrous metal surfaces shall be cleaned by solvent, high-speed power wire brushing or by blasting to the extent recommended by the shop coating manufacturer.

D. Edge Grinding.

1. Sharp projections of cut or sheared edges of ferrous metals shall be ground to a radius as needed to ensure satisfactory shop coating adherence.

E. Galvanizing.

1. Unless otherwise indicated herein or on the Drawings, all steel in exterior locations shall be galvanized. All galvanizing shall be done by the hot-dip process after fabrication. An approved zinc-rich paint shall be used to touch up minor coating damage, in accordance with ASTM A780. Materials with significant coating damage shall be regalvanized or replaced.

2. Bolts, nuts, and washers shall be galvanized when connected materials are galvanized or where indicated on the Drawings. The use of zinc-plated bolts will not be acceptable.

F. Prime Painted Steel.

1. Unless otherwise specified or indicated on the Drawings, all ungalvanized steel shall be given a shop coat of universal primer after fabrication. The dry film thickness of the

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universal primer shall be at least 5 mils. Steel surfaces shall be coated as soon as practicable after cleaning. Steel shall not be moved or handled until the shop coat is dry and hard.

G. Stainless Steel.

1. Unless otherwise specified, all items fabricated from stainless steel shall be thoroughly cleaned and degreased after fabrication. Pickling or a light blast cleaning shall produce a modest etch and remove all embedded iron and heat tint. Surfaces shall be subjected to a 24 hour water test or a ferroxyl test to detect the presence of residual embedded iron and shall be retreated as needed to remove all traces of iron contamination. Surfaces shall be adequately protected during shipping and handling to prevent contact with iron or steel objects or surfaces.

H. Aluminum.

1. All surfaces of aluminum which will be in contact with concrete, mortar, or dissimilar metals shall be given a coat of bituminous paint.

I. Castings.

1. Shop coating of miscellaneous iron castings will not be required.

J. Other Surfaces.

1. Painting of zinc coated steel or bronze surfaces will not be required.

PART 3 - EXECUTION

3.1 GENERAL

A. Miscellaneous metals shall be placed in accurate location, alignment, and elevation. Edges and surfaces shall be free of warps, local deformations, and unauthorized bends. Connections shall be accurately fitted.

B. Field welding or cutting shall not be performed on galvanized or primed surfaces.

3.2 BOLTED CONNECTIONS

A. Unless otherwise indicated on the Drawings all bolted connections shall be snug tight.

3.3 WELDING

A. Welds that are exposed to view shall be ground smooth. Intermittent welds shall have an effective length of at least 2 inches and shall be spaced not more than 6 inches apart.

NOT TO BE USED FOR BIDDING PURPOSES

B. Surfaces within 2 inches of a weld shall be free from loose or thick scale, slag, rust, moisture, grease, paint and other foreign materials that would prevent proper welding or release objectionable fumes.

C. Deformed bar anchors, headed concrete anchors, and shear connectors shall be welded with an automatic stud welding gun per the manufacturer's recommendation. Hand welding will not be acceptable.

3.4 BEARING AND LEVELING PLATES

A. Bearing and leveling plates shall have the bottom surfaces cleaned prior to installation. Plates shall be set on wedges or leveling nuts, and after positioning and leveling, anchor bolts shall be tightened. Grout shall be placed solidly below plates with no remaining voids.

3.5 BASIN WEIR PLATES

A. Before installation, surfaces in contact with concrete shall be given a heavy coating of sealant as specified in the Caulking section. Weir plates shall be adjusted after installation to provide uniform overflow rate at all points.

End of Section

NOT TO BE USED FOR BIDDING PURPOSES

SECTION 05 50 13 - STRUCTURAL METALS

PART 1 - GENERAL

1.1 SCOPE

A. This section covers the fabrication and erection of structural metal items.

B. Except as otherwise specified or indicated on the Drawings, all work shall conform to the applicable provisions of the AISC "Steel Construction Manual" (14th edition) with the exception of the "Code of Standard Practice for Steel Buildings and Bridges" and the Aluminum Association "Specification for Aluminum Structures."

C. Special inspection during the fabrication and erection of structural steel, if required by the local building code, is addressed in the Code-Required Special Inspections and Procedures section.

D. Both inch-pound (English) and SI (metric) units of measurement are specified herein; the values expressed in inch-pound units shall govern.

1.2 SUBMITTALS

A. Drawings and Data - General

1. Complete data, fabrication drawings, and setting or erection drawings covering all structural and miscellaneous metal items shall be submitted in accordance with the Submittal Procedures section.

B. Connection and Weld Data

1. All bolted connections and welds shall be properly identified on the shop drawings. Welding procedures, welding procedure qualification records and welder qualifications shall be submitted.

C. Bolts and Washer Data

1. Submittals for high strength bolts, tension control bolts and load indicator washers shall include statements from the bolt and washer manufacturers certifying satisfactory compliance with the governing standards and the specified tests.

D. Drawings and Data – Design

1. Submittals for items that are designed by the fabricator shall include drawings sealed by a professional engineer registered in the state of the project. Data shall include confirmation that the design meets all applicable code requirements. Calculations shall be submitted when requested by Engineer.

NOT TO BE USED FOR BIDDING PURPOSES

1.3 DELIVERY, STORAGE, AND HANDLING

A. Materials shall be handled, transported, and delivered in a manner which will prevent bends, dents, significant coating damage, or corrosion. Damaged materials shall be promptly replaced. Structural metal work shall be stored on blocking so that no metal touches the ground and water cannot collect thereon. The material shall be protected against bending under its own weight or superimposed loads.

B. Bolting materials shall be stored indoors. Weld rod shall be stored in accordance with the supplier's instructions and AWS D1.1.

1.4 FABRICATOR QUALIFICATION

A. All fabricating plants providing structural steel shall be qualified fabricators who participate in the AISC Certification program and are designated an AISC Certified Plant, Category BU.

PART 2 - PRODUCTS

2.1 GENERAL

A. All materials needed for both shop and field assembly shall be furnished.

2.2 MATERIALS

Steel	
Shapes (W, WT)	ASTM A992.
Shapes (S, M, HP, C)	ASTM A36 or ASTM A572 Grade 50.
Other Shapes (angles)	ASTM A36.
Plates and Bars	ASTM A36.
Sheets	ASTM A1008 CS Type B or A1011 CS Type B.
Pipe	ASTM A53, Type E or S, Grade B (F_y = 35 ksi).
Round Structural Tubing	ASTM A500, Grade C (F_y = 46 ksi).
Square and Rectangular Structural Tubing	ASTM A500, Grade C (F_y = 50 ksi).
Bolts and Nuts	
Bolts, High Strength	ASTM F3125, Grade A325.
Bolts, Tension Control Type (Twist off)	ASTM F3125, Grade 1852.
Bolts, unfinished	ASTM A307.
Nuts, Heavy-Hex	ASTM A563, grade and finish compatible with bolts.

NOT TO BE USED FOR BIDDING PURPOSES

Nuts, Self-Locking	Prevailing torque type; IFI-100, Grade A.
Washers	
Flat, Hardened	ASTM F436, Type 1.
Lock	ANSI/ASME B18.21.1, helical spring type.
Beveled	ASTM F436.
Load Indicator	ASTM F959, compressible-washer-type direct tension indicator; type compatible with bolts tested in accordance with Article 10.2 of ASTM F959.
Threaded Rods (Including Hanger Rods for Pipe Supports)	ASTM A36. Threaded rods shall have sufficient threading to permit the maximum adjustment available. Continuously threaded rod is not acceptable for rods over 12 inches in length.
Forged Steel Sleeve Nuts	AISI C-1018, Grade 2.
Stainless Steel	
Shapes	ASTM A1069 or A276, Type 316L.
Plates	ASTM A240, Type 316L.
Pipe	ASTM A312, Grade TP316L.
Tube	ASTM A269, Grade TP316L.
Bolts	ASTM F593, Alloy Group 1 or 2, minimum yield strength of 45 ksi.
Nuts	ASTM F594, Alloy Group shall match that of the bolts. Nuts shall have a minimum proof stress equal to or greater than the minimum full-size tensile strength of the bolts.
Washers	
Flat	ANSI/ASME B18.22.1, Type 316.
Lock	ANSI/ASME B18.21.1, helical spring type, Type 316.
Threaded Rods (Including Hanger Rods for Pipe Supports)	ASTM A593, Alloy Group 1 or 2, minimum yield strength of 45 ksi.
Aluminum	
Sheet and Plate	ASTM B209, Alloy 6061-T6.
Rolled Sections	ASTM B308, Alloy 6061-T6. All members shall be Aluminum Association standard shapes. Special shapes with sloping flange surfaces, or Army-Navy type members, shall not be used unless specifically indicated on the Drawings.
Rod and Bar (Rolled or Drawn)	ASTM B211, Alloy 6061-T6 or 2017-T4.
Extrusions	ASTM B221, Alloy 6063-T5 or T6.

NOT TO BE USED FOR BIDDING PURPOSES

Pipe	ASTM B429, Alloy 6061-T6.
Rivets	ASTM B316, Alloy 6061-T6.
Bolts, Aluminum	ASTM F468, Alloy 2024-T4.
Nuts, Aluminum	ASTM F467, Alloy 6061-T6.
Washers, Aluminum	
Flat	ANSI/ASME B18.22.1, Type 6061 T-6.
Lock	ANSI/ASME B18.21.1, helical spring type, Type 6061-T6.
Weld Metal (Steel Connections)	ANSI/AWS D1.1, Table 3.1, filler metal with minimum 70 ksi tensile strength unless otherwise required.
Rails	
Crane	ASTM A1.
Railroad	ASTM A1.
Shop Coatings	
Universal Primer	As indicated in the Protective Coatings section.
Bituminous Paint	Metal fabricator's standard product.
Galvanizing	ASTM A123, A153, A385, and F2329 as applicable.

2.3 STAIRS

A. Stairs shall be fabricated to the dimensions, arrangements and sizes indicated on the Drawings. Stairs shall be true to line and slope, shall be rigidly supported, and shall be braced and tightened to prevent movement. All treads shall be level and in perfect alignment and spacing.

B. After installation, stairs shall be rigid and shall not sway noticeably or deflect under foot traffic. If necessary to prevent noticeable movement, additional supports or bracing shall be provided.

C. Stair Design

1. Stairs shall be designed by the stair supplier in general accordance with details indicated on the Drawings. The design shall comply with all applicable provisions of the local building code, ANSI A117.1, and OSHA as applicable. The drawings shall be sealed by a professional engineer registered in the state of the project. If requested, sealed calculations shall be submitted to Engineer.

2. The completed fabrications shall support a uniform live load of 100 lbs per square foot and a concentrated load of 300 lbs applied at the center of the span. Individual treads and platforms shall be designed to support a uniform live load of 100 lbs per square foot or a 300 lb concentrated live load applied on an area of 4 square inches. Vertical deflections under full live load shall be limited to span/240. Stairs and landings shall be braced or otherwise designed to avoid noticeable sidesway.

NOT TO BE USED FOR BIDDING PURPOSES

3. The stair design and details shall be coordinated with the handrailing and guardrailing supplied. Stair members shall be adequate to accept loads from the rail posts based upon the criteria in the Metal Railings section.

4. Connections between the stair members and the supporting structure shall be adequate to transfer all loadings, and shall be designed in accordance with all applicable provisions of the AISC manual and ACI 318 Chapter 17. The number and type of connections shall comply, at a minimum, with the Drawings. All necessary brackets, bolts, and anchors shall be provided.

D. Nosings

1. All stair treads shall have non-skid nosings, either fabricated integrally with the tread or attached with stainless steel bolts and self-locking nuts.

E. Grating Stairs

1. Treads shall be fabricated from grating material in accordance with the Metal Gratings section.

F. Pan Type Stairs

1. Risers and subtreads shall be fabricated from 12 USS gage steel and subplatforms from 10 USS gage steel. Fill depth shall be 2 inches for treads and 3 inches for platforms. Each riser shall have an integral non-slip nosing and a formed sanitary cove, located so that the toe of the cove will be at the surface of the concrete fill or applied finish.

2.4 STRUCTURAL STEEL BOLTED CONNECTIONS

A. Bolt holes shall have a diameter nominally 1/16 inch larger than the nominal bolt diameter. Bolt holes for one ply of vertical diagonal bracing connections may be oversized to a diameter nominally 3/16 inch larger than the nominal bolt diameter.

2.5 SHOP COATING

A. All items shall be shop coated as specified herein. The requirements for field painting are covered in the Protective Coatings section.

B. Contact surfaces of structural steel slip critical bolted connections shall not be shop coated. Contact surfaces of structural steel bearing type bolted connections may be shop coated.

C. Cleaning

1. Surfaces shall be dry and of proper temperature when coated, and shall be free of grease, oil, dirt, dust, grit, rust, loose mill scale, weld flux, slag, weld spatter, and other objectionable substances. Articles to be galvanized shall be pickled before galvanizing. All other ferrous metal surfaces shall be cleaned by solvent, high-speed power wire brushing or by blasting to the extent recommended by the paint manufacturer and as required in the Protective Coatings section.

NOT TO BE USED FOR BIDDING PURPOSES

D. Edge Grinding

1. Sharp projections of cut or sheared edges of ferrous metals which will be submerged in operation, except for items specified to be hot-dip galvanized, shall be ground to a radius as needed to ensure satisfactory paint adherence and as required in the Protective Coatings section.

E. Prime Painted Steel

1. Unless otherwise specified or indicated on the Drawings, all ungalvanized steel shall be given a shop coat of universal primer after fabrication. The dry film thickness of the universal primer shall be at least 5 mils. Steel surfaces shall be prime-coated as soon as practicable after cleaning. Steel shall not be moved or handled until the shop coat is dry and hard.

F. Galvanizing

1. Steel materials required to be galvanized are indicated on the Drawings. All galvanizing shall be done by the hot-dip process after fabrication. An approved zinc-rich paint shall be used to touch up minor coating damage, in accordance with ASTM A780. Materials with significant coating damage shall be regalvanized or replaced.

2. Bolts, nuts, and washers shall be galvanized when connected materials are galvanized or where indicated on the Drawings. The use of zinc-plated bolts will not be acceptable.

G. Stainless Steel

1. Unless otherwise specified, all items fabricated from stainless steel shall be thoroughly cleaned and degreased after fabrication. Pickling or a light blast cleaning shall produce a modest etch and remove all embedded iron and heat tint. Surfaces shall be subjected to a 24 hour water test or a ferroxyl test to detect the presence of residual embedded iron and shall be retreated as needed to remove all traces of iron contamination. Surfaces shall be adequately protected during shipping and handling to prevent contact with iron or steel objects or surfaces.

H. Aluminum

1. All surfaces of aluminum which will be in contact with concrete, mortar, or dissimilar metals shall be given a coat of bituminous paint.

PART 3 - EXECUTION

3.1 STRUCTURAL STEEL ERECTION

A. Structural steel shall be erected so that individual pieces are plumb, level, and aligned within a tolerance of 1:500. The elevations of the top of floor and roof members shall be within 1/16 inch of the elevations indicated on the Drawings. The faces of girts and other supporting members for rigid wall panels shall be in vertical planes within a maximum variation of 1/8 inch.

NOT TO BE USED FOR BIDDING PURPOSES

B. All members and parts, as erected, shall be free of warps, local deformations, and unauthorized bends. All parts shall be assembled accurately as indicated on the Drawings. Light drifting will be permitted to draw parts together, but drifting to match unfair holes will not be permitted. Any enlargement of holes necessary to make connections in the field shall be done by reaming with twist drills and only with the approval of Engineer. Enlarging holes by burning will not be permitted.

C. Baseplates shall be set level in exact position and grouted in place.

D. Inspection and Testing

1. Special inspection will be performed as indicated in the Code Required Special Inspections and Procedures section. The erector shall provide access as needed to facilitate all inspections and shall provide timely notification during erection when inspection milestones are approaching.

3.2 STRUCTURAL STEEL BOLTED CONNECTIONS

A. Unless otherwise indicated on the Drawings, bolted connections for structural steel, as defined in the AISC manual, shall be made with ASTM F3125 high strength bolts conforming to the "Specification for Structural Joints Using High-Strength Bolts" as approved by the Research Council on Structural Connections. The method of installation, pretensioning procedures, bolting equipment and tools shall likewise conform to the above referenced standard.

B. When assembled, all joint surfaces, including those adjacent to the bolt heads, nuts, or washers, shall be free of loose mill scale, dirt, burrs, oil, and other foreign material that would prevent solid seating of the parts.

C. Beveled washers shall be used when the bearing faces of bolted parts have a slope of 1:20 or greater with respect to a plane perpendicular to the bolt axis. Bolt length shall be increased as needed to accommodate the beveled washers.

D. Tightening of each connection assembly shall progress systematically from the most rigid part of the joint toward the free edges until all have been sufficiently rotated or the load indicator washers on all bolts have been closed to the average gap stipulated by the load indicator washer manufacturer.

E. Except as otherwise indicated on the Drawings or specified herein, bolted connections shall be bearing type with threads excluded from the shear plane. Slip critical connections shall be used in diagonal bracing connections, where oversize holes or slotted holes parallel to the direction of the load are used, and where indicated on the Drawings.

NOT TO BE USED FOR BIDDING PURPOSES

F. Bolts in all structural steel connections, both bearing and slip critical, shall be fully pretensioned in accordance with the AISC standards unless specifically noted otherwise on the Drawings. The calibrated wrench method of pretensioning bolts will not be acceptable. Acceptable pretensioning methods are as follows:

Connection Type	Acceptable Pretensioning Method
Bearing	Turn of the nut method and load-indicator washers are acceptable. Tension control (twist-off) type bolts may be used only if approved by Engineer.
Slip-Critical	Load indicator washers.

G. Turn of the Nut Method

1. The bolt, nut, and material shall be match marked. A wax lumber marker or paint shall be used to clearly mark the assembly.

H. Load-Indicator Washers

1. Load indicator washers shall be installed in accordance with the manufacturer's recommendations, as supplemented herein. To facilitate proper tightening of fastener assemblies with load indicator washers, a hardened flat washer shall be installed under the turned element (bolt head or nut) and between the turned element and the load indicator washer protrusions, in all cases. Whenever possible, the load indicator washer shall be installed on the head end of the bolt. If the bolt head will not be visible for inspection of the indicator washer after installation, or if the bolt head must be turned to tighten the assembly, the load indicator washer may be installed on the nut end of the bolt.

I. Tension Control (Twist-off) Bolts

1. Patented tension control bolts shall be of equivalent size and strength to the indicated high strength bolts, and shall be installed in strict accordance with the manufacturer's instructions. Load-indicator washers are not required on tension control bolts.

3.3 STRUCTURAL AND STAINLESS STEEL WELDING

A. Welding and related operations shall conform to applicable provisions of AWS D1.1 for steel and AWS D1.6 for stainless steel. All welding shall be performed in accordance with written procedures, using only those joint details which have prequalified status. All welding shall be performed by welders qualified in accordance with the American Welding Society.

B. Welds not dimensioned on the Drawings shall be sized to develop the full strength of the least strength component of the connection.

C. All butt and miter welds shall be continuous and, where exposed to view, shall be ground smooth. Intermittent welds shall have an effective length of at least 2 inches and shall be spaced not more than 6 inches apart.

