Issued for Bid

Kessinger Dam Rehabilitation

Contract Documents and Technical Specifications

Prepared for:

City of Rome, New York

Issue Date:

February 7, 2025

WARNING
IT IS A VIOLATION OF SECTION 7209, SUB-DIVISION 2 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR TO ALTER IN ANY WAY PLANS, SPECIFICATIONS, PLATES OR REPORTS TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER OR LAND SURVEYOR HAS BEEN ATTACHED.

CDM Smith

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INVITATION TO BID
RFB 2025-001

Sealed Bids for construction of the Kessinger Dam Rehabilitation will be received by the City of Rome at the City Clerk's office, Rome City Hall, 198 North Washington Street, Rome, New York 13440 **until 11AM, on Thursday April 3, 2025 and at that time and place bids will be publicly opened and read aloud.**

Separate sealed bids will be received for the following:

Kessinger Dam Rehabilitation Project

The project will generally consist of concrete rehabilitation of the spillway, non-overflow sections, gatehouse and flip bucket. Replacement of manual strainers with auto strainers at the screens, new mixers and a floating ice boom are also included in the project. Electrical upgrades to power the new equipment are included.

BID MATERIALS
Bids will be advertised electronically at:

- http://www.romenewyork.com/treasurer-purchasing/
- https://www.bidnetdirect.com/new-york/city-of-rome

Digital copies of the contract documents may also be examined at the following locations/sites:

- Dodge Data & Analytics (www.construction.com/projects)
- Mohawk Valley Builders Exchange, 10 Main Street, Suite 202 Whitesboro, NY 13492
- Eastern Contractors Association Inc., 6 Airline Drive, Albany NY 12205
- Syracuse Builders Exchange, 6563 Ridings Road, Syracuse, NY 13206

OFFICIAL PLAN HOLDERS LIST
Bidders who intend to submit a bid must call or email the City of Rome to be placed on the official plan holders list.

All Contractors that obtain contract documents must notify the City of Rome in order to be placed in the official plan holder's list, in order to receive addenda and any other bid correspondence. Bids received from contractors other than those on the official plan holder's list will not be accepted. To be placed on the official plan holders list please contact the Department of Engineer at either (315) 339-7627 or jguiliano@romecitygov.com

PRE-BID CONFERENCE & PROJECT QUESTIONS
There will be a pre-bid conference for this bid on March 4, 2025 at 10:00 am at Rome's Water Filtration Plant at 6105 Stokes-Lee Center Road, Lee Center, NY 13363 followed by a site visit to Kessinger Dam, 0 Fish Creek Dam Road, Taberg, NY 13471.

Questions pertaining to the bid package should be directed to Ms. Nancy Vigneault, P.E. at CDM Smith via e-mail (vigneaultno@cdmsmith.com).

ADDENDA
The City will not issue Addenda, nor will its Engineer issue addenda nor respond to bidder's questions five (5) days prior to the scheduled bid opening unless stated bid date is postponed.

BID SECURITY
Each Bid shall be submitted in accordance with the Instructions to Bidders and shall be accompanied by a Bid Security in the amount of five (5) percent of the Bid. Bidders may not withdraw their Bids for a period of forty-five (45) calendar days after the actual date of the opening of the Bids.

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

ADDITIONAL NOTES
Complete instructions for filing Bids are included in the Instructions to Bidders.

Any contracts awarded under this Invitation to Bid are expected to be funded in part by grants and loans from the New York State Drinking Water State Revolving Fund.

Bidders on this work are required to comply with 40 CFR Part 33.240 of the United States Environmental Protection Agency's Region 2 policy on the increased utilization of Minority Business Enterprises (MBEs) and Women Business Enterprises (WBEs). The requirements for bidders and contractors covered by this policy are explained in the Instructions to Bidders.

Wage rates for this Project are subject to both the minimum wage rates as per New York State Prevailing Wage Schedule and Davis-Bacon Wage Requirements for SRF Recipients.

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

Rome City Clerk,
Eric Seelig

Legal Date: February 18, 2025

DESIGN ENGINEER
Nancy Oram Vigneault, P.E., PMP, BCEE
Associate Engineer
CDM Smith
308 Maltbie Street
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Syracuse, NY 13204
Phone: (315) 434-3247
vigneaultno@cdmsmith.com

OWNERS CONTACT
Joseph Guiliano
Commissioner of Public Works
City of Rome
City Hall
198 N Washington Street
Rome, NY 13440
Phone: (315) 336-6000

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SECTION 002113.16 - INSTRUCTIONS TO BIDDERS

City of Rome
Kessinger Dam Rehabilitation

Contract No. 1G – General
Contract No. 1E - Electrical

INSTRUCTIONS TO BIDDERS

ARTICLE 1. QUALIFICATIONS OF BIDDERS

1.1 Bidders may be investigated by OWNER to determine if they are qualified to perform the Work. All Bidders shall be prepared to submit within five days of OWNER's or ENGINEER's request, written evidence of such information and data necessary to make this determination.

1.2 The investigation of a Bidder will seek to determine whether the organization is adequate in size, is authorized to do business in the jurisdiction where the project is located, has had previous experience and whether available equipment and financial resources are adequate to assure OWNER that the Work will be completed in accordance with the terms of the Agreement. The amount of other work to which the Bidder is committed may also be considered.

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

1.4 OWNER reserves the right to reject any Bid if the evidence submitted by, or the investigation of, such Bidder fails to satisfy OWNER that such Bidder is properly qualified to carry out the obligations of the Contract Documents and to complete the Work contemplated therein.

ARTICLE 2. COPIES OF CONTRACT DOCUMENTS

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

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

ARTICLE 3. EXAMINATION OF CONTRACT DOCUMENTS AND SITE

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

3.2 Boring locations and the boring logs are included in the Appendix to the Project Manual. Concrete samples may be examined at the City's office during regular business hours.

3.2 Surveys and investigative reports of subsurface or latent physical conditions at the site which have

been relied upon by ENGINEER in preparing the Contract Documents are identified in Article 5 of the Supplementary Conditions. Copies of these reports are included in the Appendix to the Project Manual. These reports are not guaranteed or warranted as to accuracy or completeness, nor are they part of the Contract Documents.

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

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

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

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

ARTICLE 4. INTERPRETATIONS

4.1 All questions about the meaning or intent of the Contract Documents shall be received in writing by CDM Smith, vigneaultno@cdmsmith.com Attn: Nancy Vigneault, at least ten days before the date set herein for the opening of bids.

4.2 Written clarifications or interpretations will be issued by Addenda not later than five days before the bid opening date. Only questions answered by formal written Addenda will be binding. Oral and other clarifications or interpretations will be without legal effect. Addenda will be emailed or faxed to all parties recorded as having received the Contract Documents.

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

ARTICLE 5. PRE-BID CONFERENCE

5.1 A pre-bid conference will be held on **March 4, 2025 at 10:00AM** at City of Rome Water Filtration Plant at 6105 Stokes-Lee Center Road, Lee Center, NY 13363 followed by a site visit to Kessinger Dam, 0 Fish Creek Dam Road, Taberg, NY 13471 to discuss the requirements of the Contract Documents.

ARTICLE 6. BID SECURITY

6.1 Each Bid must be accompanied by cash, bid bond, or a certified check on, or a treasurer's or cashier's check issued by, a responsible bank or trust company, payable to OWNER. The Bid Security shall be in the amount stated in the Invitation to Bid. Bid Security shall be sealed in a separate envelope from the Bid and then attached to the envelope containing the Bid. All Bid Securities except those of the three lowest responsible and eligible Bidders will be returned within five days, Saturdays, Sundays, and legal holidays excluded, after opening of the Bids. All Bid Securities will be returned on the execution of the Agreement or if no award is made, within thirty (30 days) after the actual date of opening of the Bids, unless forfeited under the conditions herein stipulated.
6.2 In case a party to whom a Contract is awarded shall fail or neglect to execute the Agreement and furnish the satisfactory bonds within the time specified, OWNER may determine that the Bidder has

abandoned the Contract, and thereupon the Bid Forms and acceptance shall be null and void and the Bid Security accompanying the Bid Form shall be forfeited to OWNER as liquidated damages for such failure or neglect and to indemnify said OWNER for any loss which may be sustained by failure of the Bidder to execute the Agreement and furnish the bonds as aforesaid, provided that the amount forfeited to OWNER shall not exceed the difference between the Bid Price of said Bidder and that of the next lowest responsible and eligible bidder and provided further that, in case of death, disability, or other unforeseen circumstances affecting the Bidder, such Bid Security may be returned to the Bidder. After execution of the Agreement and acceptance of the bonds by OWNER, the Bid Security accompanying the Bid Form of the Successful Bidder will be returned.

ARTICLE 7. PERFORMANCE, PAYMENT AND OTHER BONDS

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

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

ARTICLE 8. BID FORM

8.1 Each Bid shall be submitted on the Bid Form included in the Contract Documents. The Bid Form shall be removed and submitted separately. All blank spaces for Bid prices must be filled in with the unit price for the item or the lump sum for which the Bid is made.

8.2 Bid Forms shall be completed in ink or by typewriter. The Bid price of each item on the form shall be stated in words, and figures. If unit prices are required on the Bid Form, discrepancies between unit prices and their respective total amounts will be resolved in favor of the unit prices. Discrepancies between words and figures will be resolved in favor of words. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

8.3 Bids by corporations shall be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown below the signature.

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

8.5 Bids by partnerships shall be executed in the partnership name and signed by a partner, whose title shall appear under the signature. The official address of the partnership shall be shown below the signature.

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

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

8.8 The address to which communications regarding the Bid are to be directed shall be shown.

8.9 One copy of each Bid shall be submitted in a sealed opaque envelope bearing on the outside the Bidder's name, address, and the Project Title for which the Bid is submitted. (If forwarded by mail, Bid and sealed envelope marked as described above shall be enclosed in another envelope with the notation "BID ENCLOSED" on the face and addressed as indicated in the Invitation to Bid.)

ARTICLE 8A. ADDITIONAL DOCUMENTS TO BE SUBMITTED WITH BID FORM

- Bidders Qualification Statement.
- Non-Collusive Affidavit.
- Bid Bond.
- Lobbying Certification.
- BABA Contractor's Certification
- AIS Contractor Certification.

ARTICLE 9. RECEIPT OF BIDS

9.1 Sealed Bids for the work of this Contract will be received at the time and place indicated in the Invitation to Bid.

9.2 OWNER may consider informal any Bid not prepared and submitted in accordance with the provisions hereof.

9.3 Bidders are cautioned that it is the responsibility of each individual bidder to assure that their bid is in the possession of the responsible official or the designated alternate prior to the stated time and at the place of the Bid Opening. Owner is not responsible for bids delayed by mail and/or delivery services, of any nature.

ARTICLE 10. MODIFICATION AND WITHDRAWAL OF BIDS

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

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

10.3 Any Bid received after the time and date specified shall not be considered. No Bid may be withdrawn for a period of forty-five (45) days, after the actual date of the opening of the Bids.

ARTICLE 11. AWARD OF CONTRACT

11.1 The Contract will be awarded to the lowest responsible and eligible Bidder (Successful Bidder). Such a Bidder shall possess the skill, ability, and integrity necessary for the faithful performance of the work. The term "lowest responsible and eligible Bidder" as used herein shall mean the Bidder whose Bid is the lowest of those Bidders possessing the skill, ability and integrity necessary to the faithful performance of the Work.

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

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

11.4 OWNER also reserves the right to reject the Bid of any Bidder that OWNER considers to be unqualified relative to Article 1 above.