D. Surfaces within 2 inches of a weld shall be free from loose or thick scale, slag, rust, moisture, grease, paint and other foreign materials that would prevent proper welding or release objectionable fumes.

NOT TO BE USED FOR BIDDING PURPOSES

E. Only shielded metal arc, gas metal arc, flux cored arc, submerged arc, and gas tungsten arc welding are permitted. For flux cored arc welding, only E70xx one (1) or five (5) wire electrodes with supplemental gas shielding shall be permitted. Use of electroslag or electrogas welding processes or the short-circuiting transfer mode of the gas metal arc process will not be acceptable.

F. Field welded connections shall not be substituted for field bolted connections indicated on the Drawings.

3.4 STRUCTURAL ALUMINUM

A. Unless otherwise noted, all work shall conform to applicable provisions of the Aluminum Association "Specification for Aluminum Structures."

B. Connections

1. Connections not specifically detailed on the Drawings shall develop the full strength of the least strength member of the connections. Bolted connections shall be all-bolted bearing type, equipped with a helical spring lock washer under the stationary element (bolt head or nut) and a flat washer under the turned element. All bolts shall be fully tightened. Bolts and nuts for structural aluminum connections shall be stainless steel. A sufficient number of bolts shall be provided in each connection to develop the shear strength of the member.

2. Welded connections shall be made in accordance with the American Welding Society D1.2, Structural Welding Code - Aluminum. All welding shall be performed by welders qualified in accordance with American Welding Society. Welds shall be free of porosity, cracks, holes, and flux. Welded connections shall not be substituted for bolted connections without prior approval of Engineer.

C. Erection

1. Structural aluminum shall be erected so that individual pieces are plumb, level, and aligned within a tolerance of 1:500. The elevation of horizontal members shall be within 1/16 inch of the elevation indicated on the Drawings.

End of Section

NOT TO BE USED FOR BIDDING PURPOSES

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NOT TO BE USED FOR BIDDING PURPOSES

SECTION 05 52 13 - METAL RAILINGS

PART 1 - GENERAL

1.1 SCOPE

A. This section covers the design, fabrication and installation of handrailing and standard guardrailing. Concrete and masonry anchorage, structural metals, and miscellaneous metal fabrications are covered in other sections.

1.2 GENERAL

A. Fabricated items which are indicated on the Drawings but not mentioned specifically herein shall be fabricated in accordance with the applicable requirements of this section.

B. All guardrailing and handrailing shall be aluminum.

1.3 SUBMITTALS

A. General

1. Complete data, detailed drawings, and setting or erection drawings covering all materials shall be submitted in accordance with the Submittal Procedures section. Each separate piece shall be marked.

2. Railing drawings shall be sealed by a professional engineer registered in the state of the project.

3. Data shall be submitted to certify that railings meet all applicable requirements of the codes as specified herein and the Specifications and Drawings. Engineer may request copies of all supporting calculations.

B. Samples.

1. Samples shall be submitted to indicate finishes. Samples of each type of fitting required to complete the installation shall also be submitted.

NOT TO BE USED FOR BIDDING PURPOSES

PART 2 - PRODUCTS

2.1 GENERAL

A. Railing systems shall be designed and fabricated by companies normally engaged in the manufacture of such systems. Railing products shall be from a single supplier and the installed systems shall have a uniform appearance throughout the project.

B. At Contractor's option, handrailing and guardrailing shall be either shop fabricated welded systems or prefabricated nonwelded systems designed for field assembly. Welded railing systems shall be fabricated from pipe and accessories by metal fabricators experienced in designing and fabricating welded railing.

2.2 PERFORMANCE AND DESIGN REQUIREMENTS

A. Railing System Design Criteria.

1. All railing systems shall be designed and fabricated in compliance with the most stringent requirements of the applicable local building code, OSHA 29 CFR Part 1926 Subpart R, and all other pertinent OSHA regulations and local safety regulations.

2. Handrails for handicapped accessible areas shall comply with the requirements of the local building code, ANSI 117.1 Uniform Federal Accessibility Standards, and the accessibility standards of the Americans with Disabilities Act.

3. In case of conflicting requirements the more stringent requirements shall be applicable.

4. At a minimum, guardrailing and handrailing shall be designed to withstand a uniform load of 50 lb per ft applied in any direction at the top, and a concentrated load of 200 lb applied in any direction at any point along the top. The uniform load and the concentrated load need not be assumed to act concurrently. The design load shall be transferred through the entire railing system and its attachment to the structure.

5. Intermediate rails, including balusters on picket-type systems, shall be designed to withstand a horizontally applied normal load of 50 lb on an area not to exceed 12 inches by 12 inches including openings and space between rails. The load shall be located so as to produce the maximum effects. Reactions due to this loading are not required to be superimposed with the loads specified for the top rail and handrail.

6. An allowable stress increase of 1/3 shall not be incorporated into the design of any part of the railing system.

7. Maximum spacing for railing posts shall be 6 ft.

B. Aluminum Rails.

1. Handrails and guardrails shall be fabricated from 1-1/2 inch ID aluminum pipe. Pickets shall be fabricated from 3/4 inch ID aluminum pipe.

C. Kickplate.

1. Kickplates shall be four inches high and shall be fabricated from similar materials as the railing. Kickplates shall clear the walking surface by 1/4 inch.

D. Fasteners.

1. Unless noted otherwise, all fasteners shall be stainless steel. Where galvanized bolts are indicated on the Drawings or specified, the use of zinc-plated bolts will not be acceptable. Railings shall be fastened to fittings with through bolts or flush set screws; glued or pop

NOT TO BE USED FOR BIDDING PURPOSES

riveted connections are not permitted. Fastener details shall be indicated on the submittal drawings.

E. Guarding of Openings.

1. Openings in railing shall be guarded by self-closing gates in accordance with OSHA 1910.23. Gates shall be the product of a manufacturer specializing in the design of safety systems.

F. Removable Guardrail.

1. Removable guardrail sections shall be designed so that each section has at least two, but not more than three posts.

G. Expansion Control.

1. Guardrailing in outdoor locations shall have slip joints at least every 60 ft and at all concrete expansion joints to permit expansion and contraction. The gap at each slip joint shall be not less than 1/4 inch.

H. Mounting to Structure.

1. Railing systems shall be mounted to structures as indicated on the Drawings. If mounting details are not indicated, railing posts shall be surface mounted with base flanges or side mount brackets secured to concrete by stainless steel adhesive anchors. Bolt sizes and pattern shall be as needed for the mounting device.

2.3 ACCEPTABLE MANUFACTURERS

A. Metal railing shall be by Julius Blum & Co, Thompson Fabricating, Kee Industrial Products, VIVA Railings, or approved equal.

2.4 MATERIALS

Aluminum Systems

Pipe	ASTM B429, Alloy 6063-T6, Schedule 40 minimum thickness.
Plates	ASTM B209, Alloy 6061-T6.
Fittings, Welded	Angles, offsets, tees, ells, crosses, caps for aluminum, ASTM B429, Alloy 6063-T6, Schedule 40 minimum thickness.
Fittings, Non-welded	Manufacturer's standard component fittings, extruded sections, ASTM B221, Alloy 6063-T5/T52.
Assembly Bolts, Nuts,	Stainless steel.

NOT TO BE USED FOR BIDDING PURPOSES

Washers, and Fasteners

Anchorage to Concrete or Masonry	Stainless steel adhesive anchors in accordance with the Anchorage in Concrete and Masonry section.
Anodic Finish	AA-M10C22A41, clear unless otherwise required.

2.5 FABRICATION

A. Unless otherwise indicated on the Drawings, all railings provided under this section shall be of the same type and design.

B. Welded Metal Railings.

1. All angles, offsets, or other changes in alignment in welded pipe railings shall be made with railing ells and welded connectors. Welded joints shall be flush type. Railings shall be smooth, with all projecting joints and sharp corners ground smooth. Members shall be neatly coped and continuously welded or mechanically connected at all junctions. Top rails shall run continuously over posts. All rails and posts shall be in the same plane and shall not be offset. All welding shall be done neatly and substantially by a process (e.g., TIG or MIG) producing a smooth weld. All weld spatter and burrs shall be removed, and all welds shall be thoroughly brushed with a stainless steel power wire brush.

2. Field joints shall be made with a spice-lock connector which shall provide a firm, permanent connection. The connector shall mechanically draw the railing sections together to form tight, hairline joint.

C. Guarding of Openings.

1. Openings in railing shall be guarded by self-closing gates. Self-closing gates shall be fabricated of the same materials with the same finish as the guardrailing. The closure device shall be Manufacturer's standard.

2.6 COATING

A. Aluminum.

1. All surfaces of aluminum which will be in contact with concrete shall be coated with bituminous paint. All surfaces of aluminum which will be in contact with dissimilar metals shall have a 15 mil thick sheet of oriented polyester film placed between the two surfaces.

2. All aluminum railings shall be provided with a clear anodic finish.

NOT TO BE USED FOR BIDDING PURPOSES

PART 3 - EXECUTION

3.1 INSTALLATION

A. When railings are assembled, all posts shall be plumb and longitudinal members shall be parallel with each other and with the floor surface or slope of stairs. In any section or run of railing, the center lines of all members shall be in true alignment, positioned in the same vertical plane. All posts in fixed handrail sections shall be rigidly attached to the supporting structure. After installation, railings shall be checked for final alignment, using a tightly drawn wire for reference. The maximum misalignment tolerance for railings shall be 1/8 inch in 12 ft. Bent, deformed, or otherwise damaged installations shall be replaced.

B. Attachment to Concrete.

1. Posts shall be attached to concrete structures as indicated on the Drawings. Base flanges and side-mount brackets shall be installed with minimal disturbance to the reinforcing steel. Bolts shall be stainless steel adhesive anchors as specified in the Anchorage in Concrete and Masonry section.

C. Attachment to Steel or Aluminum.

1. Attachments to steel or aluminum shapes shall be made with flanges or with other special attachments or anchorages as detailed on the Drawings.

D. Removable Attachments.

1. For removable guardrail sections in embedded sleeves, inner sleeves shall be set in outer sleeves in the same manner as specified herein for the setting of fixed posts. Particular care shall be taken to ensure that the inner sleeves are accurately spaced and plumbed, so that the guardrail sections, when set in position, will stand in proper alignment and will be removable without binding.

2. Removable guardrail sections with base flanges or side mount brackets shall be secured in the bases with removable screws.

E. Wall Mounted Handrailing.

1. Suitable wall brackets shall be provided where shown or required. Wall brackets shall be securely anchored to walls with stainless steel adhesive anchors as specified in the Anchorage in Concrete and Masonry section. Expansion anchors shall not be used unless specifically indicated on the Drawings.

F. Connections.

1. Welding connectors and splice locks shall be installed in accordance with the manufacturer's recommendations. Other methods of making connections and changes in alignment will be considered, provided complete information covering the proposed method is submitted to Engineer for review.

NOT TO BE USED FOR BIDDING PURPOSES

End of Section

NOT TO BE USED FOR BIDDING PURPOSES

SECTION 05 55 13 - METAL GRATINGS

PART 1 - GENERAL

1.1 SCOPE

A. This section covers the fabrication and installation of metal grating.

B. Both inch-pound (English) and SI (metric) units of measurement are specified herein; values expressed in inch-pound units shall govern.

1.2 GENERAL

A. Fabricated items which are indicated on the Drawings but not mentioned specifically herein shall be fabricated in accordance with the applicable requirements of this section.

B. All grating shall be aluminum unless called out otherwise in the drawings. All carbon steel grating shall be galvanized.

1.3 SUBMITTALS

A. Items listed in this article shall be submitted for review by Engineer in accordance with the Submittal Procedures section.

1. Detailed fabrication and erection drawings, indicating location of grating supports, profiles, thicknesses, piece lengths and widths, markings of panels, and fastening methods.

2. Clips and anchorage devices information.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Materials shall be handled, transported, and delivered in a manner which will prevent bends, dents, scratches, or damage of any kind. Damaged materials shall be promptly replaced. Materials shall be stored off the ground.

NOT TO BE USED FOR BIDDING PURPOSES

PART 2 - PRODUCTS

2.1 PERFORMANCE AND DESIGN REQUIREMENTS

A. Design Criteria.

1. Except as modified herein, the manufacture and fabrication of metal grating shall comply with NAAMM MBG 531 "Metal Bar Grating Manual", and NAAMM MBG 532

"Heavy-Duty Metal Bar Grating Manual". Grating depth shall be as indicated on the Drawings.

B. Carbon Steel Grating.

1. Carbon steel grating shall be the welded type. Bearing bars shall be at least 3/16 inch thick with center to center spacing of 1 3/16 inch . Cross bar center to center spacing shall be 4 inches . Grating shall be galvanized with a coating weight of at least 1.8 oz/sq. ft of coated surface.

C. Aluminum Grating.

1. Aluminum grating shall be the pressure locked type, with cross bars deformed or swaged to prevent turning. Bearing bars shall be at least 3/16 inch thick flat stock or equivalent I-bars, with center-to-center spacing of 1 3/16 inches. Cross bar center-to-center spacing shall be 4 inches. Grating shall have a mill finish.

2.2 MATERIALS

Carbon Steel Grating	ASTM A1011
Aluminum Grating	ASTM B221, 6061-T6 or 6063-T6 for bearing bars. ASTM B221, 6061-T1 for cross bars.
Grating Stair Treads	Grating stair treads shall match the material and finish of grating in adjacent platforms and floors. Treads shall have a permanently attached or integral non-skid nosing.
Grating Fasteners	Manufacturer's standard, AISI Type 316 stainless steel.
Clips, Bolts, Nuts, Washers	Manufacturer's standard, AISI Type 316 stainless steel.
Welded Threaded Steel Studs	ASTM A108 fully threaded studs automatically welded with compatible nuts and washers; TRW Nelson Type CFL or equal.
Stepped Locking Fasteners	Non-penetrating, non-welded mechanical fasteners, with stainless steel clips and bolts, galvanized cast iron body; Lindapter "Grate-Fast" or Grating Specialty Co. "G-Clip".

2.3 FABRICATION

A. Grating shall be fabricated in panels that can be easily handled by plant personnel. Unless otherwise indicated on the Drawings, the weight of individual panels shall not exceed 150 lbs.

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Cross bars and edge bars of adjacent panels shall align. After installation, there shall be not more than 1/4 inch clearance between panels. All bearing bars shall be parallel. Bands and toeplates shall align within 1/8 inch tolerance, vertical and horizontal.

B. Angular, circular, and re-entrant cuts in steel grating may be made by flame cutting. All other cuts in steel grating shall be sawed or sheared. Cuts shall be clean and smooth, without fins, beads, or other projections. Any damaged protective coating shall be fully restored.

C. All cuts in aluminum grating shall be sawed or sheared.

D. Grating panels shall be arranged so that openings are centered on a joint between panels. Toeplates extending the full depth of the grating and four inches above the top shall be provided around openings. Toeplates shall be welded to each bearing bar. The ends of bearing bars need not be banded unless required by the Drawings. Bands shall be welded to the first, the last, and every fourth intermediate bar. Bands and toeplates shall be 3/16 inch thick. Crossbars shall be cut off flush with the outside face of side bars.

E. Steel frames anchored to or cast in concrete to support grating shall be stainless steel or hot-dip galvanized after fabrication.

2.4 SHOP COATING

A. Galvanizing.

1. All galvanizing shall be done by the hot-dip process after fabrication, in conformity with the requirements of ASTM A123, A153, and A385.

B. Aluminum.

1. All surfaces of aluminum which will be in contact with concrete, mortar, or dissimilar metals shall be given a coat of bituminous paint.

PART 3 - EXECUTION

3.1 GENERAL

A. All grating shall lie flat, with no tendency to rock when installed. Poorly fitting or damaged grating shall be rejected. Grating openings may be field cut with the approval of Engineer, provided that no more than four adjacent bearing bars are cut. If the grating is cut or modified in the field, affected surfaces shall be repaired or sealed to assure restoration of the corrosion resistance of the grating. Field cut openings must be spaced so that there are at least as many continuous bars between each opening as there are cut bars at the opening.

3.2 ATTACHMENTS TO SUPPORTING STRUCTURE

A. All grating supported on steel or aluminum structures shall be attached. Grating shall be attached to the supporting structure in accordance with the grating manufacturer's

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recommendations and submittals. Single span grating over openings in concrete may rest unattached in recesses constructed for that purpose.

B. Prime Painted Steel Supports.

1. Unless otherwise required or indicated on the Drawings, clip or flange block fasteners or stepped locking fasteners shall be used to attach grating to prime painted steel supports. Clip fasteners shall be secured to the supporting steel with through bolts in drilled holes. Through bolts shall be stainless steel. Fusion welded threaded studs may be utilized if the primer is removed before welding or if a suitable weldable primer is used. Welded studs shall be cleaned and prime painted to match the support steel prior to finish painting.

C. Galvanized Steel Supports.

1. Unless otherwise indicated on the Drawings, stepped locking fasteners shall be used to attach grating to galvanized steel supports. The galvanized coating shall not be damaged.

D. Stainless Steel and Aluminum Supports.

1. Unless indicated otherwise on the Drawings, clip or flange block fasteners or stepped locking fasteners shall be used to attach grating to stainless steel or aluminum supports. Fasteners shall be secured to the supporting structure with stainless steel through bolts in drilled holes. Welded fasteners shall not be used.

3.3 FINISH TOUCHUP

A. After erection, all grating shall be cleaned. Damaged coatings shall be touched up in accordance with the grating manufacturer's recommendations to fully restore the corrosion resistance of the grating.

End of Section

NOT TO BE USED FOR BIDDING PURPOSES

SECTION 05 81 00 - ANCHORAGE IN CONCRETE AND MASONRY

PART 1 - GENERAL

1.1 SCOPE

A. This section covers the design and installation of anchors in concrete and masonry. It includes cast-in-place anchor bolts and anchor rods, adhesive anchors for both threaded rods and reinforcing bars, expansion anchors, and undercut anchors.

1.2 GENERAL

A. Anchors Designed by Engineer

1. Cast-in-place and post-installed anchors that are fully detailed on the Drawings have been designed by Engineer and may not be changed to a different type without written approval of Engineer.

B. Anchors Designed by Contractor's Suppliers

1. Contractor's material suppliers shall be responsible for design of anchors for railings, ladders, equipment, pre-engineered structures, and other manufactured items, as indicated in the Drawings and Specifications. Anchors shall be designed for all operating conditions, including wind and seismic loadings when indicated in the Meteorological and Seismic Design Criteria section.

2. Cast-in-place anchors shall be used unless post-installed types are indicated on the Drawings or accepted by Engineer. Post installed anchors into concrete or masonry shall be designed in accordance with the anchor manufacturer's research report.

3. Adhesive anchors used in vibrating applications shall only be used if the anchor manufacturer submits documentation indicating that the product is suitable for the anticipated service conditions.

4. Seismic anchorage design for non-structural components shall include the overstrength factors indicated in ASCE 7, Tables 13.5-1 and 13.6-1, when applicable.

5. Design of anchorage into concrete shall be in accordance with ACI 318 Chapter 17, shall consider concrete to be cracked, and shall not include the strengthening effects of supplementary reinforcement or anchor reinforcement unless approved by Engineer.