11.5 If the Contract is to be awarded, OWNER will give the Successful Bidder a Notice of Award within forty-five (45) days, after the actual date of the opening of the Bids. All bids shall remain open for forty-five (45) days **,**after the actual date of the opening of the Bids but OWNER may, at OWNER's sole discretion, release any Bid and return the Bid Security prior to that date.

ARTICLE 12. EXECUTION OF AGREEMENT

12.1 When OWNER gives a Notice of Award to the Successful Bidder, it will be accompanied by at least six unsigned copies of the Agreement and all other applicable Contract Documents. Within fifteen (15) days, excluding Saturdays, Sundays and legal holidays, after the date of receipt of such notification CONTRACTOR shall execute and return all copies of the Agreement and all other applicable Contract Documents to OWNER.

ARTICLE 13. SAFETY AND HEALTH REGULATIONS

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

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

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

ARTICLE 14.FEDERAL WAGE RATES
ARTICLE 14. FEDERAL REQUIREMENTS

14.1 This Contract is Federally assisted. Terms and Conditions for SRF Equivalency Projects must be followed, refer to Section 007344. The Contractor must comply with the Davis-Bacon Act, the Anti-Kickback Act and the Contract Work Hours and Safety Standards Act, Title VI of the Civil Rights Act of 1964 and Executive Orders 11246 and 11375.

14.1 Davis Bacon (DB) Prevailing Wage Requirements

14.1.1 The following clauses shall apply to any contract in excess of $2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a treatment work under the CWSRF or a construction project under the DWSRF financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in § 5.1 or the FY 2012 Appropriations Act, the following clauses:

(1) Minimum wages.

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

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1 (b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(l)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(l)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

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

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

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

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

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known) or their representatives, and the Owner(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the Owner(s) to the State award official. The State award official will transmit the request, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification request within 30 days of receipt and so advise the State award official or will notify the State award official within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the Owner(s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the request and the local wage determination, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The request shall be sent to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(l)(ii)(B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

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

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

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

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, their correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section l(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)(l)(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 l(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in

providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

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

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

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

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

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

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

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

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the State, EPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency or State may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees.

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

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding

journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

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

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

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

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

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

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

(10)Certification of eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(l).

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

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

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

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

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

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (a)(l) of this section the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (a)(l) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (a)(l) of this section.

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

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

(b) In addition to the clauses contained in Item 1, above, in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1, the Owner shall insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Owner shall insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

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

[14.3 All construction associated with this contract will be governed by Heavy and Highway Rates and Heavy Dredging Rates.

ARTICLE 15. AMERICAN IRON AND STEEL REQUIREMENT

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

ARTICLE 16. NONDISCRIMINATION IN EMPLOYMENT

16.1 Contracts for work under this Project will obligate the Contractor and Subcontractors not to discriminate in employment practices.

16.2 Bidders for the Contract shall indicate in their Bid, whether they have previously performed work subject to the President's Executive Order No. 11246, or any preceding similar Executive Order.

16.3 Bidders must, if requested, submit a compliance report concerning their employment practices and policies in order to maintain their eligibility to receive the Award of the Contract.

16.4 Successful bidders must, if requested, submit a list of all Subcontractors who will perform work on the Project and written signed statements from authorized agents of the labor pools with which they will or may deal for employees on the Work, together with supporting information to the effect that said labor pools' practices and policies are in conformity with Executive Order No. 11246, and that said labor pools will affirmatively cooperate in or offer no hindrance to the recruitment, employment, and equal treatment of employees seeking employment and performing work under the Contract, or a certification as to what efforts have been made to secure such statements when such agents or labor pools have failed or refused to furnish same prior to the Award of the Contract.

16.5 Successful Bidders must be prepared to comply in all respects with the U.S. Environmental Protection Agency Labor Standards form entitled: "Labor Standards Provisions for Federal and Federally Assisted Contracts", dated May, 1987, a copy of which is included in Part II of the Supplementary Conditions.

ARTICLE 17. INFORMATION REGARDING BUY AMERICAN PROVISION

17.1 Build America, Buy America (BABA) and American Iron and Steel (AIS) requirements apply. Refer to Section 007344.

ARTICLE 18. UTILIZATION OF MINORITY AND WOMEN BUSINESS ENTERPRISES (MBE's AND WBE's) AND DISADVANTAGED BUSINESS ENTERPRISES (DBE'S)

18.1 Bidders on this work are required to comply with the 40 CFR 33.240 regarding the use of Minority Business Enterprise (MBE) and Woman Business Enterprises (WBE). The requirements for Bidders and Contractors are explained in the "Recipients Guidance for Utilization of Minority Business Enterprise in

procurements under EPA Assistance Agreements." Refer to Section 007344 for SRF Terms and Conditions related to M/WBE and DBE requirements.

ARTICLE 19. SPECIAL LEGAL REQUIREMENTS

19.1 Insurance: see Section 007200.16 “General Conditions” and Section 007300.16 “Supplementary Conditions.”

19.2 Sales Tax Exemption: see Section 007300.16 “Supplementary Conditions.”

19.3 Non-Collusive Bidding Certification: see Bid Form, Sections 004113 and Supplementary Conditions - Additional Articles, Section 007321, Article 21.

19.4 Wage Rates: see Supplementary Conditions - Additional Articles, Section 007321, Article 22, Federal Davis Bacon Requirements, Section 007300.27, NYS Prevailing Wage Requirements, Section 007345, and NYS Agency Requirements, Section 007344.

ARTICLE 20. SUBCONTRACTORS, SUPPLIERS AND OTHER

20.1 If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers and other persons and organizations to be submitted to Owner in advance of the Notice of Award, the apparent Successful Bidder, and any other Bidder so requested, will within seven days after the Bid Opening submit to Owner a list of all Subcontractors, Suppliers and other persons and organizations (including those who are to furnish the principal items of material and equipment) proposed for those portions of the Work for which such identification is so required. Such list shall be accompanied by an experience statement with pertinent information as to similar projects and other evidence of qualification for each such Subcontractor, Supplier, person or organization if requested by Owner.

If Owner or Engineer/Architect after due investigation has reasonable objection to any proposed Subcontractor, Supplier, other person or organization, either may before the Notice of Award request the apparent Successful Bidder to submit an acceptable substitute without an increase in Bid price.

20.2 If the apparent Successful Bidder declines to make any such substitution, Owner may award the contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers and other persons and organizations. The declining to make requested substitutions will not constitute grounds for sacrificing the Bid Security of any Bidder. Any Subcontractor, Supplier, other person or organization listed and to whom Owner or Engineer/Architect does not make written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer/Architect subject to revocation of each acceptance after the Effective Date of the Agreement as provided in Article 7 of the General Conditions.

20.3 Some or all of such identification of subcontractors and material and equipment suppliers may be requested as part of the Bid by inclusion of an appropriate form(s) in the Bid Forms that must be completed by all Bidders.

20.4 No Contractor shall be required to employ any Subcontractor, other person, or organization against whom he has reasonable objection.

Joseph Guiliano

Commissioner of Public Works
City of Rome, New York

END OF DOCUMENT 002113.16

SECTION 004113.16 - BID FORM

BID FORM
TO

City of Rome
Kessinger Dam Rehabilitation
RFB-2025-001
Contract 1G - General

The undersigned declares that the only persons or parties interested in this Bid as principals are as stated; that the Bid is made without any collusion with other persons, firms, or corporations; that all the Contract Documents as prepared by CDM Smith, 308 Maltbie Street, Suite 101, Syracuse, New York 13204 and dated February 2025 have been carefully examined; that the undersigned is fully informed in regard to all conditions pertaining to the Work and the place where it is to be done, and from them the undersigned makes this Bid. These prices shall cover all expenses incurred in performing the Work required under the Contract Documents, of which this Bid Form is a part.

If a Notice of Award accompanied by at least six unsigned copies of the Agreement and all other applicable Contract Documents is delivered to the undersigned within forty five (45) days, after the actual date of the opening of the Bids, the undersigned will within fifteen days, after the date of receipt of such notification, execute and return all copies of the Agreement and all other applicable Contract Documents to OWNER. The premiums for all Bonds required shall be paid by CONTRACTOR and shall be included in the Contract Price. The undersigned Bidder further agrees that the Bid Security accompanying this Bid shall become the property of OWNER if the Bidder fails to execute the Agreement as stated above.

The undersigned hereby agrees that the Contract Time shall commence twenty days following the Effective Date of the Agreement and to fully complete the Work on or before November 15, 2026 and in accordance with the terms as stated in the Agreement. The undersigned further agrees to pay OWNER, as liquidated damages, $1,000 per day for each calendar day beyond the Contract Time Limit or extension thereof that the Work remains incomplete, in accordance with the terms of the Agreement.

The undersigned acknowledges receipt of addenda numbered:

_____

In accordance with the above understanding, the undersigned proposes to perform the Work, furnish all materials and complete the Work in its entirety in the manner and under the conditions required at the prices listed as follows:

Kessinger Dam Rehabilitation
Bid Form - General Contractor
Contract 1G

Item No.	Estimated Quantity	Pay Item Description Unit Prices in Words	Unit Price in Figures	Extended Total in Figures
1	1 Lump Sum	Mobilization/Demobilization _____Dollars _____Cents/LS	$_____	$_____
2	1 Lump Sum	Spillway and Right Non-Overflow Section Cofferdams and Dewatering _____Dollars _____Cents/LS	$_____	$_____
3	1 Lump Sum	Gatehouse Cofferdams and Dewatering _____Dollars _____Cents/LS	$_____	$_____
4	10 CY	Right Training Wall Concrete Demolition _____Dollars _____Cents/CY	$_____	$_____
5	155 SY	Spillway / Right Non-Overflow Section Concrete Demolition, Up to 6" Thick _____Dollars _____Cents/SY	$_____	$_____
6	635 SY	Spillway / Right Non-Overflow Section Concrete Demolition, 6" to 8" Thick _____Dollars _____Cents/SY	$_____	$_____
7	25 SY	Spillway/ Right Non-Overflow Section Concrete Demolition, 8 to 12" depth _____Dollars _____Cents/SY	$_____	$_____

8	20 SY	Underwater Concrete Demolition on U/S Face of Spillway _____Dollars _____Cents/SY	$_____	$_____
9	980 Each	#4 Dowels Epoxied into Existing Spillway, Right Non-Overflow Section, Right and Left Training Walls, and Bypass Channel Retaining Wall Concrete _____Dollars _____Cents/Each	$_____	$_____
10	1,050 LF	Miradrain - 6"-Wide Strip _____Dollars _____Cents/LF	$_____	$_____
11	10 CY	Right Training Wall Concrete _____Dollars _____Cents/CY	$_____	$_____
12	155 SY	Spillway/Right Non-Overflow Section Concrete, Up to 6" Thick _____Dollars _____Cents/SY	$_____	$_____
13	635 SY	Spillway/ Right Non-Overflow Section Concrete, 6" to 8" thick _____Dollars _____Cents/SY	$_____	$_____
14	25 SY	Spillway/ Right Non-Overflow Section Concrete, 8" to 12" Thick _____Dollars _____Cents/SY	$_____	$_____
15	20 SY	Underwater Concrete Repair on Upstream Face of Spillway _____Dollars _____Cents/SY	$_____	$_____
16	1 LS	Ice Boom and Anchors _____Dollars _____Cents/LS	$_____	$_____