6. Design of anchorage into masonry shall be in accordance with TMS 402.

7. Shop drawings for anchor bolts, anchor rods, and post-installed anchors shall include full details and shall be sealed by a professional engineer licensed in the state of the project. Calculations shall be furnished when requested by Engineer.

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C. Materials

1. Unless otherwise indicated, anchors of structural steel members connected to concrete shall have a diameter of at least 3/4 inch, and structural members connected to masonry shall have a diameter of at least 5/8 inch. Anchors for ladders and equipment shall have a diameter of at least 1/2 inch. Anchors for pedestrian railing systems shall have a diameter of at least 3/8 inch.

2. Unless otherwise indicated on the Drawings, anchors used in the following locations and applications shall be of the indicated materials.

Cast-In-Place Anchor Bolts and Anchor Rods	
Submerged locations	Stainless steel.
Locations subject to splashing	Stainless steel.
Buried locations	Stainless steel.
Anchorage of structural steel columns	Galvanized steel.
Other exterior locations	Galvanized steel.
Interior locations not subject to corrosion	Carbon steel.
Adhesive, Expansion, and Undercut Anchors	
Submerged locations	Stainless steel.
Locations subject to splashing	Stainless steel.
Buried locations	Stainless steel.
Anchorage of structural steel columns	Stainless steel.
Other exterior locations	Stainless steel.
Interior locations not subject to corrosion	Carbon steel.

1.3 SUBMITTALS

A. Drawings and Data

1. Data, catalog cuts, and manufacturer's research reports (from independent organizations such as ICC-ES or IAPMO UES) indicating the manufacturer and types of adhesive anchors, expansion anchors, and undercut anchors to be supplied shall be submitted in accordance with the Submittal Procedures section.

B. Calculations

1. If Contractor requests use of products other than those indicated herein, calculations may be required as part of the submittal package. Calculations shall be prepared by a professional engineer licensed in the state of the project, using methods and procedures required by the building code. Contractor shall demonstrate that the proposed substitute anchors are equivalent in all necessary criteria, including strength, spacing and edge distance limitations, embedment depth limitations, temperature limitations, and any other criteria required by Engineer.

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1.4 DELIVERY, STORAGE, AND HANDLING

A. Materials shall be handled, transported, and delivered in a manner which will prevent damage or corrosion. Damaged materials shall be promptly replaced. Materials shall be shipped and stored in original manufacturer's packaging.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Unless otherwise indicated on the drawings, materials shall be as indicated below.

Cast-In-Place Anchor Bolts and Anchor Rods	
Carbon steel	ASTM F1554, Grade 36 with compatible nuts.
Galvanized steel	ASTM F1554, Grade 36 with compatible nuts; hot-dip galvanized, ASTM F2329.
Stainless steel	Bolts, ASTM F593, Alloy Group 1 or 2 (minimum yield strength of 45 ksi); nuts, ASTM F594, Alloy Group 1 or 2.
Flat Washers	ANSI B18.22.1, of the same material as anchor bolts and nuts.
Expansion Anchors in Concrete	Products shall be single component anchors tested in accordance with ICC AC193, and shall have a manufacturer's research report in compliance with the applicable building code. The anchors shall be approved for use in cracked concrete, and for resisting seismic forces. Hilti "Kwik-Bolt TZ2" Simpson "Strong-Bolt 2", or DeWalt "Power-Stud+SD2" (carbon steel), "Power-Stud+SD4" (304 stainless steel), and "Power-Stud+SD6" (316 stainless steel).
Expansion Anchors in Grouted Concrete Masonry Units	Products shall be single component anchors tested in accordance with ICC AC01, and shall have a manufacturer's research report in compliance with the applicable building code. Hilti "Kwik-Bolt 1," Simpson "Wedge-All," or DeWalt "Power-Stud+ SD1."
Undercut Anchors in Concrete	Products shall be tested in accordance with ICC AC193, and shall have a manufacturer's research report in compliance with the applicable building code. Hilti "HDA Undercut Anchor" (carbon steel) and "HDA-R Undercut Anchor" (stainless steel), or DeWalt "Atomic+ Undercut Anchor" (A36 carbon steel).
Adhesive Anchors in Concrete	Products shall be tested in accordance with ICC AC308, and shall have a manufacturer's research report in compliance with the applicable building code. The anchors shall be approved for use in cracked concrete, and for resisting seismic forces.
Threaded Rods and Nuts (Carbon Steel)	ASTM A307 or ASTM F1554 Grade 36.

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Threaded Rods and Nuts (Stainless Steel)	ASTM F593, CW.
Reinforcing Bars	ASTM A615, Grade 60, deformed.
Reinforcing Bars, weldable	ASTM A706, Grade 60, deformed.
Adhesive	Hilti "HIT-HY 200," or DeWalt "Pure 110+."
Adhesive Anchors in Grouted Concrete Masonry Units	Products shall be tested in accordance with ICC AC58, and shall have a manufacturer's research report in compliance with the applicable building code.
Threaded Rods and Nuts (Carbon Steel)	ASTM A307 or ASTM F1554 Grade 36.
Threaded Rods and Nuts (Stainless Steel)	ASTM F593 CW (Hilti or Powers systems), or ASTM A193 Grades B6, B8, or B8M (for Simpson system).
Adhesive	Hilti "HIT-HY 270," DeWalt "AC100+ Gold," or Simpson "SET XP."
Adhesive Anchors in Hollow Concrete Masonry Units	Products shall be tested in accordance with ICC AC58, and shall have a manufacturer's research report in compliance with the applicable building code.
Threaded Rods and Nuts (Carbon Steel)	ASTM A307 or ASTM F1554 Grade 36.
Threaded Rods and Nuts (Stainless Steel)	ASTM F593 CW (Hilti or Powers systems), or ASTM A193 Grades B6, B8, or B8M (for Simpson system).
Adhesive	Hilti "HIT-HY 270," DeWalt "AC100+ Gold," or Simpson "SET XP."
Screen Tubes	As recommended by the manufacturer.
Adhesive Anchors in Unreinforced Brick Masonry	Products shall be tested in accordance with ICC AC60, and shall have a manufacturer's research report in compliance with the applicable building code.
Threaded Rods and Nuts	ASTM A307.
Adhesive	Hilti "HIT-HY 270," DeWalt "AC100+ Gold", or Simpson "SET."
Screen Tubes	As recommended by the manufacturer.

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2.2 ANCHORS

A. Cast-in-Place Anchor Bolts and Anchor Rods

1. Cast-in-place anchor bolts and anchor rods shall have forged heads or embedded nuts and washers. Anchors shall be delivered in time to permit setting prior to the placing of structural concrete or masonry grout. Anchor sleeves shall not be used unless acceptable to Engineer. Unless installed in sleeves, anchor bolts and anchor rods shall be provided with sufficient threads to permit a nut to be installed on the concrete side of the concrete form or the supporting template. Two nuts, a jam nut, and a washer shall be furnished for

cast-in-place anchor bolts and anchor rods indicated on the Drawings to have locknuts; two nuts and a washer shall be furnished for cast-in-place anchor bolts and anchor rods without locknuts.

B. Adhesive, Expansion, and Undercut Anchors

1. When adhesive, expansion, or undercut anchors are indicated on the Drawings, only acceptable systems shall be used. Acceptable systems shall include only those systems and products specified or specifically indicated by product name on the Drawings. Alternative anchoring systems may be used only when specifically accepted by Engineer.

2. Unless otherwise noted, single nuts and washers shall be provided with adhesive anchors, expansion anchors, and undercut anchors. Adhesive anchors shall be free of coatings that would weaken the bond with the adhesive.

3. Adhesive anchors in hollow CMU masonry and unreinforced brick masonry shall utilize screen tubes as recommended by the manufacturer.

PART 3 - EXECUTION

3.1 GENERAL

A. Anti-seize thread lubricant shall be liberally applied to projecting, threaded portions of stainless steel anchors immediately before tightening of the nuts.

B. Compliance with Manufacturer's Instructions

1. Post-installed anchors shall be installed in accordance with the manufacturer's printed installation instructions and all applicable requirements of the manufacturer's research report for the specific anchor system. If conflicts are found between the Drawings, the manufacturer's printed installation instructions, and the manufacturer's research report installation requirements, Contractor shall notify Engineer for resolution.

C. Special Inspection

1. Special inspection requirements for cast-in-place and post-installed anchors shall be as indicated in the Code-Required Special Inspections and Procedures section. Anchorage work shall be performed in a manner that allows the inspections to take place without adversely impacting the schedule.

3.2 CAST-IN-PLACE ANCHOR BOLTS AND ANCHOR RODS

A. Cast-in-place anchor bolts and anchor rods shall be carefully positioned with templates and secured in the forms prior to placing concrete, or in masonry bond beams prior to placing grout. Contractor shall verify that anchorage devices are positioned in accordance with the Drawings and with applicable equipment or structure submittal drawings.

B. Threads, bolts, and nuts spattered with concrete or masonry grout during placement shall be cleaned prior to final installation of the bolts and nuts.

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C. Sleeves shall be filled with non-shrink grout.

3.3 ADHESIVE ANCHORS

A. Adhesive shall be statically mixed in the field during application. All proportioning and mixing of the components shall be in accordance with the manufacturer's recommendations.

B. Anchors or bars shall be installed in holes hammer drilled into hardened concrete or masonry. Drill shall be set to rotation-only mode when drilling into hollow CMU or into brick. Diameter of holes shall be 1/16 inch larger than the outside diameter of the rod or bar unless recommended otherwise by the anchor system manufacturer. Holes shall be prepared by removing all dust and debris using procedures recommended by the adhesive manufacturer.

C. Adhesive anchors and holes shall be clean, dry, and free of grease and other foreign matter at the time of installation. The adhesive shall be placed and the rods or bars shall be set in accordance with the recommendations of the manufacturer. Care shall be taken to ensure that all spaces and cavities are filled with adhesive, without voids.

D. Concrete Installation

1. Unless indicated otherwise on the Drawings, reinforcing bars shall be embedded to a depth of 15 bar diameters, and threaded rods shall be embedded to a depth that will develop the yield strength of the rod.

2. Adhesive anchors in concrete shall be installed under the following conditions:

Minimum Age of Concrete Prior to Anchor Installation	21 days.
Concrete Temperature Range	Maximum short-term temperature 162° F, maximum long-term temperature 110° F.
Moisture Condition	Dry concrete.
Type of Lightweight Concrete	N/A
Hole Drilling and Preparation	Hammer drill only.

3. Installation of adhesive anchors into concrete that are either horizontal or upwardly inclined shall be performed only by personnel certified by the ACI/CRSI Adhesive Anchor Installation Certification Program.

E. Masonry Installation

1. Anchors shall be installed to meet all criteria in the manufacturer’s installation instructions and ICC-ES reports, including but not limited to minimum compressive strength at time of installation, minimum edge distances, minimum clearances from mortar joints, minimum anchor spacing, and use of screen tubes.

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3.4 EXPANSION AND UNDERCUT ANCHORS

A. Expansion and undercut anchors shall be installed using all procedures and accessory devices recommended by the anchor manufacturer.

End of Section

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DIVISION 6 - Wood, Plastics, and Composites

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SECTION 06 10 00 - ROUGH CARPENTRY

PART 1 – GENERAL

1.1 SCOPE

A. This section covers miscellaneous items required by the drawings to be of wood construction including temporary walls required for phasing of construction. Rough carpentry shall include:

1. Wood nailers and blocking.
2. Miscellaneous wood framing.
3. Exterior sheathing.
4. Rough hardware and fasteners.

1.2 SUBMITTALS

A. Drawings and data for rough carpentry and field fabricated items will not be required.

1.3 PROTECTION AND STORAGE

A. Lumber shall be protected and kept under cover, both in transit and at jobsite. Lumber shall be carefully stacked on suitable supports in a manner which will ensure proper ventilation and drainage.

B. All lumber shall be delivered to the jobsite bearing grade stamps of the Western Wood Products Association or Southern Pine Inspection Bureau. All lumber shall be segregated by grades. Extreme care shall be exercised in unloading the lumber to prevent damage, splitting, or breaking of materials.

C. All plywood shall be identified according to species, grade, and glue type by the stamp of the American Plywood Association.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Unless otherwise indicated on the drawings, materials shall be as indicated below.

Lumber	American Standard Lumber conforming to PS20, moisture content 19 percent or less; sized dry.
Structural Dressed	Southern pine or Douglas fir, S4S; structural light framing and structural joists and planks, No. 2;

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	studs, stud grade.
Pressure Treated	Southern pine, pressure treated with waterborne preservative (alkaline copper quaternary ammonium) in accordance with AWPA C1 and AWPA P5.
Plywood	
General Purpose	PS1, waterproof, resin-bonded, exterior type; APA Group 1, Grade Ext-BB, or better unless otherwise specified.
Fire Retardant	FR-S rated plywood, APA rated sheathing, exterior, span rating 32/16, Exposure 1, 3/4 inch thick, pressure treated with fire retardant chemicals, Hickson "Dricon".
Bolts and Nuts	ASTM A307, galvanized ASTM A153, Type NS, or zinc-plated ASTM B633, SC-4.
Wood Screws	18-8 stainless steel or brass.
Self-tapping Steel Screws	Length and size as required by code.
Nails	Galvanized or aluminum coated.
Rough Hardware	Galvanized steel, 18-8 stainless steel, brass, or aluminum.

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PART 3 - EXECUTION

3.1 ROUGH CARPENTRY

A. Rough carpentry shall include lumber work generally, except finish work.

B. The Contractor shall install all wood framing, blocking, and nailers as indicated on the drawings or required to complete a finished building. In addition to all framing indicated on the drawings, nailers, blocking, and other backing required for other work and trades shall be installed.

C. At all times during execution of this portion of the contract, sufficient workmen and supervisors shall be present who are thoroughly familiar with rough carpentry construction and the materials and techniques specified or indicated on the drawings.

D. All rough carpentry shall produce joints true, tight, and well nailed, with all members assembled in accordance with the drawings and with all pertinent codes and regulations.

E. Individual pieces of lumber shall be selected so that obvious defects will not interfere with the placement of bolts, proper nailing or making of joints. All pieces with defects which render them unusable shall be discarded. Individual pieces of lumber which are too small to use in fabricating the Work with minimum joints shall be discarded.

F. Whether or not lumber has been installed, it may be rejected by the Engineer for excessive splits, warp, twist, bow, crook, mildew, or fungus, as well as for improper cutting and fitting.

G. Carpentry work shall be set to required levels and lines, with members plumb and true.

H. Carpentry shall be securely attached to substrates by anchoring and fastening as indicated and as required for strength and by recognized standards.

I. Framing members shall not be bored or cut for pipes, ducts, conduits, or for any other reasons except where accepted by the Designer.

J. The premises shall be kept in a neat, safe, and orderly condition at all times during the execution of this portion of the Work and shall be free from accumulation of sawdust, cut ends, and other debris.

K. Connections between members shall be tight. Washers shall be provided under all bolt heads and nuts in contact with lumber. Installation of fasteners shall not cause splitting of wood.

L. Structural lumber in exterior locations; lumber in contact with concrete, masonry, earth, or water; and all wood nailers shall be pressure treated unless otherwise specified.

M. Nailers shall be provided where indicated on the drawings. The nailers shall be continuous and shall be installed level and straight. Each section of nailer shall be secured by at least two anchor bolts.

End of Section

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SECTION 06 71 00 – STRUCTURAL COMPOSITE SHAPES AND PLATES

PART 1 - GENERAL

1.1 SCOPE

A. This section covers the furnishing and installation of fiberglass reinforced plastic (FRP) fabrications.

B. Provide all labor, materials, equipment and incidentals as shown on the Drawings, specified and required to furnish and install fiberglass-reinforced plastic baffle walls and operational with all anchor bolts, fasteners and accessories.

C. All equipment furnished under this Section shall be the product of a single manufacturer.

D. Comply with the requirements of specification Section 03 - Concrete and Section 05 – Metals.

E. The following products shall be provided:

Baffle Walls.

Size and quantity. See Drawings

1.2 GENERAL

A. Manufacturer shall maintain a continuous quality control program in the manufacture of items furnished under this Section.

B. Provide letter or certificate describing quality control program.

C. Manufacturers shall have been a minimum of five years of experience producing substantially similar equipment and shall be able to show evidence of at least five installations in satisfactory operation.

D. Reference Standards: Comply with applicable provisions and recommendations of the following except as otherwise shown or specified.

1. ASTM D 256, Test Method for Determining the Izod Pendulum Impact Resistance of Notched Specimens of Plastics.

2. ASTM D 570, Test Method for Water Absorption of Plastics.

3. ASTM D 638, Test Method for Tensile Properties of Plastics.

4. ASTM D 696, Test Method for Coefficient of Linear Thermal Expansion of Plastics between -30°C and 30°C.

5. ASTM D 790, Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

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6. ASTM D 2583, Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.

7. AWWA F101, Contact-Molded, Fiberglass-Reinforced Plastic Wash Water Troughs and Launders.

8. AWWA F102, Matched-Die-Molded, Fiberglass-Reinforced Plastic Weir Plates, Scum Baffles, and Mounting Brackets.

9. Standards of the Reinforced Plastic/Composites Institute.

10. National Bureau of Standards, PS 15-69.

1.3 SUBMITTALS.

A. All submittals shall be made in accordance with the Submittal Procedures section.

B. The following items shall be submitted, as a minimum.

1. Manufacturer's information for all products supplied under this section, in the form of technical data sheets, certificates of compliance, test data, or reports.

2. Detailed and signed and sealed fabrication drawings / shop drawings, including each member's piece mark and dimensions, plans, sections, connection details and so on.

3. Samples of all products.

4. Signed and sealed structural calculations. Calculations shall include design criteria, loading, members analysis and design, connections and so on.

5. The design drawings and calculations shall be signed and sealed by a Registered Professional Engineer who may or may not be an employee of the manufacturer. The state of the Engineer's registration, their number and their name on the seal shall be clearly legible.

PART 2 - PRODUCTS

2.1 MATERIALS

FRP Fabrications	Vinyl ester resin, with a UV inhibitor. Strongwell, Fibergrate, or approved equal.
Longitudinal Tensile Strength	20,000 psi minimum, ASTM D638.
Longitudinal Tensile Modulus	1,800,000 psi minimum, ASTM D638.
Longitudinal Flexural Strength	24,000 psi minimum, ASTM D790.
Longitudinal Flexural Modulus	1,100,000 psi minimum, ASTM D790.
Full Section Modulus of Elasticity	2,000,000 psi minimum.

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Flame Spread Rating	25 or less, in accordance with ASTM E84.
Visual Requirements	ASTM D4385.
Fasteners	Type 316 stainless steel.

A. All materials and components of fiberglass fabrications for use in potable water facilities shall meet the applicable requirements of NSF/ANSI 61 and NSF/ANSI 600.

B. All surfaces of plastic laminate shall be sealed with a resin layer at least 5 mils thick.

2.2 BAFFLE WALLS

A. Baffle walls, and all required supporting members shall be molded style as manufactured by Plasti-Fab, Warminster, Nefco, MFG Water Treatment Products, or approved equal. Baffles walls, and all required supporting members shall be 1/4 inch thick and shall be fabricated to the shape indicated on the Drawings. The top surface shall be molded to shape and the top edge of each plate shall be straight within 1/32 inch . Molded surfaces shall be resin rich, free of voids, porosity, exposed glass, cracks or crazes.