17	1 LS	Clear/prepare area for grouted riprap (cut tree/brush at edge of water adjacent to non-overflow downstream area _____Dollars _____Cents/LS	$_____	$_____
18	95 CY	Grouted Riprap _____Dollars _____Cents/CY	$_____	$_____
19	30 LF	Crack Repair _____Dollars _____Cents/LF	$_____	$_____
20	115 CY	Exterior Gatehouse Wall Demolition _____Dollars _____Cents/CY	$_____	$_____
21	270 SY	Interior Gatehouse Wall Demolition, 1" to 2" Thick _____Dollars _____Cents/SY	$_____	$_____
22	56 SY	Interior Gatehouse Wall Demolition, 6" Thick _____Dollars _____Cents/SY	$_____	$_____
23	44 CY	Left Training Wall and Bypass Discharge Retaining Wall Demolition _____Dollars _____Cents/CY	$_____	$_____
24	220 EA	#5 Dowels Epoxied into Gatehouse Concrete _____Dollars _____Cents/Each	$_____	$_____
25	12 EA	#6 Rock Dowels Epoxied Inside Gatehouse _____Dollars _____Cents/Each	$_____	$_____

26	115 CY	Exterior Gatehouse New Concrete _____Dollars _____Cents/CY	$_____	$_____
27	270 SY	Interior Gatehouse Overlay Repair Mortar, 1" to 2" Thick _____Dollars _____Cents/SY	$_____	$_____
28	56 SY	Interior Gatehouse New Concrete, 6" Thick _____Dollars _____Cents/SY	$_____	$_____
29	770 SF	Interior Gatehouse Plaster Repair of Masonry Walls _____Dollars _____Cents/SF	$_____	$_____
30	1540 SF	Exterior Gatehouse Masonry Restoration _____Dollars _____Cents/SF	$_____	$_____
31	1 LS	Interior Gatehouse Painting _____ Dollars _____Cents/LS	$_____	$_____
32	1 LS	Exterior Gatehouse Painting _____Dollars _____Cents/LS	$_____	$_____
33	44 CY	Left Training Wall and Bypass Discharge Retaining Wall Concrete _____Dollars _____Cents/CY	$_____	$_____
34	1 LS	Upstream Retaining Wall _____Dollars _____Cents/LS	$_____	$_____

35	2 EA	Slotted Slide Gate and Manual Trash Rack (exterior of gatehouse) _____Dollars _____Cents/Each	$_____	$_____
36	1 LS	Metal Grating _____Dollars _____Cents/LS	$_____	$_____
37	1 LS	Handrail _____Dollars _____Cents/LS	$_____	$_____
38	590 SY	Cementitious Slurry Waterproofing _____ Dollars _____ Cents/SY	$_____	$_____
39	1 LS	Process equipment furnish/install - new De-icing mixers, replace basket strainers with Autostrainers, nozzles for screen discharge trough, and ancillary piping _____Dollars _____Cents/LS	$_____	$_____
40	1 LS	Bypass Water Supply System (including coarse screens before discharge to water tunnel and controls) _____Dollars _____Cents/LS	$_____	$_____
41	1 Allowance	Controls/Programming Allowance	$50,000	$50,000
42	1 Allowance	Project Contingency allowance to be used at owner's discretion *Five hundred thousand dollars*	$500,000	$500,000

Total - General Contractor (Contract 1G) $_____

TOTAL CONTRACT 1G BID PRICE IN WORDS (including above Allowances)

$_____

_____

The undersigned agrees that extra work, if any, will be performed and will be paid for in accordance with Article 11 of the Conditions of the Contract.

Amounts shall be shown in both words and figures, where indicated. In case of discrepancy, the amount shown in words will govern.

The above prices shall include all labor, materials, bailing, shoring, removal, overhead, profit, insurance and incidentals required to complete the Work.

The names and residences of all persons and parties interested in the foregoing Bid as principals are as follows:

(Give first and last names in full. In the case of a corporation, see Article 8.3 of the Instructions to Bidders, in the case of a limited liability company [LLC], see Article 8.4 of the Instructions to Bidders, in the case of a partnership, see Article 8.5 of the Instructions to Bidders.)

_____

_____

_____

The undersigned hereby certifies that he/she is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work.

The undersigned hereby certifies under the penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this section, the word "person" shall mean any natural person, joint venture, partnership, corporation, or other business or legal entity.

_____ _____

Social Security Number or Federal Identification Number

Signature of Individual or Corporate Name

By: _____

Corporate Officer (if applicable)

Notice of acceptance should be mailed, faxed, or delivered to the following:

_____
(Name)

By: _____
(Title)

_____
(Business Address)

_____
(City and State)

Date _____

If the Bidder is a corporation, indicate State of incorporation under signature, and affix corporate seal; if a partnership, give full names and residential addresses, if different from business address.

END OF SECTION 004113.16

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SECTION 004113.18 - BID FORM

BID FORM
TO

City of Rome
Kessinger Dam Rehabilitation
RFB-2025-001
Contract 1E - Electrical

The undersigned declares that the only persons or parties interested in this Bid as principals are as stated; that the Bid is made without any collusion with other persons, firms, or corporations; that all the Contract Documents as prepared by CDM Smith, 308 Maltbie Street, Suite 101, Syracuse, New York 13204 and dated February 2025 have been carefully examined; that the undersigned is fully informed in regard to all conditions pertaining to the Work and the place where it is to be done, and from them the undersigned makes this Bid. These prices shall cover all expenses incurred in performing the Work required under the Contract Documents, of which this Bid Form is a part.

If a Notice of Award accompanied by at least six unsigned copies of the Agreement and all other applicable Contract Documents is delivered to the undersigned within forty five (45) days, after the actual date of the opening of the Bids, the undersigned will within fifteen days, after the date of receipt of such notification, execute and return all copies of the Agreement and all other applicable Contract Documents to OWNER. The premiums for all Bonds required shall be paid by CONTRACTOR and shall be included in the Contract Price. The undersigned Bidder further agrees that the Bid Security accompanying this Bid shall become the property of OWNER if the Bidder fails to execute the Agreement as stated above.