B. The location, length and width of the baffle walls are indicted on the Drawings.

C. Baffle walls shall be designed so that at least 2 inches of horizontal and vertical adjustment is provided. Splice plates shall be designed to accommodate expansion and contraction.

D. Design for snow, wind, and seismic loads shall be as indicated in the Meteorological and Seismic Design Criteria section.

E. Baffle walls, and all required supporting members shall be fabricated in accordance with ANSI/AWWA F102-07.

F. Contractor shall coordinate the Baffles, and all required supporting members with all perimeter guardrails, guardrail support brackets, launder covers, and launder cover support brackets that are supplied by others.

G. Design Conditions for Weir Plates:

1. Minimum Wall Thickness (inches): 1/4

2. Maximum Ambient Temperature: 120°F

3. Minimum Ambient Temperature: 20°F.

4. Location: Aeration Basins 1 to 8

   a. Flow: 2778 gpm

NOT TO BE USED FOR BIDDING PURPOSES

H. Loadings:

1. Baffle walls shall be capable of supporting, within stress and deflection limitations, the following loads:

a. Gravity Loads: All downward vertical loads
b. Lateral Load: Loads acting against the walls, specifically, those induced by differential water levels on either side of the walls, wind loads and seismic loads.
c. When calculating deflection, fiber stress and other critical properties, use the maximum possible differential existing when the trough/launder is empty and the tank full, or when the trough is full and the tank is empty.

I. Torsional Stability: Design trough systems to resist torsional oscillations induced by the flow of water over the trough edges. Maximum allowable torsional oscillation sideways or torsionally during normal operating conditions shall be 3/8-inch. Provide torsional stabilization by methods described in Section 3.2.3.3 of AWWA F101 when torsional oscillation exceeds the maximum allowable limit.

J. Thermal Expansion/Contraction: Design trough and launder to accommodate a thermally-induced expansion or contraction in length over temperature range specified herein. Troughs/launders shall be capable of withstanding ambient temperature variations of up to 80°F that could occur within a 24-hour period without exceeding specified deflection or stress limitations.

K. Glass Fiber Stress: In addition to the deflection criteria specified above, design troughs/launders such that the maximum stress under the most severe loading condition does not exceed 1,500 psi.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Baffle Walls

1. Surfaces in contact with concrete shall be given a heavy coating of sealant as specified in the Caulking section before installation. Weir plates shall be adjusted after installation to provide uniform overflow rate at all points. Baffle walls shall be adjusted for proper freeboard.

3.2 FIELD COATING

A. Field Cut Surfaces

1. Field-cut surfaces shall be recoated with resin obtained from the fabricator.

End of Section

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DIVISION 7 - Thermal and Moisture Protection

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SECTION 07 53 20 - TPO ROOFING, FULLY ADHERED

PART 1 - GENERAL

1.1 SCOPE

A. This section covers the furnishing and installing of a fully adhered, single-ply membrane roof system, complete with vapor retarder, adhesives, fasteners, flashings, insulation, and accessories.

1.2 GENERAL

A. Except as otherwise indicated on the Drawings, all roof decks shall be covered with insulated, fully adhered single-ply membrane roofing system as indicated. The finished roof shall be watertight under all conditions of weather and service except physical damage due to unforeseen causes.

B. The roof system shall meet UL rating Class A and wind uplift FM classification 1-90. In addition, roofing system shall be designed to withstand 90 mph peak wind gusts for a minimum three seconds without damage.

C. Unless indicated otherwise, a complete total system guarantee covering all elements of the roofing system shall be furnished with this work. A warranty or guarantee which covers only the membrane will not be acceptable.

1.3 SUBMITTALS

A. Complete specifications and data covering the roofing systems and materials furnished under this section shall be submitted in accordance with the Submittal Procedures section.

B. Drawings shall be submitted showing outline of roof area and roof size, locations and types of roof penetrations, perimeter and penetration details, splice details, special details as needed, and installation instructions.

C. Drawings shall be submitted showing the insulation manufacturer's recommended layout for each area of tapered insulation and crickets, when such systems are indicated on the Drawings.

D. Samples of the roofing membrane, insulation, and fasteners shall be submitted. Test data for pullout resistance for fastening systems shall be provided.

E. Data shall be submitted showing compliance with UL requirements for the Class rating and the Factory Mutual wind uplift classification as indicated.

F. Evidence shall be submitted which shows the roofing system installer to be an authorized applicator of the system furnished.

1.4 SUBCONTRACTOR'S QUALIFICATIONS

A. Subcontractor shall be an installer who has met the highest level of installers for that manufacturer’s roofing system. Subcontractor shall submit a qualification letter from the roofing

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manufacturer stating that the roofing contractor is an applicator and is able to offer the 30-year Total System NDL Guarantee required for this specific project. This qualification letter must accompany bid to the General Contractor.

B. Unless indicated otherwise on the Drawings, work under this section shall be done by a qualified roofing subcontractor who has been in business for at least 5 years. The work shall be inspected by a representative of the membrane manufacturer to verify that materials and methods of application are in accordance with the recommendations of the manufacturer and with these specifications.

C. Subcontractor shall coordinate and attend a pre-construction roof meeting with the General Contractor and the roofing manufacturer's technical representative prior to roof installation. Subcontractor shall submit a NOA (Notice of Award) and project information to roofing manufacturer prior to project start.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Shipping shall be in accordance with the Product Delivery Requirements section. Handling and storage shall be in accordance with the Product Storage and Handling Requirements section.

B. Materials shall be delivered in original, unopened containers labeled with the manufacturer's name, brand name, installation instructions, and identification of various items. All materials for the roofing system shall be stored and handled in accordance with the recommendations of the manufacturer.

1.6 GUARANTEE

A. Unless otherwise indicated, the manufacturer of the roofing membrane shall furnish to Owner, through the roofing subcontractor, a nonprorated, no dollar limit (30 year No Dollar Limit Guarantee), total roof system guarantee covering the workmanship and application of the roofing system including membranes, insulation, fasteners, vapor retarder, and flashings for a period of 30 years from the date of acceptance.

B. The guarantee shall provide for the repair of the total roofing system including repairs to membrane, flashings, counterflashings, insulation, barrier and cover boards, if required, fasteners, vapor retarder, adhesives and sealants resulting from all leaks in the membrane and base flashings that may occur due to defective materials, improper workmanship, and normal weather conditions. Unless otherwise indicated, the warranty shall include general wind uplift protection to 90 mph peak gusts. High wind uplift protection to 90 mph peak gusts shall be required if indicated or shown on the Drawings. The guarantee shall also provide limited coverage for hail damage.

C. In addition, the manufacturer shall also provide a separate material warranty covering the membrane for not less than 30 years against premature deterioration because of weather.

PART 2 - PRODUCTS

2.1 MATERIALS

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A. Unless noted otherwise, all materials used in construction of the roof system shall be furnished by the same manufacturer. Materials shall be manufactured by firms of national reputation.

B. In order to indicate type, quality, and features required, this specification is based on GAF Everguard Extreme TPO fully adhered system. Equivalent roofing systems manufactured by other manufacturers may also be acceptable provided the requirements of these specifications are met.

C. Materials shall conform to the following:

Roofing and Flashing Membrane, White	GAF Everguard 80mil fleece back Extreme TPO
TPO Adhesive	Two-part low rise polyurethane foam adhesive. VOC free and contains no solvents.
Fasteners	Membrane manufacturer's standard. As recommended by roofing membrane manufacturer.
Water Cutoff Mastic	Membrane manufacturer's standard.
Night Sealant	Membrane manufacturer's standard.
Seam Fastening	Membrane manufacturer's standard.
Molded Pipe Flashing	Membrane manufacturer's standard.
Pourable Sealer	Membrane manufacturer's standard.
Cover Board	½” high density polyisocynurate board (HD ISO Board). A COVER BOARD IS REQUIRED.
Insulation	
Polyisocyanurate	Polyisocyanurate foam with both sides faced with glass fiber felts; ASTM C1289, Type II; Apache "Pyrox", GAF "Isotherm", Schuller/NRG "E-NRGY-Y 2" or as recommended by the membrane manufacturer.
Flat	Uniform thickness as indicated on the Drawings.
Tapered	Thickness and slope as indicated on the Drawings.
Cricket System	Insulation manufacturer's standard factory pre-cut cricket system, pattern as indicated on the Drawings.
	On metal roof decks an ASTM C1177 Gypsum based board shall be used as the substrate for the two-ply vapor retarder.

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Roof Walkways	Everguard walkway pads, 30 inches by 60 inches by 3/8 inch thick; as manufactured by GAF.
Mechanical Fasteners	
Metal Deck Applications	Corrosion resistant type for metal deck specified, Factory Mutual approved for roof insulation used, and for fire and wind resistance requirements specified.

D. Unless otherwise specified, metal copings, counterflashings, cap flashings and similar metal components are covered in the Sheet Metal section but shall be covered in the "30 Year Total System NDL Guarantee".

PART 3 - EXECUTION

3.1 INSPECTION

A. The roofing membrane manufacturer's representative and the roofing subcontractor shall conduct all required inspections and shall submit to the roofing manufacturer all required drawings, details, and completed questionnaires for obtaining the specified warranty.

B. A job start observation will be required with roofing manufacturer's technical representative present at project start. The representative shall witness actual roofing installation and shall submit a letter to the General Contractor and the Engineer stating that the observed installation met the recommendations of the roofing manufacturer.

3.2 PREPARATION OF ROOF SURFACES

A. Roof surfaces shall be cleaned and inspected before any roofing materials are applied. All drainage fixtures shall be set at the proper elevation to permit free flow of water.

B. The roof surfaces to be covered shall be smooth, hard, dry, and free from high spots, depressions, and frost or effects of frost. Roof surfaces shall be swept clean and free from dust, loosened cement scale, and debris. Roof surfaces shall be examined for openings, holes, or crevices which might allow adhesives or sealants to drip or flow through the deck or between the deck and vertical projections. Such openings shall be filled or covered before any roofing materials are applied.

3.3 APPLICATION OF ROOFING

A. System. The materials for the roofing systems shall be as specified herein. The roofing system assemblies shall conform to the following systems as indicated on the Drawings.

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Metal Deck (with vapor retarder)

Flat Structural Deck/Tapered Insulation:

1-layer ½" Securock or Prime DensDeck mechanically attached to metal roof deck

Two plies of Type IV felt mopped to gyp board in Type III asphalt

Polyisocyanurate Insulation, tapered.

1 layer of ½" HD ISO cover board.

Crickets, where required.

Roof Membrane in LRF adhesive.

Walkway Pads, where required.

B. Nailers. Nailers shall be as specified in the Rough Carpentry section. Nailers shall be secured as specified by the roofing membrane manufacturer and as specified by FM Bulletin 1-49. Wood nailers shall be installed at the locations specified herein, as indicated on the Drawings, and as recommended by the membrane manufacturer.

C. Vapor Retarder for Metal Deck. A bottom layer of a gypsum-based board meeting ASTM C1177 shall be installed over metal roof decks as indicated. The layer of gypsum-based board shall be anchored to the metal roof deck with mechanical fasteners in accordance with FM Bulletin 1-28 and the FM Approval Guide. Installation of the mechanical fasteners shall be in accordance with the manufacturer's recommendations. The board shall be completely covered with a vapor retarder as per the manufacturer's written recommendations. The vapor retarder shall be flashed at all penetrations, curbs, and parapets to prevent entry of moisture.

1. The vapor retarder shall not be used as a temporary roof.

D. Insulation. Insulation shall be dry when installed. No more insulation shall be installed than can be covered with roofing membrane before the end of the day's work or before the onset of inclement weather.

1. Unless otherwise specified, insulation shall be laid over the substrate, with joints no wider than 1/4 inch. Joints wider than 1/4 inch shall be filled with the same insulation.

2. Insulation boards shall be laid with joints staggered between parallel courses and, if required, between layers. Abutting edges of boards shall be laid in moderate contact, not forced into place. At vertical surfaces, insulation shall be cut neatly to provide a clearance of not more than 1/4 inch.

3. Insulation boards for tapered systems shall be positioned in accordance with the manufacturer's layout to produce roof slopes and drainage patterns as indicated on the Drawings. The installed thickness of insulation shall be as indicated on the Drawings.

4. Crickets to provide positive roof drainage as indicated on the Drawings, shall be installed as indicated on the Drawings and per the manufacturer's instructions.

NOT TO BE USED FOR BIDDING PURPOSES

5. All insulation over metal roof decks and, where recommended by the membrane manufacturer over concrete decks, shall be anchored to the deck with mechanical fasteners in accordance with FM Bulletin 1-28 and the FM Approval Guide. Installation of the mechanical fasteners shall be in accordance with the manufacturer's recommendations.

6. When high wind uplift is required, anchorage of insulation boards and cover boards shall be provided complete with all necessary anchors, special anchors, and appurtenances to meet the performance and warranty requirements.

E. Cover Board. Cover boards shall be installed over all insulation. Cover boards shall be attached as recommended by the membrane manufacturer for the wind design specified.

F. Membrane. The roofing membrane shall be positioned over the installed insulation without stretching. Membrane shall be allowed to relax for approximately 1/2 hour prior to bonding.

1. Sheets of membrane shall be positioned to provide a 3 inch minimum edge lap with adjacent sheets. Adhesive shall be applied to the membrane and the underlying substrate to securely bond the membrane to the board according to the manufacturer's recommendations. Membrane shall be rolled to eliminate wrinkles, pockets, or voids. Joints in the membrane shall be cleaned and permanently joined at the overlap as recommended by the membrane manufacturer. Special care shall be taken to minimize staining and damage to the exposed membrane surfaces by the sealants.

2. At the end of each day or whenever application of roofing is interrupted, temporary water cutoffs shall be installed at loose edges as recommended by the membrane manufacturer. When work is resumed, the sheet shall be pulled free and trimmed to remove membrane where sealant was previously applied.

G. Securing Perimeter Membrane. Sheets of membrane shall be secured at the perimeter of each roof level, roof section, curb, skylight, expansion joint, penthouse, and parapet wall, where required, using fastening strips or reinforced universal securement strips mechanically fastened through the membrane and insulation into the wood blocking or structural substrate as recommended by the membrane manufacturer.

H. Flashing. Perimeter, wall, roof edge, expansion joints, parapet, and curb flashings, where required, of TPO membranes shall be provided and installed as recommended by the membrane manufacturer. All pipe, conduits, or other roof penetrations shall be flashed with molded pipe flashings and the manufacturer's recommended water cutoff mastic.

I. Roof Drains. When roof drains are required, insulation shall be tapered around the roof drains to provide a smooth transition from the roof surface to the drain. Roofing membrane shall be extended over the lip and down inside the drain and secured with the clamping ring. Seals between the roofing membrane and the drains shall be made with water cutoff mastic as recommended by the membrane manufacturer.

J. Walkways. Roof walkways shall be installed where indicated on the Drawings and in accordance with the membrane manufacturer's recommendations.

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K. Cleanup. Following installation of roofing materials, the roof surface shall be cleaned of all construction materials, traffic grime, accumulated dirt, excess sealants, and other debris. The membrane surface shall be cleaned as recommended by the membrane manufacturer.

End of Section

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SECTION 07 62 00 - SHEET METAL

PART 1 - GENERAL

1.1 SCOPE

A. This section covers sheet metal for flashings and moisture protection. The following sheet metal items are covered in other sections:

1. Ductwork, louvers, and other sheet metal for the heating, ventilating, and air conditioning system.

1.2 GENERAL

A. Installation of wall and roof flashings, gutters and downspouts shall be as indicated on the drawings and as specified in the building masonry and roofing sections.

B. Flashing members to be built into masonry, concrete or roofing shall be delivered at the proper time for incorporation into the work.

C. When installing sheet metal items, care shall be taken to avoid marring and improper bending. All components shall be stored in clean, dry storage areas. Contact with corrosive or staining materials shall be prevented. All damaged sections shall be replaced, and only undamaged units shall be installed.

1.3 SUBMITTALS

A. Complete specifications, data, and catalog cuts or drawings covering the items furnished under this section shall be submitted in accordance with the Submittal Procedures section.

1.4 HANDLING AND STORAGE

A. Adequate protection shall be provided during shipment, site storage, and installation to prevent damage to materials or finished work.

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PART 2 - PRODUCTS

2.1 MATERIALS

Galvanized Steel	ASTM A366 or A569; hot dip galvanized in accordance with ASTM A525, G90 minimum.
Sheet Aluminum	ASTM B209, Alloy 3003-H14, mill finish.
Extruded Aluminum	ASTM B221, Alloy 6053 or 6063.
Lead	Fed Spec QQ-L-201, Grade B.
Stainless Steel	ASTM A167, Type 302 or 304, AISI 2B finish unless otherwise specified.
Solder	ASTM B32, Alloy Grade 50A (50-50). Soldering
Flux	
For Stainless Steel	Zinc chloride type, Fed Spec 0-F-506, Type II.
For Other Metals	Acid type, Fed Spec O-F-506, Type I, Form A.
Fasteners	Same metal as sheet metal being fastened.
Plastic Cement	Asphalt roof cement, asbestos free; ASTM D4586, Type 1.
Acrylic Sealant	Pecora "Unicrylic" or Tremco "Mono".

2.2 FLASHINGS

A. All exposed or contacting flashings shall be of the same material.

B. Flashing types as follows:

Cap Flashing	Stainless steel, 26 gage.
Roof Drain Flashings	Sheet lead.
Miscellaneous Hidden Flashings	Stainless steel, 26 gage.
Miscellaneous Hidden	Stainless steel, 26 gage. Flashings
Miscellaneous Exposed	Prefinished metal flashing, 22 gage Flashing steel.

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Prefinished Parapet Copings	0.063 prefinished aluminum formed as indicated; 10-year Class 1 anodized finish warranty: Metal ERA “Perma-Tite” coping.

2.3 CONFIGURATIONS

A. Cap Flashings. Cap flashings shall be provided at all roof ventilators and elsewhere as indicated on the drawings. Cap flashings shall be fabricated in sections not exceeding 10 feet in length; sections shall overlap at least 3 inches and shall form a slip joint but shall not be interlocked. All corners and all joints other than slip joints shall be closed watertight as specified herein.

B. Hoods. Counterflashing hoods shall be provided for all conduits and pipes which pass through the roof, as indicated on the drawings. Hoods shall be fabricated of 24 gage stainless steel or 22 gage galvanized steel, and shall conform to the details indicated on the drawings.

C. Prefinished Metal Copings. Unless otherwise indicated on the drawings or specified, parapet copings shall be installed in conformity with the instructions and recommendations of the copings manufacturer. Copings shall be installed with ½ inch space between the end sections. The finished installation shall have a uniformly smooth vertical face in accurate alignment.

D. Pitch Dams. Not used.

E. Roof Drain Flashings. A flashing sheet of 4-pound sheet lead of the size indicated on the drawings shall be provided for each roof drain.

F. Miscellaneous Metal Flashings.

1. Metal flashings shall be provided for vents, sleeves, and similar projections through the roof.

2. Unless otherwise indicated on the drawings, all flashings for such projections shall be fabricated from 4-pound sheet lead and shall extend at least 8 inches above the roof.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Watertight Joints.

1. Joints in sheet metal work shall be closed watertight unless slip joints are specifically required. Watertight joints shall be mechanically interlocked and then thoroughly soldered

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for metals other than aluminum. Joints in aluminum or between aluminum and other metals shall be sealed with acrylic sealant.

2. All joints shall be wiped clean of flux after soldering. Acid flux shall be neutralized by washing the joints with sodium bicarbonate.

B. Cap Flashings. Cap flashings shall be installed after membrane base flashings have been completed. Cap flashings shall be anchored in place as indicated on the drawings.

C. Prefinished Metal Copings. Unless otherwise indicated on the drawings or specified, parapet copings shall be installed in conformity with the instructions and recommendations of the copings manufacturer. Copings shall be installed with ½ inch space between the end sections. The finished installation shall have a uniformly smooth vertical face in accurate alignment.

D. Pitch Dams. Not used.

E. Roof Drain Flashings. Roof drain flashings shall be installed as specified in the roofing section.

F. Miscellaneous Metal Flashings. Metal flashings shall be installed as specified in the roofing section.

3.2 PROTECTION

A. Adequate protection shall be provided during shipment, site storage, and installation, to prevent damage to materials or finished work.

B. Aluminum to be placed in contact with concrete, mortar, or dissimilar metals shall be given a heavy coat of coal tar paint.

End of Section

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SECTION 07 72 00 - ROOF SPECIALTIES AND ACCESSORIES

PART 1 - GENERAL

1.1 SCOPE

A. This section covers miscellaneous roof accessories.

1.2 GENERAL

A. Roof accessories shall be provided and installed at the locations indicated on the Drawings. Fasteners as required for mounting the accessories shall be provided.

1.3 SUBMITTALS

A. Complete specifications, detailed drawings, and setting and erection drawings covering roof accessories shall be submitted in accordance with Section 01 33 00, Submittal Procedures.

PART 2 - PRODUCTS

2.1 ROOF HATCH

A. The metal roof scuttles indicated on the drawings shall be Type "S" as manufactured by the Bilco Company, or equal. Cover shall be 11 gage aluminum with 3-inch beaded flange, neatly welded. Insulation shall be glass fiber 1 inch thick, fully covered and protected by an 18 gage aluminum metal liner.

B. Curb shall be 12 inches in height and 11 gage aluminum. It shall be formed with a 3-1/2 inch flange with holes provided for securing to the roof deck. Curb shall be equipped with an integral metal cap flashing of the same gage and material as the curb, full welded at the corners for absolute weathertightness. Insulation on the exterior of the curb shall be rigid fiber board 1 inch in thickness.

C. Each scuttle shall be completely assembled with heavy pintle hinges, compression spring operators enclosed in telescopic tubes, positive spring latch with turn handles and padlock hasps inside and outside, and neoprene draft seal. Cover shall be equipped with an automatic hold-open arm complete with red vinyl grip handle to permit easy one hand release. All hardware shall be stainless steel. Manufacturer shall guarantee proper operation and against defects in material or workmanship for a period of five years.

2.3 SAFETY POST

A. A safety post shall be installed on the fixed ladder below each roof hatch. The post shall be manufactured of high strength steel with telescoping tubular section that locks automatically when fully extended. Upward and downward movement shall be controlled by a stainless steel spring balancing mechanism. Unit shall be model "1" "Ladderup" safety post as

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manufactured by the Bilco Company, or equal. Unit shall be completely assembled with fasteners for securing to one of the ladder rails in accordance with the manufacturer's instructions.

2.4 METAL CURBS

A. Prefabricated metal curbs shall be provided for roof perimeters as indicated on the Drawings. Metal curbs shall be as manufactured by the Pate Company, Broadview, Illinois; Custom Curb, Inc., Chattanooga, Tennessee; or Uni-Curb, Inc., Chicago, Illinois. The curbs shall be constructed of 14-gauge galvanized steel according to the details indicated on the Drawings. Metal curbs shall have continuous welded corner seams and factory installed wood nailers.

B. Metal curbs for shall be securely fastened to the roof deck. Curbs shall be shop painted with a universal primer.

PART 3 - EXECUTION

3.1 INSTALLATION

A. All products provided under this section shall be installed in accordance with the manufacturers' instructions. Unless otherwise noted, all anchors shall be noncorrosive type.

B. All installations interfacing with roofing membrane, metal roofing, and sheet metal flashings shall be coordinated with those sections.

End of Section

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SECTION 07 92 00 - JOINT SEALANTS

PART 1 - GENERAL

1.1 SCOPE

A. This section covers caulking and sealing..

1.2 GENERAL

A. The terms “caulking” and “sealing,” as used on the Drawings and in these Specifications, are synonymous. Both terms indicate the materials specified herein. Oil-base caulking shall not be used on this Project.

1.3 APPROVALS

A. All caulking shall meet the requirements of the standards specified herein. All caulking and sealing to be used in contact with potable water shall meet the requirements of ANSI/NSF Standard 61.

1.4 SUBMITTALS

A. Drawings and Data

1. Specifications and data covering the materials proposed for use, together with samples or color cards showing the manufacturer’s full line of sealant colors, shall be submitted in accordance with the Submittal Procedures section.

PART 2 - PRODUCTS

2.1 MATERIALS

Urethane Sealants (Polyurethanes)	Fed Spec TT-S-00227E, Class A, Type 2 and ASTM C920, Type M, Grade NS, two-component.
Nonsag	
Submerged Service	
Potable Water	Polymeric Systems “RC-270”; Sika “Sikaflex-2cNS.
Nonpotable Water	Polymeric Systems “RC-270.”

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Nonsubmerged Service	Bostik “Chem-Calk 500”; Tremco “Vulkem 227”; Pecora “Dynatrol II”; Tremco “DYmeric 240”; Sika “Sikaflex-2cNS.”**]**
Self-Leveling, Nonsubmerged Service	Bostik “Chem-Calk 550”; Tremco “Vulkem 245”; Pecora “Urexpan NR-200”; Polymeric Systems “RC-2SL”; Tremco “THC-900.”

Primer	As recommended by the sealant manufacturer.
Backup Material	Polyethylene or polyurethane foam as recommended by the sealant manufacturer; Dow “Ethafoam SB” or Plateau “Denver Foam.”
Bondbreaker Tape	Adhesive-backed polyethylene tape as recommended by the sealant manufacturer.

2.2 COLORS

A. Colors of sealants shall be as selected by Engineer from the manufacturer’s standard line of colors. Different colors may be required for different locations.

2.3 LOCATIONS TO BE CAULKED

A. With Urethane Sealant (Nonsag) - Submerged Service

1. All joints requiring caulking in submerged locations.

2. Surface of basin weir plates in contact with supporting structure.

B. With Urethane Sealant (Nonsag) - Nonsubmerged Service

1. Entire perimeter of frames for metal doors.

2. Entire perimeter of metal louvers.

3. Entire perimeter of metal dampers and metal shutters.

4. Control joints in masonry walls.

5. Joints between masonry and cast-in-place concrete, where indicated on the Drawings.

6. Other locations where caulking is indicated on the Drawings, specified in other sections, or required for weatherproofing.

C. With Urethane Sealant (Self-Leveling)

1. Horizontal joints in walks or drives.

2. Horizontal joints in traffic-bearing decks and slabs.

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3. Annular space around handrail posts set in sleeves.

PART 3 - EXECUTION

3.1 JOINT PREPARATION

A. All surfaces to receive sealant shall be clean, dry, and free from dust, grease, oil, or wax. Concrete surfaces which have been contaminated by form oil, paint, or other foreign matter which would impair the bond of the sealant to the substrate shall be cleaned by sandblasting. All surfaces shall be wiped with a clean cloth saturated with xylol or other suitable solvent, and shall be primed before the sealant is applied.

B. Unless otherwise recommended by the sealant manufacturer and permitted by the Engineer, the depth of sealant in a joint shall be equal to the width of the joint, but not more than 1/2 inch. Backup material shall be provided as necessary to control the depth of sealant and shall be of suitable size so that, when compressed 25 to 50 percent, the space will be filled. Backup material shall be rolled or pressed into place in accordance with the manufacturer's installation instructions, avoiding puncturing and lengthwise stretching. If depth of the joint does not permit use of backup material, bondbreaker tape shall be placed at the bottom of the joint to prevent three-sided adhesion.

3.2 SEALING

A. Sealing work shall be done before any field painting work is started. The air temperature and the temperature of the sealed surfaces shall be above 50° F when sealing work is performed.

B. Upon completion of the sealing work, each sealed joint shall have a smooth, even, tooled finish, flush with the edges of the sealing recess, and all adjacent surfaces shall be clean. Sealant shall not lap onto adjacent surfaces. Any sealant so applied as to prevent the painting of adjacent surfaces to a clean line, or with an excess of material outside the joint and feathered onto surfaces, shall be removed and the joint resealed.

End of Section

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DIVISION 8 - Openings

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SECTION 08 11 13 - HOLLOW METAL DOORS AND FRAMES

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. Section includes:

1. Interior standard steel doors and frames.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Include the following:

1. Elevations of each door type.

2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.

3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.

C. Product Schedule: For hollow-metal doors and frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

1.4 INFORMATIONAL SUBMITTALS

A. Product test reports.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Ceco Door; ASSA ABLOY.

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2. Curries Company; ASSA ABLOY.

3. Approved equal.

2.2 INTERIOR STANDARD STEEL DOORS AND FRAMES

A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Heavy-Duty Doors and Frames: SDI A250.8, Level 2; SDI A250.4, Level B.

1. Doors:

a. Type: As indicated in the Door and Frame Schedule.
b. Thickness: 1-3/4 inches.
c. Face: Metallic-coated steel sheet, minimum thickness of 0.042 inch.
d. Edge Construction: Model 2, Seamless.
e. Core: Manufacturer's standard.

2. Frames:

a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch.
b. Construction: Full profile welded.

3. Frames:

a. Materials: Metallic-coated steel sheet, minimum thickness of 0.067 inch.
b. Construction: Full profile welded.

2.3 FRAME ANCHORS

A. Jamb Anchors:

1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.

2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches of frame height above 7 feet.

3. Postinstalled Expansion Anchor: Minimum 3/8-inch- diameter bolts with expansion shields or inserts, with manufacturer's standard pipe spacer.

B. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.

C. Floor Anchors for Concrete Slabs with Underlayment: Adjustable-type anchors with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at top of underlayment.

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D. Material: ASTM A 879/A 879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.

1. For anchors built into exterior walls, steel sheet complying with

2. ASTM A 1008/A 1008M or ASTM A 1011/A 1011M; hot-dip galvanized according to ASTM A 153/A 153M, Class B.

2.4 MATERIALS

A. Iron and steel products must be in full compliance with the American Iron and Steel (AIS) requirement as mandated in EPA's State Revolving Fund Program.

B. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

C. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

D. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B.

E. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.

F. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.

G. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.

2.5 FABRICATION

A. Door Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated in the Door Hardware specification. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.

B. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.

1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.

2. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.

NOT TO BE USED FOR BIDDING PURPOSES

a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

C. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.

1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

2. Comply with BHMA A156.115 for preparing hollow-metal doors and frames for hardware.

2.6 STEEL FINISHES

A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.

1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate- free primer complying with SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

PART 3 - EXECUTION

3.1 PREPARATION

A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.

B. Drill and tap doors and frames to receive nontemplated, mortised, and surface- mounted door hardware.

3.2 INSTALLATION

A. Hollow-Metal Frames: Comply with SDI A250.11.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.

a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.
b. Install frames with removable stops located on secure side of opening.

2. Floor Anchors: Secure with postinstalled expansion anchors.

NOT TO BE USED FOR BIDDING PURPOSES

a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.

3. Solidly pack mineral-fiber insulation inside frames.

4. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:

a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

B. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.

1. Non-Fire-Rated Steel Doors: Comply with SDI A250.8.

C. Glazing: Comply with installation requirements in the Glazing specification and with hollow-metal manufacturer's written instructions.

3.3 CLEANING AND TOUCHUP

A. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust- inhibitive primer.

B. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

C. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

End of Section

NOT TO BE USED FOR BIDDING PURPOSES

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NOT TO BE USED FOR BIDDING PURPOSES

SECTION 08 31 19 - FLOOR ACCESS DOORS AND HATCHES

PART 1 - GENERAL

1.1 SCOPE

A. This section covers the fabrication and installation of cast-in-place, off-street, floor access doors and hatches.

B. Fabricated items which are indicated on the Drawings but not mentioned specifically herein shall be fabricated in accordance with the applicable requirements of this section.

1.2 GENERAL

A. Equipment furnished under this section shall be fabricated and assembled in full conformity with Drawings, Specifications, engineering data, instructions, and recommendations of the equipment manufacturer, unless exceptions are noted by Engineer.

B. Equipment shall be furnished complete with all components and accessories required for proper operation, and any additional materials or construction required by the manufacturer's design.

C. General Equipment Stipulations

1. The General Equipment Stipulations shall apply to all equipment furnished under this section. If requirements in this specification differ from those in the General Equipment Stipulations, the requirements specified herein shall take precedence.

D. Seismic Design Requirements

1. Seismic design requirements for products specified herein shall be as indicated in the Meteorological and Seismic Design Criteria section.

1.3 SUBMITTALS

A. Drawings and Data

1. Complete assembly and installation drawings, together with detailed specifications, capacities, and data covering material used, and accessories forming a part of the equipment furnished, shall be submitted in accordance with the Submittals Procedures section.

2. For fire rated access doors and hatches, the manufacturer shall submit a test report certifying the specified performance.

3. Submit confirmation of compliance with the requirements of the Meteorological and Seismic Design Criteria section.

NOT TO BE USED FOR BIDDING PURPOSES

1.4 DELIVERY, STORAGE, AND HANDLING

A. Shipping shall be in accordance with the Product Delivery Requirements section. Handling and storage shall be in accordance with the Product Storage and Handling Requirements section.

1.5 WARRANTY

A. The manufacturer shall guarantee against defects in material or workmanship for a warranty period of not less than 5 years.

PART 2 - PRODUCTS

2.1 GENERAL

A. Access doors and hatches shall be fabricated in conformity with dimensions, arrangements, sizes, and weights or thicknesses specified herein and as indicated in the Floor Access Doors and Hatches Schedule.

B. All members and parts shall be free of warps, local deformations, and unauthorized bends. Holes and other provisions for field connections shall be accurately located and shop checked so that proper fit will result when the units are assembled in the field. All field connection materials shall be furnished.

2.2 ACCEPTABLE MANUFACTURERS

A. Access doors and hatches shall be as manufacturerd by Halliday Products, Bilco Company, or Dur-Red Products.

2.3 DESIGN REQUIREMENTS

A. Door leaves shall be 1/4 inch minimum thickness plate material with pattern as indicated in the Floor Access Doors and Hatches Schedule. Leaves in hatches not subject to vehicular loading shall be designed to withstand a minimum live load as indicated in the Floor Access Doors and Hatches Schedule, with a maximum deflection of 1/150th of the span. Leaves shall pivot so that the cover does not protrude above the channel frame.

B. Door and hatch frames shall be provided with anchorage devices into the concrete slab. Where required for drainage, channel frames shall be 1/4 inch thick with a cross sectional area large enough to allow adequate water drainage. A 1-1/2 inch drainage coupling shall be located in the channel frame. The frame shall be designed to empty through the coupling. Frames shall have a neoprene door cushion unless a specific door model without a cushion is specified.

C. Hatches shall be supplied with lifting operators and hold-open devices. All doors, except fire rated doors, shall automatically lock in the vertical position by means of a hold-open arm with release handle. A snap lock with a gasketed cover plug and removable turn handle shall be

NOT TO BE USED FOR BIDDING PURPOSES

provided. The operators shall provide for smooth, easy and controlled door operation throughout the entire arc of opening and closing. Operation shall not be affected by temperature.

D. Fall protection grating panels shall be provided on doors and hatches as indicated in the Floor Access Doors and Hatches Schedule. The panels shall be aluminum or fiberglass grating panels designed to support a 300 psf loading. Panels shall be hinged along one edge and provided with a positive latch to maintain unit in an upright position. Provision for locking the panel in place shall be provided. All hardware shall be of non-corroding material.

E. Odor resistant access doors and hatches shall be provided for all structures that are connected to the odor control system. Odor resistant doors and hatches shall be supplied with a continuous EPDM gasket to form an odor resistant barrier around the entire perimeter of the cover. The gasket shall provide the unit with an air infiltration rate of less than 1 cfm per linear foot of cover perimeter while under a pressure differential, across the cover, of 1 inch water column. If the channel frame drainage system allows for the passage of odors into the frame, an appropriate drain trap will be provided to prevent odors from entering the connecting drainage system.

F. Fire rated access doors and hatches shall be UL listed for a 2 hour fire rating when exposed to fire from the underside. In the closed position, the temperature on the unexposed surface of the door assembly shall not exceed 325° F during the 2 hour period. Fire rated door leaves shall have a fillable pan to receive concrete. They shall be provided with lifting operators and hold open devices as specified for other hatches. In addition, fire rated doors shall be equipped with a self-contained, pneumatic, automatic closing system which will close and latch the door leaves when the temperature exceeds 165° F.

2.4 MATERIALS

A. Floor access doors and hatches are indicated on the Drawings. Unless otherwise specified, materials, appurtenances, and finishes shall be the manufacturer's standard for each type of door and hatch indicated in the Floor Access Doors and Hatches Schedule. Doors and hatches shall be odor resistant and/or fire rated only if specifically indicated in the Floor Access Doors and Hatches Schedule.

B. If floor access doors and hatches are shown on the Drawings but not identified by manufacturer's name and product number, Contractor shall request clarification from Engineer prior to ordering and shipping the equipment. For purposes of bidding the work, unidentified floor access doors and hatches shall be assumed to be aluminum with a drained channel frame, suitable for a live load of at least 150 psf.

2.5 FINISHES

A. Aluminum access doors and hatches shall be given a mill finish.

B. All aluminum surfaces in contact with concrete or mortar shall be given a heavy coat of epoxy enamel unless specified otherwise.

C. Steel doors shall be prime painted with manufacturer's standard primer or shall be hot-dip galvanized as indicated in the Floor Access Doors and Hatches Schedule.

NOT TO BE USED FOR BIDDING PURPOSES

PART 3 - EXECUTION

3.1 INSTALLATION

A. Materials shall be erected and installed in conformity with the dimensions and arrangements specified or indicated on the Drawings and as recommended by the manufacturer. Product finishes damaged during erection shall be repaired as recommended by the manufacturer. Hatch frames with drainage couplings shall be connected to the appropriate drainage system.