The undersigned hereby agrees that the Contract Time shall commence **twenty** days following the Effective Date of the Agreement and to fully complete the Work **on or before November 15, 2026** and in accordance with the terms as stated in the Agreement. The undersigned further agrees to pay OWNER, as liquidated damages, **$1,000** per day for each calendar day beyond the Contract Time Limit or extension thereof that the Work remains incomplete, in accordance with the terms of the Agreement.

The undersigned acknowledges receipt of addenda numbered:

_____

In accordance with the above understanding, the undersigned proposes to perform the Work, furnish all materials and complete the Work in its entirety in the manner and under the conditions required at the prices listed as follows:

Kessinger Dam Rehabilitation Bid Form - Electrical Contractor Contract 1E				
Item No.	Estimated Quantity	Pay Item Description Unit Prices in Words	Unit Price in Figures	Extended Total in Figures
1	1 Lump Sum	Mobilization/Demobilization _____Dollars _____Cents/LS	$_____	$_____
2	1 Lump Sum	Electrical Improvements _____Dollars _____Cents/LS	$_____	$_____
3	1 Allowance	National Grid Service Upgrade _____Dollars _____Cents/LS	$230,000	$230,000
4	1 Allowance	Project contingency to be used as directed by Owner _____Dollars _____Cents/LS	$100,000	$100,000

Total - Electrical Contractor (Contract 1E) $_____

TOTAL CONTRACT 1E BID PRICE IN WORDS (including above Allowances)

$_____

_____

The undersigned agrees that extra work, if any, will be performed and will be paid for in accordance with Article 11 of the Conditions of the Contract.

Amounts shall be shown in both words and figures, where indicated. In case of discrepancy, the amount shown in words will govern.

The above prices shall include all labor, materials, bailing, shoring, removal, overhead, profit, insurance and incidentals required to complete the Work.

The names and residences of all persons and parties interested in the foregoing Bid as principals are as follows:

(Give first and last names in full. In the case of a corporation, see Article 8.3 of the Instructions to Bidders, in the case of a limited liability company [LLC], see Article 8.4 of the Instructions to Bidders, in the case of a partnership, see Article 8.5 of the Instructions to Bidders.)

_____

_____

_____

The undersigned hereby certifies that he/she is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work.

The undersigned hereby certifies under the penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this section, the word "person" shall mean any natural person, joint venture, partnership, corporation, or other business or legal entity.

_____
Social Security Number
or Federal Identification
Number

_____
Signature of Individual or
Corporate Name

By:_____
Corporate Officer
(if applicable)

Notice of acceptance should be mailed, faxed, or delivered to the following:

_____
(Name)

By: _____
(Title)

_____
(Business Address)

_____
(City and State)

Date _____

If the Bidder is a corporation, indicate State of incorporation under signature, and affix corporate seal; if a partnership, give full names and residential addresses, if different from business address.

END OF SECTION 004113.18

SECTION 005214.16 - AGREEMENT

City of Rome
Kessinger Dam Rehabilitation
RFB 2025-001

Contract No. 1G – General
Contract No. 1E – Electrical

AGREEMENT

THIS AGREEMENT made as of the _____ day of _____ in the year 2025 by and

between _____

acting through its _____

hereinafter called OWNER and _____

with legal address and principal place of business at _____
_____ hereinafter called CONTRACTOR. OWNER and CONTRACTOR in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1. WORK

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

ARTICLE 2. ENGINEER

2.1 The Project has been designed by CDM Smith NY Inc., Syracuse, NY who will act as ENGINEER in connection with completion of the Work in accordance with the Contract Documents.

ARTICLE 3. CONTRACT TIME

3.1 The Work will be completed on or before November 15, 2026.

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

ARTICLE 4. CONTRACT PRICE.

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

ARTICLE 5. APPLICATIONS FOR PAYMENT

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

ARTICLE 6. PROGRESS AND FINAL PAYMENTS

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

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

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

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

ARTICLE 7. LIQUIDATED DAMAGES

7.1 OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the Work is not completed within the Contract Time specified in Article 3 above, plus any extensions thereof allowed in accordance with Article 11 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving, in a legal or arbitration proceeding, the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of requiring any such proof OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER $1,000 per day for each calendar day of delay until the Work is complete.

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

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

ARTICLE 8. ASSURANCE

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

8.2 CONTRACTOR has studied carefully all reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the Work which

were relied upon by ENGINEER in the preparation of the Drawings and Specifications and which have been identified in Article 5 of the Supplementary Conditions.

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

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

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

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

ARTICLE 9. CONTRACT DOCUMENTS

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

9.1.2 Instructions To Bidders.

9.1.3 Bid Form.

9.1.4 This Agreement.

9.1.5 Performance Bond, EJCDC Document C-610, 2018 edition, Payment Bond, EJCDC Document C-615, 2018 edition, and other required Bonds.

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

9.1.7 Supplementary Conditions Parts I and II.

9.1.8 Specifications (as listed in Table of Contents).

9.1.9 Drawings, numbered 1 through 34, inclusive and dated February 2025.

9.1.10 Addenda numbers _____ to _____, inclusive.

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

ARTICLE 10. MISCELLANEOUS

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

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

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

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

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

This Agreement shall become effective on _____, 2025.