End of Section

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Schedule 08 31 19-S01

Floor Access Doors and Hatches Schedule

1.000	**Requirements**	
1.010	Quantity	6
1.020	Location	Aeration Basin Drainage Structure 1-6
1.030	Nominal size, inches, W x L	48”x72”
1.040	Design loading, psf, minimum	300
1.050	Material	Aluminum
1.060	Finish	Mill
1.070	Number of leaves	Double
1.080	Cover style	Diamond pattern
1.090	Fire Rated	No
1.100	Leaf gasket	Yes
1.110	Frame drainage	Yes
1.120	Hinges, operators, and all hardware	316 Stainless
1.130	Fall Protection	Fabric type safety net

End of Schedule

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SECTION 08 71 11 - FINISH HARDWARE

PART 1 - GENERAL

1.1 SCOPE

A. This section covers finish hardware for steel doors, together with cylinders which must be keyed to match door locks.

1.2 GENERAL

A. Templates.

1. Each hardware manufacturer shall deliver to the door and frame manufacturer a template for each item of mortised and surface-applied hardware. Each template shall be labeled with the manufacturer's name, hardware item, opening number, and location on the door or frame where the item is to be installed.

1.3 SUBMITTALS

A. A complete schedule of finish hardware shall be submitted in accordance with the Submittal Procedures section. The schedule shall indicate each item of hardware required for each opening, manufacturer's name, manufacturer's number or symbol, and finish.

1.4 PACKAGING

A. Each item of hardware shall be packaged separately in an individual container complete with screws, keys, special wrenches, instructions, and installation templates necessary for accurately locating, setting, adjusting and attaching the hardware. Each container shall be marked with the number of the opening to which the hardware item is to be applied.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. The catalog numbers which appear in the Hardware Schedule identify products of the first-named of the manufacturers listed herein for each hardware item. Equivalent products of the other manufacturers listed herein will also be acceptable.

Butts	Stanley, Hager, or Lawrence
Locksets, latchsets, cylinders	Corbin Russwin
Exit devices	Sargent or Von Duprin
Closers	LCN or Sargent
Holders, bumpers, and silencers	Rockwood, Ives, or Trimco.

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Thresholds and rain guards, extruded	Pemko, National Guard, or Reese.
Weatherstripping	Pemko, National Guard, or Reese.

2.2 FINISH

A. The required finish shall be as indicated by the catalog number listed in the Hardware Schedule herein. Exterior surfaces of door closers shall be finish painted with shop-applied aluminum paint. Machine screws, bolts, and other exposed attachments shall be finished to match hardware.

2.3 KEYING

A. Cylinder locks shall be keyed in groups.

B. After the finish hardware submittals have been accepted by the Engineer, the Engineer and Owner will meet with the Contractor to determine the keying groups.

C. All locks in each group shall be keyed alike and each group shall be keyed differently. All locks shall be operable by a master key or by master key groups and a grand master key. Two keys shall be furnished with each lock. Six master keys shall be furnished.

2.4 LOCK CYLINDERS

A. Lock function shall be Entry.

B. Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver.

C. High-Security Lock Cylinders: BHMA A156.30; Grade 1, interchangeable cores equivalent to Corbin Russwin 6-pin for D3 keyway; face finished to match lockset.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Hardware shall be accurately fitted, securely applied, carefully adjusted, and lubricated in accordance with the manufacturer's instructions.

1. Location. Unless otherwise directed by the Engineer, the locations of hardware items shall be in accordance with DHI "Recommended Locations for Builders' Hardware for Standard Steel Doors and Frames".

C. Thresholds. The ends of thresholds shall be notched to fit the applicable door frame profile. Thresholds shall be field drilled to receive flush bolts where required. Thresholds shall be anchored to concrete by means of 5/16-inch diameter stainless steel flat head countersunk machine screws and expansion anchors spaced at 8 inch centers. Thresholds shall be set in asphalt roofing cement conforming to ASTM D4586, Type II.

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3.2 ADJUSTING

A. Each supplier of finish hardware shall provide the services of a trained and experienced hardware consultant to service and adjust installed hardware.

3.3 PROTECTION

A. Special care shall be taken to protect finished surfaces of hardware during installation. Hardware on which the finish has been damaged prior to final acceptance of the work shall be replaced with new hardware at no additional cost to the Owner.

3.4 HARDWARE SCHEDULE

A. Hardware shall be furnished in accordance with the following schedule. Doors are listed by group number. A complete set of hardware is listed for each group.

Set: 1.0
Door: 20-107

4	Butts	FBB191 4 ½” x 4 ½” NRP	32D	HA
1	Concealed Vert Rod Exit	9847L-NL 16 996L-NL	US26D	VD
1	Concealed Vert Rod	9847EO-F 16	US26D	VD
1	Cylinder, rim	DL3000	626	CR
2	Door Closer	4040XP SRI CUSH	AL	LC
1	Threshold	273x3AFG		PE
1	Gasketing	2891AS		PE
1	Astragal	303AS		PE

End of Section

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DIVISION 9 - Finishes

NOT TO BE USED FOR BIDDING PURPOSES

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SECTION 09 22 16 - NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Framing systems.

1.2 ACTION SUBMITTALS

A. Product Data: For each product.

1.3 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of code-compliance certification for studs and tracks.

B. Evaluation reports for high-strength steel studs and tracks, firestop tracks, post-installed anchors and power-actuated fasteners.

1.4 QUALITY ASSURANCE

A. Code-Compliance Certification of Studs and Tracks: Provide documentation that framing members are certified according to the product-certification program of the Certified Steel Stud Association.

PART 2 - PRODUCTS

2.1 FRAMING SYSTEMS

A. Framing Members, General: Comply with AISI S220 for conditions indicated. Iron and steel products must be in full compliance with the American Iron and Steel (AIS) requirement as mandated in EPA's State Revolving Fund Program.

1. Steel Sheet Components: Comply with AISI S220 requirements for metal unless otherwise indicated.

2. Protective Coating: Comply with AISI S220; ASTM A653/A653M, G40; or coating with equivalent corrosion resistance. Galvannealed products are unacceptable.

a. Coating demonstrates equivalent corrosion resistance with an evaluation report acceptable to authorities having jurisdiction.

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B. Studs and Track: AISI S220.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. ClarkDietrich
   b. Cemco
   c. Mill Steel
   d. Scafco

2. Minimum Base-Steel Thickness: As required by performance requirements for horizontal deflection.

3. Depth: As indicated on Drawings.

4. Iron and steel products must be in full compliance with the American Iron and Steel (AIS) requirement as mandated in EPA's State Revolving Fund Program.

C. High-Strength Steel Studs and Tracks: Roll-formed with surface deformations to stiffen the framing members.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. ClarkDietrich
   b. Cemco
   c. Mill Steel
   d. Scafco

2. Minimum Base-Steel Thickness: As required by horizontal deflection performance requirements.

3. Depth: As indicated on Drawings.

4. Iron and steel products must be in full compliance with the American Iron and Steel (AIS) requirement as mandated in EPA's State Revolving Fund Program.

D. Slip-Type Head Joints: Where indicated, provide the following:

1. Deflection Track: Steel sheet top track manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs. Iron and steel products must be in full compliance with the American Iron and Steel (AIS) requirement as mandated in EPA's State Revolving Fund Program.

2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. ClarkDietrich
   b. Cemco
   c. Mill Steel

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d. Scafco

E. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ClarkDietrich
b. Cemco
c. Mill Steel
d. Scafco

2. Minimum Base-Steel Thickness: As indicated on Drawings.

3. Iron and steel products must be in full compliance with the American Iron and Steel (AIS) requirement as mandated in EPA's State Revolving Fund Program.

F. Cold-Rolled Channel Bridging: Steel, 0.0538-inch minimum base-steel thickness, with minimum 1/2-inch- wide flanges.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ClarkDietrich
b. Cemco
c. Mill Steel
d. Scafco

2. Depth: 1-1/2 inches.

3. Clip Angle: Not less than 1-1/2 by 1-1/2 inches, 0.068-inch- thick, galvanized steel.

4. Iron and steel products must be in full compliance with the American Iron and Steel (AIS) requirement as mandated in EPA's State Revolving Fund Program.

G. Hat-Shaped, Rigid Furring Channels:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ClarkDietrich
b. Cemco
c. Mill Steel
d. Scafco

2. Minimum Base-Steel Thickness: As indicated on Drawings.

3. Depth: 7/8 inch.

4. Iron and steel products must be in full compliance with the American Iron and Steel (AIS) requirement as mandated in EPA's State Revolving Fund Program.

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H. Resilient Furring Channels: 1/2-inch- deep, steel sheet members designed to reduce sound transmission.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ClarkDietrich
b. Cemco
c. Mill Steel
d. Scafco

2. Configuration: Asymmetrical or hat shaped.

3. Iron and steel products must be in full compliance with the American Iron and Steel (AIS) requirement as mandated in EPA's State Revolving Fund Program.

I. Cold-Rolled Furring Channels: 0.053-inch uncoated-steel thickness, with minimum 1/2-inch-wide flanges.

1. Depth: As indicated on Drawings.

2. Furring Brackets: Adjustable, corrugated-edge-type steel sheet with minimum uncoated-steel thickness of 0.0329 inch.

3. Tie Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.062-inch- diameter wire, or double strand of 0.048-inch- diameter wire.

4. Iron and steel products must be in full compliance with the American Iron and Steel (AIS) requirement as mandated in EPA's State Revolving Fund Program.

J. Z-Shaped Furring: With slotted or nonslotted web, face flange of 1-1/4 inches, wall attachment flange of 3/4 inch, minimum uncoated-steel thickness of 0.0179 inch, and depth required to fit insulation thickness indicated. Iron and steel products must be in full compliance with the American Iron and Steel (AIS) requirement as mandated in EPA's State Revolving Fund Program.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ClarkDietrich
b. Cemco
c. Mill Steel
d. Scafco

NOT TO BE USED FOR BIDDING PURPOSES

2.2 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards.

1. Fasteners for Steel Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates. Iron and steel products

must be in full compliance with the American Iron and Steel (AIS) requirement as mandated in EPA's State Revolving Fund Program.

B. Isolation Strip at Exterior Walls: Provide one of the following:

1. Asphalt-Saturated Organic Felt: ASTM D226/D226M, Type I (No. 15 asphalt felt), nonperforated.

2. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch thick, in width to suit steel stud size.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Installation Standard: ASTM C754.

1. Gypsum Board Assemblies: Also comply with requirements in ASTM C840 that apply to framing installation.

B. Install framing and accessories plumb, square, and true to line, with connections securely fastened.

C. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, furnishings, or similar construction.

D. Install bracing at terminations in assemblies.

E. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.2 INSTALLATION OF FRAMING SYSTEMS

A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.

B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.

C. Install studs so flanges within framing system point in same direction.

D. Install tracks at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts that penetrate partitions above ceiling.

1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.

NOT TO BE USED FOR BIDDING PURPOSES

2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install track section (for cripple studs) at head and secure to jamb studs.

   a. Install two studs at each jamb unless otherwise indicated.

3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.

E. Direct Furring:

1. Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.

F. Z-Shaped Furring Members:

1. Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.

2. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw-attach short flange of furring channel to web of attached channel. At interior corners, space second member no more than 12 inches from corner and cut insulation to fit.

G. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

END OF SECTION

NOT TO BE USED FOR BIDDING PURPOSES

SECTION 09 29 00 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Gypsum board.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. American National Standards Institute (ANSI):

   a. A108.11, Specification for Interior Installations of Cementitious Backer Units.

2. ASTM International (ASTM):

   a. A653, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot- Dip Process.
   b. C475, Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
   c. C840, Standard Specification for Application and Finishing of Gypsum Board.
   d. C1047, Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
   e. C1396, Standard Specification for Gypsum Board.
   f. D3273, Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.

3. Gypsum Association (GA):

   a. GA-214, Recommended Levels of Gypsum Board Finish.

4. Underwriters Laboratories, Inc. (UL):

   a. Building Materials Directory.
   b. Fire Resistance Directory.

NOT TO BE USED FOR BIDDING PURPOSES

1.3 SUBMITTALS

A. Shop Drawings:

1. See Specification Section Submittal Procedures for requirements for the mechanics and administration of the submittal process.

2. Drawings of unusual conditions.

   a. Control joint layout.

3. Product technical data including:

   a. Acknowledgement that products submitted meet requirements of standards referenced.
   b. Manufacturer's installation instructions.

4. Manufacturer's adhesive, joint treatment compound and tape recommendations.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

   1. Gypsum board and accessories:

      a. American Gypsum.
      b. Georgia-Pacific Building Products.
      c. National Gypsum.
      d. USG Corporation.

2.2 MATERIALS

A. General:

   1. Furnish in lengths as long as practicable.

B. Gypsum Board (GB):

   1. ASTM C1396.

   2. Thickness: 5/8 IN unless noted otherwise.

   3. Edges: Tapered.

   4. Fire-rated board: Type X.

C. Adhesive: As recommended by board manufacturer.

D. Joint Treatment Compound:

NOT TO BE USED FOR BIDDING PURPOSES

1. ASTM C475.

2. Recommended by manufacturer for specified board type and location.

3. Do not use self-adhesive fiber mesh tape.

E. Joint Tape:

1. ASTM C475.

2. Recommended by manufacturer for specified board type and location.

2.3 ACCESSORIES

A. Trim:

1. ASTM C1047.

2. Galvanized: ASTM A653 G-60, unless noted otherwise. Iron and steel products must be in full compliance with the American Iron and Steel (AIS) requirement as mandated in EPA's State Revolving Fund Program.

3. Corner bead:

a. Standard type with perforated flanges.
b. ClarkDietrich "#103 Deluxe Corner Bead".
c. Iron and steel products must be in full compliance with the American Iron and Steel (AIS) requirement as mandated in EPA's State Revolving Fund Program.

4. Casing and trim bead:

a. ClarkDietrich "#200-A Metal U-Trim.
b. Iron and steel products must be in full compliance with the American Iron and Steel (AIS) requirement as mandated in EPA's State Revolving Fund Program.

5. Control and expansion joints:

a. ClarkDietrich "#093 Zinc Control Joint."

B. Fasteners:

1. Gypsum board:

a. Self-drilling Type S, corrosion-resistant bugle head screws.
b. Provide stainless steel fasteners in wet areas.
c. Iron and steel products must be in full compliance with the American Iron and Steel (AIS) requirement as mandated in EPA's State Revolving Fund Program.

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PART 3 - EXECUTION

3.1 INSTALLATION

A. General:

1. Verify that metal stud framing has been installed plumb, true, and in accordance with the Contract Documents.

2. Install gypsum board in accordance with ASTM C840.

   a. Self-adhesive applied fire rated tape is not acceptable for use on board joints in fire rated walls.
   b. Tape all joints using conventional fire rated joint tape and joint treatment compound.

3. Erect all board vertically with edges over supporting members.

   a. See Non-Structural Metal Framing.

4. Secure to each support or framing member with screws.

   a. Provide fasteners of sufficient length to penetrate framing member or stud not less than 3/8 IN.

5. In areas having gypsum board ceilings and walls, install ceiling first.

6. Bring boards into contact, but do not force into place.

7. Fit neatly and carefully.

8. Stagger edge joints on opposite side of a partition so they occur on different framing members.

9. Hold board in firm contact with support while fasteners are being driven.

10. Proceed with attachment from center of board toward ends and edges.

11. Scribe board prior to cutting.

12. Where gypsum board abuts concrete, masonry, metal deck, exterior doors and windows, or other dissimilar material; provide 3/8 IN joint between edge of gypsum board and abutting material.

    a. Provide continuous casing bead trim on edge of board.
    b. Seal joint with sealant and backer rod.
    c. See Specification Section for sealant.

13. Set fasteners between 3/8 and 1/2 IN from edges and 2 IN in from board corner.

    a. Space maximum of 12 IN on center at edges and in field of board.
    b. Where board butts at wall/ceiling juncture, hold fasteners back 6 IN from edges.

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c. Space fasteners closer if required by UL.

14. Where two layers of gypsum board are required:

a. Base layer: Install per single layer system procedures.
b. Finish layer: Install per single layer system but stagger joints not less than one (1) support from the base layer.

15. Install fasteners, in gypsum board, so that head rests in a slight dimple without cutting face paper or fracturing core or as recommended by board/panel manufacturer.

16. Install screws, in cement backer board, flush with board surface.

a. Do not countersink screws.

B. Control Joints:

1. Install prefabricated control joints to provide following maximum unjointed lengths or areas:

a. Partitions: 30 FT, maximum straight run, and at lock side of jamb from head of each door opening to top of partition.

2. Where control or expansion joints occur in fire or sound rated assemblies, install suitable backing material to maintain required rating.

3. Where a partition or ceiling abuts a structural element or dissimilar wall or ceiling, install corner bead, casing bead or other trim as required.

C. Board Finishing:

1. Securely attach continuous corner beads to all external corners in accordance with manufacturer's recommendations.

2. Provide the following minimum levels of gypsum board finish in accordance with GA-214.

a. Areas exposed to view:
1) Surfaces to receive painted finish: Level #5.

b. Areas not exposed to view:
1) Non-fire rated partitions: Level #2.

c. Provide additional coats of joint compound as required to completely conceal joints, fasteners and accessories.
1) Joint photographing will not be acceptable.

3. Sand each coat to remove excess joint compound.

a. Avoid roughing paper facing on board.

4. Finish surface shall be smooth and free of tool marks and ridges.

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5. Prime gypsum board surfaces in accordance with Architectural Painting Section.

   a. After primer has been applied, inspect surfaces and repair and refinish all areas which show defects.

6. Refer to ASTM C840 for additional finishing requirements.

End of Section

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SECTION 09 96 11 - PROTECTIVE COATINGS

PART 1 - GENERAL

1.1 SCOPE

A. This section covers field applied protective coatings, including surface preparation, protection of surfaces, inspection, and other appurtenant work for equipment and surfaces designated to be coated with heavy-duty maintenance coatings. Regardless of the number of coats previously applied, at least two field coats in addition to any shop coats or field prime coats shall be applied to all surfaces unless otherwise specified. All equipment and valves shall have factory finished with standard manufacturer colors unless otherwise specified, without field coats except to touch up damage caused during shipping and installation.

1.2 GENERAL

A. Cleaning, surface preparation, coating application, and thickness shall be as specified herein and shall meet or exceed the coating manufacturer's recommendations. When the manufacturer's minimum recommendations exceed the specified requirements, Contractor shall comply with the manufacturer's minimum recommendations. When equivalent products are acceptable to Engineer, Contractor shall comply with this Specification and the coating manufacturer's recommendations.

B. Governing Standards

1. All cleaning, surface preparation, coating application, thickness, testing, and coating materials (where available) shall be in accordance with the referenced standards of the following AWWA, ANSI, NACE, SSPC, NSF, and ASTM.

C. Delivery and Storage

1. All coating products shall be received and stored in accordance with the coating manufacturer's recommendations.

D. Coatings, Painting, and Linings Covered in Other Sections

1. Architectural painting.

2. Dampproofing of concrete when NSF compliance is not required.

1.3 SUBMITTALS

A. General Submittals and Data

1. Contractor shall submit color cards for all coatings proposed for use, together with complete descriptive specifications, manufacturer's product data sheet and the completed Coating System Data Sheets, to Engineer for review and color selection. Each product data

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sheet shall include application temperature limits including recoat time requirements for the ambient conditions at the site, including temperatures up to 130° F. Requests for review submitted directly to Engineer by coating suppliers will not be considered.

B. NSF 61 Compliance

1. When the proposed products will be in contact with treated or raw water in potable water treatment facilities, Contractor shall submit certifications that the proposed systems are in compliance with ANSI/NSF 61.

C. Data Sheets

1. Contractor shall submit a Coating System Data Sheet for each separately identified surface in the Metal Surfaces Coating Schedule, Concrete and Masonry Surfaces Coating Schedule, and the Miscellaneous Surfaces Coating Schedule that will be used in the Project, using the appropriate Coating System Data Sheet forms (Figures 1-09 96 11 and 2-09 96 11) at the end of this section. Each field coating system shall be acceptable to the coating material manufacturer.

a. Coating System Data Sheets shall be assigned a unique number with a prefix letter based on the following:

Prefix	Surfaces	Fig. 09 96 11
A	Iron and steel (coated entirely in field)	1
A	Iron and steel (shop primed)	2
C	Concrete and concrete block	1
E	Equipment - submerged	1
E	Equipment – nonsubmerged	2
F	Nonferrous metal	1
G	Galvanized	1
H	High temperature	1
P	PVC and FRP	1

b. Each coating system that will be applied entirely in the field shall be assigned only a prefix letter and no suffix letter. Fig 1-09 96 11 shall be submitted for each surface coated entirely in the field.

c. Each shop-applied coating system that includes one or more field applied coats shall be assigned both a prefix letter and suffix letter "F." Fig 2-09 96 11 shall be submitted for each surface having a shop applied coating and one or more field applied finish coats.

d. A separate Coating System Data Sheet shall be developed and submitted for each surface scheduled to be coated or variation or change in a coating system. The number identifying the surface and coating system shall be of the form $A1_1$ or $A1_2$-F. The subscript number shall be assigned by the Contractor so that each surface and coating system combination is uniquely identified. For example:

1) $A1_1$-F may be assigned to "Epoxy – one coat to metal curbs for skylights and power roof ventilators that have been shop primed."

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2) $A2_1$ may be assigned to "Epoxy – two coats to non-galvanized structural and miscellaneous steel exposed to view inside buildings."
3) $C2_1$ may be assigned to "Epoxy – two coats to all concrete and concrete block in corrosive area (Except floors and surfaces scheduled to receive other coatings) which are exposed to view."
4) $C2_2$ may be assigned to "Epoxy – two coats to walls, floors, and curbed areas, adjacent to corrosive chemical storage and feed equipment as indicated on the Drawings."

D. Color Submittals

1. For the epoxy and for aliphatic polyurethane, a total of not more than 15 custom colors (excluding deeptone or highlevel colors) may be required. The manufacturer's standard colors will be acceptable for all other coatings.

2. The manufacturer's standard colors will be acceptable for all coatings.

1.4 QUALITY ASSURANCE

A. Coating System Data Sheet Certifications

1. The coating applicator and coating manufacturer shall review and approve in writing the coating manufacturer's written recommendations for the coating system and the intended service. Any variations from the Specifications or the coating manufacturers published recommendations shall be submitted in writing and approved by the coating manufacturer.

2. The coating manufacturer shall observe the surface preparation, mixing, and application of the coating systems and submit a written report of his observations and any additional recommendations.

B. Special Interior Coating Systems

1. In addition to the requirements for all coating systems, the coating applicator and coating manufacturer shall develop and submit, in writing, the proposed detailed procedures for handling, storing, surface preparation, mixing, and application to verify compliance with this Specification and the coating manufacturer's written recommendations. The procedures shall include copies of the coating manufacturer's published recommendations and the proposed method for complying with these recommendations and these Specifications. Contractor, coating applicator, and coating manufacturer shall review and approve, in writing, the proposed detail procedures before they are submitted for review.

2. Contractor and coating manufacturer shall inspect coating application of the appropriate application methods.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Alternative Manufacturers

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1. In addition to the coatings listed herein, equivalent products of other manufacturers that distribute globally will also be acceptable.

B. Equivalent Coatings

1. Whenever a coating is specified by the name of a proprietary product or of a particular manufacturer or vendor, it shall be understood as establishing the desired type and quality of coating. Other manufacturers' coatings will be accepted, provided that sufficient information is submitted to enable Engineer to determine that the proposed coatings are equivalent to those named. Information on proposed coatings shall be submitted for review in accordance with the Submittals Procedures section. Requests for review of equivalency will be accepted only from Contractor and will be considered only after the contract has been awarded.

2.2 MATERIALS

A. All coatings shall be delivered to the job in original, unopened containers, with labels intact. Coatings shall be stored indoors and shall be protected against freezing. No adulterant, unauthorized thinner, or other material not included in the coating formulation shall be added to the coating for any purpose.

B. All coatings shall conform to the air quality regulations applicable at the location of use. Coating materials that cannot be guaranteed by the manufacturer to conform, whether or not specified by product designation, shall not be used.

C. With the exception of heat resistant coatings, the coatings specified have been selected on the basis of the manufacturer's statement that the VOC content of the product is 2.8 lbs per gallon or less; however, it shall be the Contractor's responsibility to use only coating materials that are in compliance with the requirements of all regulatory agencies. Local regulations may require some coatings to have a lower VOC content than specified herein. The coatings specified may meet the VOC limits in the unthinned (as shipped) condition but may exceed the limits if thinned according to the manufacturer's recommendations. In such case, the coatings shall not be thinned beyond the 2.8 lbs per gallon limit, and if the product cannot be thinned to suit the application method or temperature limits, another manufacturer's coating shall be used, subject to acceptance by Engineer..

D. Contractor shall be responsible for ensuring the compatibility of field coatings with each other or with any previously applied coatings. Coatings used in successive field coats shall be produced by the same manufacturer. The first field coat over shop coated or previously coated surfaces shall cause no wrinkling, lifting, or other damage to underlying coats.

E. Primers

Universal Primer (tie coat)	PPG "Amerlock Sealer," Carboline "Rustbond Series," International Devoe "Devran 201H," Tnemec "Series 27 F.C. Typoxy," or Sherwin-Williams "Dura Plate 235."

F. Fillers and Surfacers

Epoxy Concrete Block Filler	PPG "Amerlock 400BF Epoxy Block Filler," Carboline "Sanitile 600," International Devoe "Devron 224V,"

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	Tnemec " Series 130 Envirofill ," or Sherwin-Williams " "
Epoxy Concrete Filler and Surfacer	Tnemec "Series 218 MortarClad," PPG Amercoat " 114A," Carboline "Carboguard 510," or Sherwin-Williams "Steel Seam FT910."

G. Intermediate and Finish Coatings

Epoxy (NSF certified systems)	
Ferrous Metal Surfaces and Concrete Surfaces in Contact with Treated or Raw Water in Potable Water Facilities	PPG "Amerlock 400 High-Solids Epoxy Coating," Carboline "Carboguard 891 VOC," International Devoe "Bar-Rust 233H" Tnemec "Series N140 Pota-Pox Plus," or Sherwin-Williams "Dura Plate 235 NSF"; immersion service.
Epoxy	
Concrete Floors	PPG "Amerlock 2/400," Carboline "Carboguard 890," International Devoe "Devran 224V," Tnemec "Series N69 Hi-Build Epoxoline II," or Sherwin-Williams "Armorseal 1000HS"; nonskid.
Ferrous Metal Surfaces and Masonry or Concrete Surfaces Other Than Floors	PPG "Amercoat 385 Epoxy," Carboline "Carboguard 890," International Devoe Devran "224V," Tnemec "Series N69 Hi-Build Epoxoline II," or Sherwin-Williams "Dura Plate 235."
Flake-Filled Epoxy	PPG Novaguard 890 FF, Carboline "Plasite 4500/4500S," Sherwin-Williams "Sher-Glass FF,", Tnemec "Series 142 Epoxoline." or International "Interzone 954GF".
Aliphatic Polyurethane	PPG "Pitthane Ultra," Carboline "Carbothane 134HG," International "Intervane 990V" Tnemec "Series 1074 Endura-Shield II," or Sherwin-Williams "Acrolon 218HS."
Coal Tar Epoxy/ High-build coal tar epoxy	PPG Amercoat "78HB Coal Tar Epoxy," Carboline "Bitumastic 300 M," Tnemec "46H-413 Hi-Build Tneme-Tar," International "Interzone 954 Black" or Sherwin-Williams "Targuard Coal Tar Epoxy"
Medium Consistency Coal Tar	PPG Amercoat 240 Black, Carboline "Bitumastic 50" International "Devoe Bar-Rust 236 Black" or Tnemec "46-465 H.B. Tnemecol."
Vinyl Ester	Tnemec "Series 120 Vinester" Carboline "Plasite 4110" or Sherwin-Williams "Magnalux 304FF." International Paint «Ceilcote 232 Flakeline »

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PART 3 - EXECUTION

3.1 SURFACE PREPARATION

A. All surfaces to be coated shall be clean and dry and shall meet the recommendations of the coating manufacturer for surface preparation. Freshly coated surfaces shall be protected from dust and other contaminants. Oil and grease shall be completely removed by use of solvents or detergents before mechanical cleaning is started. The gloss on previously coated surfaces shall be dulled if necessary for proper adhesion of topcoats.

B. Surfaces shall be free of cracks, pits, projections, or other imperfections that would interfere with the formation of a smooth, unbroken coating film, except for concrete block construction where a rough surface is an inherent characteristic.

C. When applying touchup coating or repairing previously coated surfaces, the surfaces to be coated shall be cleaned as recommended by the coating manufacturer, and the edges of the repaired area shall be feathered by sanding or wire brushing to produce a smooth transition that will not be noticeable after the coating is applied. All coatings made brittle or otherwise damaged by heat of welding shall be completely removed.

D. Galvanized Surfaces

1. When a coating is required, galvanized surfaces shall be prepared for coating according to the instructions of the manufacturer of the epoxy. Any chemical treatment of galvanized surfaces shall be followed by thorough rinsing with clean water.

E. Ferrous Metal Surfaces

1. Ungalvanized ferrous metal surfaces shall be prepared for coating by using one or more of the following cleaning procedures specified here-in: solvents (SSPCSP1); abrasive blasting (SSPC-SP5, -SP10, -SP6, or -SP7) power tools (SSPCSP3 or -SP11); or hand tools (SSPCSP2). Oil and grease shall be completely removed in accordance with SSPCSP1 before beginning any other cleaning method. Surfaces of welds shall be scraped and ground as necessary to remove all slag and weld spatter. Tools which produce excessive roughness shall not be used.

2. All components of equipment that can be properly prepared and coated after installation shall be installed prior to surface preparation. Components that will be inaccessible after installation shall have the surfaces prepared and coated before installation. Motors, drive trains, and bearings shall be protected during surface preparation in accordance with the equipment manufacturer's recommendations.

3. All cut or sheared edges shall be ground smooth to a 1/8 inch minimum radius for all material 1/4 inch thickness and larger. For material thickness less than 1/4 inch all cut or sheared edges shall be ground smooth to a radius equal to 1/2 the material thickness. Grinding of rolled edges on standard shapes with a minimum radius of the 1/16 inch will not be required.

4. All ferrous metal surfaces shall have all welds ground smooth and free of all defects in accordance with NACE Standard SP0178, Appendix C, Designation C and sharp edges

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ground smooth, if not previously prepared in the shop. Instead of blending of the weld with the base metal as required by the NACE standard, it will be acceptable to furnish a welded joint that has a smooth transition of the weld to the base metal. All welds shall be ground smooth to ensure satisfactory adhesion of paint.

5. The cleaning methods and surface profiles specified herein are minimums, and if the requirements printed in the coating manufacturer's data sheets exceed the limits specified, the value printed on the data sheets shall become the minimum requirement.

6. Ferrous Metal Surfaces – Non-immersion Service

   a. Ferrous metal surfaces, including fabricated equipment, in non-immersion service shall be cleaned to the degree recommended by the coating manufacturer for surfaces to be coated with coal tar epoxy, epoxy, and heat-resistant coatings, except galvanized surfaces. Surface preparation of ferrous metal surfaces in non-immersion service shall consist of abrasive blast cleaning to SSPC-SP6, and the first application of coating shall be performed on the same day. If more surface area is prepared than can be coated in one day, the uncoated area shall be blast cleaned again to the satisfaction of Engineer. Surface profile shall be as recommended by coating manufacturer, but not less than 2.0 mils.

7. Ferrous Metal Surfaces - Immersion Service

   a. Surface preparation of ferrous metal surfaces in immersion service shall consist of abrasive blast cleaning to at least SSPC-SP10 and the first application of coating shall be performed on the same day. If more surface area is prepared than can be coated in one day, the uncoated area shall be blast cleaned again to the satisfaction of Engineer. Surface profile shall be as recommended by coating manufacturer, but not less than 3.5 mils.

F. Concrete Surfaces

1. All concrete surfaces shall be free of objectionable substances and shall meet the coating manufacturer's recommendations for surface preparation. Concrete surfaces shall be prepared in accordance with SSPC-SP13/NACE 6. Any other surface preparation recommended by the coating material manufacturer shall be brought to Engineer's attention and may be incorporated into the work if acceptable to Engineer.

2. All concrete surfaces shall be dry when coated and free from dirt, dust, sand, mud, oil, grease, and other objectionable substances. Oil and grease shall be completely removed by use of solvents or detergents before mechanical cleaning is started.

3. New concrete shall have sufficiently cured for at least 4 weeks or reached moisture content levels at or below the material manufacturer's requirements before coating is applied. Concrete surfaces shall be tested for capillary moisture in accordance with ASTM D4263. There shall be no capillary moisture when coatings are applied on concrete.

4. All surfaces to be coated shall be cleaned and prepared in accordance with the printed manufacturer's requirements or ASTM D4258 and abraded in accordance with ASTM D4259. Surface profile shall be at least 25 percent of the dry film thickness specified for the coating system. Prior to application of the coating, the surfaces shall be

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thoroughly washed or cleaned by air blasting to remove all dust and residue. Spalled areas, voids, and cracks shall be repaired in accordance with the Concrete section and as acceptable to the Engineer. Fins and other surface projections shall be removed to provide a flush surface before application of coating.

5. Except where epoxy is applied as damp-proofing, the concrete surfaces, including those with bug holes less than 1 inch in any dimension, shall be prepared as recommended by the manufacturer, using an epoxy concrete filler and surfacer. Where coating with a vinyl ester the concrete filler and surfacer shall be as recommended by the manufacturer to be compatible with vinyl ester.

G. Concrete Block Surfaces

1. Voids and openings in concrete block surfaces shall be pointed. All exposed exterior surfaces and surfaces to be coated with epoxy, including the joints, shall be filled so that a continuous unbroken coating film is obtained.

H. Copper Tubing

1. All flux residue shall be removed from joints in copper tubing. Immediately before coating is started, tubing shall be wiped with a clean rag soaked in xylol.

I. Plastic Surfaces

1. All wax and oil shall be removed from plastic surfaces that are to be coated, including PVC and FRP, by wiping with a solvent compatible with the specified coating.

J. Hardware

1. Hardware items such as bolts, screws, washers, springs, and grease fittings need not be cleaned prior to coating if there is no evidence of dirt, corrosion, or foreign material.

K. Aluminum

1. When a coating system is required, remove all oil or deleterious substance with neutral detergent or emulsion cleaner or blast lightly with fine abrasive.

L. Stainless Steel

1. When a coating system is required, surface preparation shall conform to the coating manufacturer's recommendations.

M. Existing Coated Surfaces.

1. Existing Piping. Testing of the existing coatings on existing piping to be coated shall be conducted to determine adhesion capability and compatibility with the coatings specified herein. Existing coatings on piping shall be checked and prepared as recommended by the coating manufacturer and topcoated with the specified coatings. If necessary, existing coatings shall be removed to bare substrate. The piping shall be cleaned, primed, and coated as specified.

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2. Existing Concrete and Concrete Block Surfaces. Existing concrete and concrete block surfaces which have been coated shall be prepared in accordance with ASTM D4261 and ASTM D4258 and the coating manufacturer's recommendations.

3. Existing Equipment Surfaces. Existing surfaces of equipment that is modified shall be prepared as indicated above for non-immersion or immersion service as applicable.

N. Other Existing Coated Surfaces. Other existing coated surfaces which are indicated on the drawings to be recoated shall be prepared in accordance with the coating manufacturer's recommendations.

3.2 MIXING AND THINNING

A. Coating shall be thoroughly mixed each time any is withdrawn from the container. Coating containers shall be kept tightly closed except while coating is being withdrawn.

B. Coating shall be factory mixed to proper consistency and viscosity for hot weather application without thinning. Thinning will be permitted only as necessary to obtain recommended coverage at lower application temperatures. In no case shall the wet film thickness of applied coating be reduced, by addition of coating thinner or otherwise, below the thickness recommended by the coating manufacturer. Thinning shall be done in compliance with all applicable air quality regulations.

3.3 APPLICATION

A. Coating shall be applied in a neat manner that will produce an even film of uniform and proper thickness, with finished surfaces free of runs, sags, ridges, laps, and brush marks. Each coat shall be thoroughly dry and hard before the next coat is applied. Each coat shall be a different color, if available. In no case shall coating be applied at a rate of coverage greater than the maximum rate recommended by the coating manufacturer.

B. Coating failures will not be accepted and shall be entirely removed down to the substrate and the surface recoated. Failures include but are not limited to sags, checking, cracking, teardrops, fat edges, fisheyes, or delamination.

C. Priming

1. Edges, corners, crevices, welds, and bolts shall be given a brush coat (stripe coat) of primer before application of the primer coat. The stripe coat shall be applied by a brush and worked in both directions. Special attention shall be given to filling all crevices with coating. When using zinc primers the stripe coat shall follow the initial prime coat.

2. Abraded and otherwise damaged portions of shop-applied coating shall be cleaned and recoated as recommended by the manufacturer of the finish coating. Welded seams and other uncoated surfaces, heads and nuts of field-installed bolts, and surfaces where coating has been damaged by heat shall be given a brush coat of the specified primer. Before the specified spot or touchup coating of metal surfaces, edges, corners, crevices, welds, and bolts in the area of the spot or touchup coating shall be given a brush coat of primer. This

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patch, spot, or touchup coating shall be completed, and the paint film shall be dry and hard, before additional coating is applied.

D. Epoxy

1. When used, epoxy shall be applied in accordance with the coating manufacturer's recommendations, including temperature limitations and protection from sunlight until top-coated.

2. When concrete is to be coated, coatings shall not be applied to concrete surfaces in direct sunlight or when the temperature of the concrete is rising. Preferably the coating shall be applied when the temperature of the concrete is dropping.

3. When applying high build epoxy coatings with a roller or brush and where a dry film thickness of at least 4-6 mils per coat is required, two or more coats shall be applied to achieve the recommended dry film thickness equal to a spray applied coating.

E. Coal Tar Epoxy

1. When used, the application of coal tar epoxy, including time limits for recoating, shall conform to the recommendations of the coating manufacturer.

2. When concrete is to be coated, coatings shall not be applied to concrete surfaces in direct sunlight or when the temperature of the concrete is rising. Preferably the coating shall be applied when the temperature of the concrete is dropping.

F. Vinyl Ester

1. When used, the application of vinyl ester coating system, including time limits for recoating and temperature requirements of the materials, shall conform to the recommendations of the coating manufacturer.