CONTRACTOR	OWNER
_____	_____
BY	BY
_____	_____
(CORPORATE SEAL)	(CORPORATE SEAL)
Attest	Attest
_____	_____
Address for giving notices	Address for giving notices
_____	_____
_____	_____

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

END OF DOCUMENT 005214.16

PERFORMANCE BOND

Contractor Name: **[Full formal name of Contractor]** Address *(principal place of business)*: **[Address of Contractor's principal place of business]**	**Surety** Name: **[Full formal name of Surety]** Address *(principal place of business)*: **[Address of Surety's principal place of business]**
Owner Name: City of Rome Mailing address *(principal place of business)*: 198 North Washington Street, Rome, New York 13440	**Contract** Description *(name and location)*: **[Owner's project/contract name, and location of the project]** Contract Price: **[Amount from Contract]** Effective Date of Contract: **[Date from Contract]**

Bond

Bond Amount: **[Amount]**

Date of Bond: **[Date]**

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

Modifications to this Bond form:

☐ None ☐ See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

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

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

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond will arise after:

    3.1. The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice may indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 will be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement does not waive the Owner's right, if any, subsequently to declare a Contractor Default;

    3.2. The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

    3.3. The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

    5.1. Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

    5.2. Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

    5.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

    5.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment, or the Surety has denied liability, in whole or in part, without further notice, the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

   7.1. the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

   7.2. additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

   7.3. liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.

12. Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such

statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

14. Definitions

    14.1. *Balance of the Contract Price*—The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

    14.2. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

    14.3. *Contractor Default*—Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

    14.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

    14.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

16. Modifications to this Bond are as follows: **[Describe modification or enter "None"]**

PAYMENT BOND

Contractor	**Surety**
Name: **[Full formal name of Contractor]** Address *(principal place of business)*: **[Address of Contractor's principal place of business]**	Name: **[Full formal name of Surety]** Address *(principal place of business)*: **[Address of Surety's principal place of business]**
Owner	**Contract**
Name: City of Rome Mailing address *(principal place of business)*: 198 North Washington Street, Rome, New York 13440	Description *(name and location)*: **[Owner's project/contract name, and location of the project]** Contract Price: **[Amount, from Contract]** Effective Date of Contract: **[Date, from Contract]**

Bond

Bond Amount: **[Amount]**

Date of Bond: **[Date]**

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

Modifications to this Bond form:

☐ None ☐ See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

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

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

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond will arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.

4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.

5. The Surety's obligations to a Claimant under this Bond will arise after the following:

    5.1. Claimants who do not have a direct contract with the Contractor

        5.1.1. have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and

        5.1.2. have sent a Claim to the Surety (at the address described in Paragraph 13).

    5.2. Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).

6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.

7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

    7.1. Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

    7.2. Pay or arrange for payment of any undisputed amounts.

    7.3. The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 will not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

8. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond will be credited for any payments made in good faith by the Surety.

9. Amounts owed by the Owner to the Contractor under the Construction Contract will be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfying obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.

11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

12. No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit will be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.

14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted here from and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

16. Definitions

    16.1. *Claim*—A written statement by the Claimant including at a minimum:

        16.1.1. The name of the Claimant;

        16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;

        16.1.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;

        16.1.4. A brief description of the labor, materials, or equipment furnished;

16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;

16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;

16.1.7. The total amount of previous payments received by the Claimant; and

16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2. *Claimant*—An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

16.3. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

16.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

16.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

18. Modifications to this Bond are as follows: **[Describe modification or enter "None"]**

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

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

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

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

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

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

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

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

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

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

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

10. *Claim*

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

46. *Technical Data*

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

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

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

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

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

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

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

1.02 *Terminology*

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

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

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

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

1. does not conform to the Contract Documents;

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

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

E. *Furnish, Install, Perform, Provide*

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

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

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

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

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

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

ARTICLE 2—PRELIMINARY MATTERS

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

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

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

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

2.02 *Copies of Documents*

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

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

2.03 *Before Starting Construction*

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

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

2. a preliminary Schedule of Submittals; and

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

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

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

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

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

2.05 *Acceptance of Schedules*

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

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

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

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

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

2.06 *Electronic Transmittals*

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

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

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

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

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

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

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

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

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

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

G. Nothing in the Contract Documents creates:

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

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

3.02 *Reference Standards*

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

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

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

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

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

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

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

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

B. *Resolving Discrepancies*

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

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

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

3.04 *Requirements of the Contract Documents*

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

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

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

3.05 *Reuse of Documents*

A. Contractor and its Subcontractors and Suppliers shall not:

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

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

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

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

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

4.02 *Starting the Work*

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

4.03 *Reference Points*

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

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

4.04 *Progress Schedule*

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

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

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

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

4.05 *Delays in Contractor's Progress*

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

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

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

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

2. Abnormal weather conditions;

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

4. Acts of war or terrorism.

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

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

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

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

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

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

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

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

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

5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.

Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.

F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.

G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

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

5.01 *Availability of Lands*

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

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

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

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

B. *Removal of Debris During Performance of the Work*: During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.

C. *Cleaning*: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment

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

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

5.03 *Subsurface and Physical Conditions*

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

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

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

3. Technical Data contained in such reports and drawings.

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

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

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

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;

3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or

4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

A. *Notice by Contractor*: If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;

2. is of such a nature as to require a change in the Drawings or Specifications;

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

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

B. *Engineer's Review*: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. *Owner's Statement to Contractor Regarding Site Condition*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

D. *Early Resumption of Work*: If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

E. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in

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

a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;

b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:

a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;

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

c. Contractor failed to give the written notice required by Paragraph 5.04.A.

3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.

4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

F. *Underground Facilities; Hazardous Environmental Conditions*: Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 *Underground Facilities*

A. *Contractor's Responsibilities*: Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:

1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;

2. complying with applicable state and local utility damage prevention Laws and Regulations;

3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;

4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and

5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. *Notice by Contractor*: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.

C. *Engineer's Review*: Engineer will:

1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;

2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;

3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and

4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.

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

D. *Owner's Statement to Contractor Regarding Underground Facility*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.

E. *Early Resumption of Work*: If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

F. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown

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

a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;

b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and

c. Contractor gave the notice required in Paragraph 5.05.B.

2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.

3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 *Hazardous Environmental Conditions at Site*

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

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;

2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and

3. Technical Data contained in such reports and drawings.

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

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

of construction to be employed by Contractor, and safety precautions and programs incident thereto;

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.