G. Film Thickness

1. The total coating film thickness including intermediate coats and finish coat, shall be not less than the following:

Type of Coating	Minimum Dry Film Thickness
Medium consistency coal tar	20 mils.
Coal tar epoxy (two coats)	20 mils.
Epoxy	
Floors (two coats)	10 mils.
Surfaces with first coat of epoxy and final coat of aliphatic polyurethane	7 mils (5 mils DFT for epoxy plus 2 mils DFT for aliphatic polyurethane).
Surfaces with first and second coat of epoxy and final coat of aliphatic polyurethane	12 mils (10 mils DFT for epoxy plus 2 mils DFT for aliphatic polyurethane).
Other surfaces (two coats)	10 mils.

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Type of Coating	Minimum Dry Film Thickness
Immersion service (three coats)	15 mils.
Flake-filled epoxy (two coats)	30 mils.
Vinyl ester	30 mils.
Zinc, epoxy, polyurethane	
Surfaces with first coat of zinc, intermediate coat of epoxy, and final coat of aliphatic polyurethane	10 mils, 3 mils zinc, 5 mils epoxy, plus 2 mils for aliphatic polyurethane.
Heat-resistant (silicone)	3 mils.
High heat-resistant (silicone)	3 mils.
Other (one coat)	5 mils.
Other (two coats)	10 mils.

H. Weather Conditions

1. Coatings shall not be applied, except under shelter, during wet, damp, or foggy weather, or when windblown dust, dirt, debris, or insects will collect on freshly applied coating.

2. Coatings shall not be applied at temperatures lower than the minimum temperature recommended by the coating manufacturer, or to metal surfaces such as tanks or pipe containing cold water, regardless of the air temperature, when metal conditions are likely to cause condensation. When necessary for proper application, a temporary enclosure shall be erected and kept heated until the coating has fully cured.

3. Coatings shall not be applied at temperatures higher than the maximum temperature recommended by the coating manufacturer. Where coatings are applied during periods of elevated ambient temperatures, Contractor and the coatings manufacturer shall be jointly responsible to ensure that proper application is performed including adherence to all re-coat window requirements. Precautions shall be taken to reduce the temperature of the surface application, especially for metal, at elevated temperatures above 100° F including shading application area from direct sunlight, applying coating in the evening or at night, and ventilating the area to reduce the humidity and temperature,

4. Vinyl ester coating materials, when required, shall be maintained during transportation, storage, mixing, and application at the temperature required by the coating manufacturer, 35° F to 90° F.

3.4 REPAIRING FACTORY FINISHED SURFACES

A. Factory finished surfaces damaged prior to acceptance by Owner shall be spot primed and recoated with materials equivalent to the original coatings. If, in the opinion of Engineer, spot repair of the damaged area is not satisfactory, the entire surface or item shall be recoated.

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3.5 PROTECTION OF SURFACES

A. Throughout the work Contractor shall use drop cloths, masking tape, and other suitable measures to protect adjacent surfaces. Contractor shall be responsible for correcting and repairing any damage resulting from its or its subcontractors' operations. Coatings spilled or spattered on adjacent surfaces which are not being coated at the time shall be immediately removed. Exposed concrete or masonry not specified to be coated which is damaged by coatings shall be either removed and rebuilt or, where authorized by Owner, coated with two coats of masonry coating.

3.6 FIELD QUALITY CONTROL

A. The following inspection and testing shall be performed: surface profile, visual inspection, spark testing, adhesion testing, and wet and dry film thickness testing. All inspection and testing shall be witnessed by Engineer.

B. Surface Profile Testing

1. The surface profile for ferrous metal surfaces shall be measured for compliance with the specified minimum profile. The surface profile for concrete shall comply with SSPC 13/NACE 6 Table 1 for severe service.

C. Visual Inspection

1. The surface of the protective coatings shall be visually inspected.

D. Film Thickness

1. Coating film thickness shall be verified by measuring the film thickness of each coat as it is applied and the dry film thickness of the entire system. Wet film thickness shall be measured with a gauge that will measure the wet film thickness within an accuracy of ±0.5 mil. Dry film thickness shall be measured in accordance with SSPC-PA 2.

E. Spark Testing

1. Coatings shall be spark tested by the coating manufacturer using an acceptable electrical spark tester set at the recommended voltage. Engineer shall observe the spark testing and shall verify the testing equipment is working properly before the spark testing of the coating is started. The electrode movement shall be continuous and shall proceed in a systematic manner that will cover 110 percent of the coated surface.

2. Spark testing for coatings on metal shall be done in accordance with ASTM D5162. Spark testing for coating on concrete shall be done in accordance with ASTM D4787.

3. All detected holidays and pinholes shall be marked and repaired as recommended by the coating material manufacturer.

F. Adhesion Testing

1. An adhesion test shall be conducted on properly prepared and coated steel or concrete surface that is acceptable to the coating material manufacturer and Engineer. The test area

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shall be at least 2 square feet [0.2 m^2] or larger to allow a minimum of three tests to be conducted. The test area shall then be coated with the specified system and cured as recommended by the coating material manufacturer.

2. At the Engineer/Owner's discretion, pull-off strength adhesion tests of the coating shall be conducted by the coating material manufacturer in accordance with ASTM D4541 for metal surfaces and ASTM D7234 for concrete surfaces. Elcometer or other tensile adhesion tester acceptable to the Engineer shall be used. At least three adhesion tests shall be conducted and the results averaged. Adhesion strength shall equal or exceed the minimum adhesion strength recommended by the coating material manufacturer and shall exceed the tensile strength of the concrete.

3. If the coating fails the adhesion test, the cause of the failure shall be determined and corrected before reconducting the test.

3.7 FIELD PRIMING SCHEDULE

A. In general, steel and cast iron surfaces of equipment are specified to be shop primed. Any such surfaces which have not been shop primed shall be field primed. Damaged or failed shop coatings which have been determined unsuitable by Engineer shall be removed and the surfaces shall be field coated, including prime coat (if any). Galvanized, aluminum, stainless steel, and insulated surfaces shall be field primed. Primers used for field priming, unless otherwise required for repair of shop primers, shall be:

Surface To Be Primed	Material
Equipment, surfaces to be coated with	
Aliphatic polyurethane	Universal primer.
Epoxy	Same as finish coats.
Coal tar coating	Same as finish coats.
Vinyl ester	Same as finish coats.
Steel and cast iron, surfaces to be coated with	
Epoxy	Same as finish coats or inorganic zinc.
Coal tar coating	Same as finish coats.
Aluminum	Epoxy.
Galvanized	Epoxy.
Copper	Epoxy.
Stainless steel	Epoxy.
Plastic surfaces, including PVC and FRP	Same as finish coats.
Insulated steel or cast iron piping	Universal primer.
Piping Insulation	As Recommended by manufacturer of finish coats.

NOT TO BE USED FOR BIDDING PURPOSES

B. Unless otherwise recommended by the coating manufacturer or specified herein, priming will not be required on concrete, or concrete block, nor on metal surfaces specified to be coated with coal tar epoxy, and heat-resistant coatings. Concrete surfaces to be coated with epoxy shall be filled with epoxy concrete filler and surfacer so that a continuous film is obtained, except where concrete is damp-proofed with epoxy.

3.8 FINISH COATING SYSTEMS

A. The following schedule lists coatings systems and coating surface designations. See Article 1-3 for a definition of the surface designations.

No.	Finish Coating Systems	Coating Surface Designation						
		A	C	E	F	G	H	P
1.	Epoxy – One coat	x			x	x		
2.	Epoxy – Two coats	x	x	x	x	x		x
3.	Epoxy / NSF – Two coats		x	x				
4.	Epoxy – Three coats	x	x	x				
5.	Epoxy / NSF – Three coats	x	x	x				
6.	Epoxy – First coat Aliphatic polyurethane – Finish coat	x	x	x	x	x		x
7.	Epoxy – First and second coat Aliphatic polyurethane – Finish coat	x	x	x	x	x		
8.	Universal primer – First coat Aliphatic polyurethane – Finish coat	x		x				
9.	Medium consistency coal tar – Two coats	x	x	x				
10.	Coal tar epoxy – Two coats	x	x	x				
11.	Vinyl ester – Two coats	x	x	x				
12.	Heat resistant – Two coats						x	
13.	High heat resistant – Two coats						x	
14.	Zinc primer – First coat Epoxy – Intermediate coat Aliphatic polyurethane – Final coat	x		x				
15.	Flake-filled epoxy	x		x				
16.	Acrylic Latex Emulsion		x					x

B. Surfaces Not To Be Coated

1. Unless otherwise specified, the following surfaces shall be left uncoated:

   a. Exposed aluminum, except ductwork.
   b. Polished or finished stainless steel. Unfinished stainless steel, except flashings and counter flashings, shall be coated.

NOT TO BE USED FOR BIDDING PURPOSES

c. Nickel or chromium.
d. Galvanized surfaces, except piping, conduit, ductwork, and other items specifically noted.
e. Hot dipped galvanized fabrications, including fabricated pipe supports, except where specifically noted.
f. Rubber and plastics, except as specified.
g. Exterior concrete.
h. FRP wastewater baffle walls and troughs.
i. Surfaces specified to be factory finished.

C. Shop Finishing

1. Items to be shop finished including the following. All equipment and valves shall be factory finished with standard manufacturer colors unless otherwise specified. Shop finishing shall be in accordance with the coating manufacturer's recommendations.

D. Field Coating

1. Items to be field coated include the following. All equipment and valves shall be factory finished with standard manufacturer colors unless otherwise specified. Field coating shall be in accordance with the field priming schedule, the coating schedule, and the manufacturer's recommendations.

3.9 METAL SURFACES COATING SCHEDULE

A. Surfaces to be coated shall include new work, including Owner furnished equipment and surfaces disturbed by the Work. Surfaces that are not disturbed will not require recoating unless noted otherwise on the Drawings.

Surface To Be Coated	Finish Coating System
Non-galvanized structural and miscellaneous steel exposed to view or to the elements in exterior locations.	A7 or A14
Non-galvanized structural and miscellaneous steel exposed to view inside buildings.	A2
Steel handrails, steel floor plates, door frames.	A8
Unless otherwise specified, pumps, motors, speed reducers, and other machines and equipment exposed to view.	E8
Actuator surfaces for valves and gates, unless factory finished.	Outdoor – E8, Indoor – E8
Heating and air conditioning units, convector covers, electrical equipment cabinets, and similar Items and equipment (unless factory finished) exposed to view.	E8
Surfaces of cranes and hoists exposed to the elements outdoors.	E6 E7
Cast Iron and steel piping inside buildings, including piping to be insulated, valves, fittings, flanges, bolts, pipe support, hangers, and accessories and galvanized surfaces after proper priming.	A2

NOT TO BE USED FOR BIDDING PURPOSES

Surface To Be Coated	Finish Coating System
Pipe supports, hangers, bolts, and accessories inside buildings and galvanized surfaces after proper priming	A2
Cast Iron and steel piping in immersion service including inside buildings, including valves, fittings, flanges, bolts, pipe support, hangers, and accessories and galvanized surfaces after proper priming.	A4 A5
Pipe supports, hangers, bolts, and accessories in immersion service including inside buildings [and galvanized surfaces after proper priming	A4 A5
Cast Iron and steel piping above grade exposed to the elements and to view outdoors, including piping to be insulated, valves, fittings, flanges, bolts, pipe support, hangers, and accessories and galvanized surfaces after proper priming.	A6 A7 A14
Pipe supports, hangers, bolts, and accessories above grade exposed to the elements and to view outdoors [and galvanized surfaces after proper priming	A6 A7 A14
Copper pipe and tubing, including fittings and valves.	F1
Copper pipe and tubing, including fittings and valves exposed to view in exterior locations.	F6
Rapid mix equipment, all Iron and steel surfaces except stainless steel, motors, and speed reducers.	E4
Surface aeration equipment, all Iron and steel surfaces except stainless steel, motors, and speed reducers.	E4
All metal surfaces, unless otherwise specified, which will be submerged or buried, all or in part, including valves, and scum baffles, and cast iron slide gates, but excluding piping laid in the ground.	E4
All fully or partially submerged surfaces aeration mixing, and sludge mixing equipment.	E4
Cast iron and steel piping in aeration basin, and similar locations, including valves fittings, flanges, bolts, supports, and accessories.	A4
Aluminum in contact with concrete.	F1
Aluminum and galvanized ductwork and conduit indoors.	F1 or G1
Aluminum and galvanized ductwork and conduit exposed to elements outdoors.	F6 or G6
Aluminum materials exposed to the elements outdoors.	F6

NOT TO BE USED FOR BIDDING PURPOSES

3.10 CONCRETE AND MASONRY SURFACES COATING SCHEDULE Not Used.

3.11 MISCELLANEOUS SURFACES COATING SCHEDULE.

Plastic Surfaces, including PVC and FRP.	Outdoor – P6 Indoor – P2
Piping Insulation	Outdoor – P6 Indoor – P2

3.12 PIPING IDENTIFICATION SCHEDULE

A. Exposed piping and piping in accessible chases shall be identified with lettering or tags designating the service of each piping system, marked with flow directional arrows, and color coded.

B. Piping scheduled to be color coded shall be completely coated with the indicated colors, except surfaces specified to remain uncoated shall include sufficiently long segments of the specified color to accommodate the lettering and arrows. All other piping shall be coated to match adjacent surfaces, unless otherwise directed by Engineer.

C. Location

1. Lettering and flow direction arrows shall be provided on pipe near the equipment served, adjacent to valves, on both sides of wall and floor penetrations, at each branch or tee, and at least every 50 feet in straight runs of pipe. If, in the opinion of Engineer, this requirement will result in an excessive number of labels or arrows, the number required shall be reduced as directed.

D. Metal Tags

1. Where the outside diameter of pipe or pipe covering is 5/8 inch or smaller, aluminum or stainless steel tags shall be provided instead of lettering. Tags shall be stamped as specified and shall be fastened to the pipe with suitable chains. Pipe identified with tags shall be color coded as specified.

E. Lettering

1. Lettering shall be provided on plastic pipe labels. Plastic labels shall be " Marking Services Inc's model MS-970 Coiled Plastic Pipe Markers", or equal. Letter size shall be as follows:

Outside Diameter of Pipe or Covering	Minimum Height of Letters
5/8 inch and smaller	Metal tags -1/4 inch
3/4 to 4 inches	3/4 inch
5 inches and larger	2 inches

F. Color Coding and Lettering

NOT TO BE USED FOR BIDDING PURPOSES

1. All piping shall be painted with ANSI 70 gray color with plastic wrap around identification signage or as selected by Owner during the submittal process. Bands shall be 6 inches wide spaced along the pipe at 5 foot intervals.

G. Notes:

1. Electrical conduit shall be coated to match adjacent ceiling or wall surfaces as directed by Engineer. Vent lines shall be coated to match surfaces they adjoin.

2. In addition, special coating of the following items will be required:

Item	Color
Valve handwheels and levers	Red
Hoist hooks and blocks	Yellow and black stripes

3. Numerals at least 2 inches high shall be painted on or adjacent to all accessible valves, pumps, flowmeters, and other items of equipment which are identified on the Drawings or in the Specifications by number.

End of Section

NOT TO BE USED FOR BIDDING PURPOSES

SURFACE DESCRIPTION	SYSTEM NO.

SURFACE PREPARATION DESCRIPTION
☐ Solvent SSPC-SP1
☐ Ferrous Metal Non-immersion SSPC-SP6
☐ Ferrous Metal Immersion
☐ SSPC-SP10
☐ SSPC-SP-5
☐ Other

COATING	DFT mils	MANUFACTURER AND PRODUCT
First Coat (Primer)		
Second Coat		
Third Coat		
Total System		Not less than minimum thickness specified.

Notes: (Attached if needed.)	
Project:	
Coatings Manufacturer:	Initials _____
Painting Applicator:	Initials _____

BLACK & VEATCH	COATING SYSTEM DATA SHEET	Fig 1- 09 96 11

NOT TO BE USED FOR BIDDING PURPOSES

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SHOP PRIMED SURFACE DESCRIPTION	**SYSTEM NO. -**	**-F**

SURFACE PREPARATION DESCRIPTION
☐ Solvent SSPC-SP1
☐ Other

COATING	**DFT mils [µm]**	**MANUFACTURER AND PRODUCT**
Shop Primer		(Identify Product/Type)
Touchup		
Intermediate Coat		
Finish Coat		
Total System		Not less than minimum thickness specified.

Notes: (Attached if needed.)

Project:	
Coatings Manufacturer:	Initials _____
Painting Applicator:	Initials _____

NOT TO BE USED FOR BIDDING PURPOSES

BLACK & VEATCH	COATING SYSTEM DATA SHEET	Fig 2-09 96 11

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DIVISION 10 - Specialties

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SECTION 10 99 00 - MISCELLANEOUS SPECIALTIES

PART 1 - GENERAL

1.1 SCOPE

A. This section covers miscellaneous specialties items not covered in other sections.

1.2 GENERAL

A. Miscellaneous specialties shall be provided as specified herein and in accordance with the details, arrangements, and dimensions specified herein. Whether or not specifically indicated or specified, fasteners and other accessories shall be provided as required and as recommended by the manufacturer of the specific item.

1.3 SUBMITTALS

A. Drawings and data covering items specified in this section shall be submitted in accordance with the Submittal Procedures section.

PART 2 - PRODUCTS

2.1 PRODUCTS

A. Multipurpose Dry Chemical Fire Extinguishers (Type FE-1). Portable fire extinguishers of the all-purpose, nitrogen-pressured, dry chemical type shall be provided as scheduled herein, and where indicated on the Drawings. The fire extinguishers shall be UL-approved for Class A, B, and C fires and shall have a 20-pound capacity, such as Badger "20MP-84", Buckeye "20TALL-ABC", or Kidde "PRO PLUS 20MP" or approved equal. Finish of shell shall be red.

B. Carbon Dioxide Fire Extinguishers (Type FE-2). Portable fire extinguishers which are noted below to be UL-approved for Class C fires shall be provided as scheduled herein, and where indicated on the Drawings. Class C fire extinguishers shall have a 10-pound capacity, such as Badger "B10V-1", Buckeye "10CD", or Kidde "Pro 10 CD" or approved equal. Finish of shell shall be red with all metal handle and valve.

C. Fire Extinguisher Schedule. Wall-mounted fire extinguishers shall be mounted on suitable wall brackets at the specific locations designated by the Engineer. Cabinet-mounted fire extinguishers shall be installed in cabinets in the locations shown on the drawings.

NOT TO BE USED FOR BIDDING PURPOSES

The following fire extinguishers shall be provided:

Room No.	Location	Quantity	Mounting
20-107	Electrical Room (Near door 20-107, Class C)	1	Wall
20-106	Mezzanine Level (Near door 20-107, Class ABC)	1	Wall

2.2 FIRE EXTINGUISHER CABINETS

A. Fire extinguisher cabinets shall be provided and installed at the locations indicated on the Drawings. Cabinets shall be Larson Architectural Series, full-glass style, "Model AL-2712-SM" surface mounted type. Cabinets shall meet ADA requirements when mounted more than 27 inches above the floor. Trim and door shall be finished in anodized clear aluminum.

PART 3 – EXECUTION (Not used.)

End of Section

NOT TO BE USED FOR BIDDING PURPOSES