H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special

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

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

J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.

B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.

C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or

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

D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.

E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.

F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.

G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.

H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 *Insurance—General Provisions*

A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.

B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

C. Alternative forms of insurance coverage, including but not limited to self-insurance and "Occupational Accident and Excess Employer's Indemnity Policies," are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.

D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by

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

E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.

F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.

G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

H. Contractor shall require:

1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and

2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.

I. If either party does not purchase or maintain the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.

J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.

K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.

M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.

N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

6.03 *Contractor's Insurance*

A. *Required Insurance*: Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.

B. *General Provisions*: The policies of insurance required by this Paragraph 6.03 as supplemented must:

1. include at least the specific coverages required;

2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;

3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;

4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and

5. include all necessary endorsements to support the stated requirements.

C. *Additional Insureds*: The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:

1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;

2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;

3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

4. not seek contribution from insurance maintained by the additional insured; and

5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 *Builder's Risk and Other Property Insurance*

A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.

B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.

C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.

D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.

E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 *Property Losses; Subrogation*

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

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

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.
2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.

1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.

C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.

D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 *Receipt and Application of Property Insurance Proceeds*

A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

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

7.02 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.

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

7.03 *Labor; Working Hours*

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

B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.

C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.04 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.05 *"Or Equals"*

A. *Contractor's Request; Governing Criteria*: Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that the proposed item:

1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;

3) has a proven record of performance and availability of responsive service; and

4) is not objectionable to Owner.

b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times; and

2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.

B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.

C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.

E. *Treatment as a Substitution Request*: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 *Substitutes*

A. *Contractor's Request; Governing Criteria*: Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:

    a. will certify that the proposed substitute item will:

        1) perform adequately the functions and achieve the results called for by the general design;

        2) be similar in substance to the item specified; and

        3) be suited to the same use as the item specified.

    b. will state:

        1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;

        2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and

        3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.

    c. will identify:

        1) all variations of the proposed substitute item from the item specified; and

        2) available engineering, sales, maintenance, repair, and replacement services.

    d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.

C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.

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

7.07 *Concerning Subcontractors and Suppliers*

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.

B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.

C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.

D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.

E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.

F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.

G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.

I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.

J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.

K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.

L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.

M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If an invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights will be disclosed in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.09 *Permits*

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

7.10 *Taxes*

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

7.11 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.

C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 *Record Documents*

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

7.13 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.

B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.

C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.

F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.

H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

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

J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 *Hazard Communication Programs*

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

7.15 *Emergencies*

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

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

1. Before submitting a Shop Drawing or Sample, Contractor shall:

a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

b. determine and verify:

1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;

2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;

c. confirm that the Submittal is complete with respect to all related data included in the Submittal.

2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.

B. *Submittal Procedures for Shop Drawings and Samples*: Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.

1. *Shop Drawings*

a. Contractor shall submit the number of copies required in the Specifications.

b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.

2. *Samples*

a. Contractor shall submit the number of Samples required in the Specifications.

b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Engineer's Review of Shop Drawings and Samples*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.

3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will

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

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.

6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. *Resubmittal Procedures for Shop Drawings and Samples*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.

2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

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

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:

   a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.

   b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.

   c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.

2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03. 2.04, and 2.05.

F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.

B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:

1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and

2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.

C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:

1. Observations by Engineer;

2. Recommendation by Engineer or payment by Owner of any progress or final payment;

3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. Use or occupancy of the Work or any part thereof by Owner;

5. Any review and approval of a Shop Drawing or Sample submittal;

6. The issuance of a notice of acceptability by Engineer;

7. The end of the correction period established in Paragraph 15.08;

8. Any inspection, test, or approval by others; or

9. Any correction of defective Work by Owner.

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

7.18 *Indemnification*

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

B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

7.19 *Delegation of Professional Design Services*

A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.

B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.

C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.

E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:

1. Checking for conformance with the requirements of this Paragraph 7.19;

2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and

3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.

F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.

G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8—OTHER WORK AT THE SITE

8.01 *Other Work*

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.

C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.

D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

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

/8.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;

2. An itemization of the specific matters to be covered by such authority and responsibility; and

3. The extent of such authority and responsibilities.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

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

B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.

1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.

2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.

C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

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

9.02 *Replacement of Engineer*

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

9.03 *Furnish Data*

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

9.04 *Pay When Due*

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

9.05 *Lands and Easements; Reports, Tests, and Drawings*

A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

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

B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

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

10.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Resident Project Representative*

A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.

B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 *Engineer's Authority*

A. Engineer has the authority to reject Work in accordance with Article 14.

B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.

C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.

D. Engineer's authority as to changes in the Work is set forth in Article 11.

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

10.05 *Determinations for Unit Price Work*

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

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

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

10.07 *Limitations on Engineer's Authority and Responsibilities*

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

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

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

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

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

10.08 *Compliance with Safety Program*

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

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.

C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 *Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders covering:

1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and

4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.

B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 *Work Change Directives*

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

B. If Owner has issued a Work Change Directive and:

1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.

2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 *Field Orders*

A. Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.

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

11.05 *Owner-Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.

B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.

C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 *Unauthorized Changes in the Work*

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

11.07 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.

B. An adjustment in the Contract Price will be determined as follows:

1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);
2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or
3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).

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

11.08 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.

B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 *Change Proposals*

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

B. *Change Proposal Procedures*

1. *Submittal*: Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.

2. *Supporting Data*: The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.

    a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.

    b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

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

3. *Engineer's Initial Review*: Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.

4. *Engineer's Full Review and Action on the Change Proposal*: Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change

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

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

C. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 *Notification to Surety*

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

ARTICLE 12—CLAIMS

12.01 *Claims*

A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:

1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;

2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;

3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and

4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.

B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge

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

C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.

D. *Mediation*

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.

2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.

E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

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

13.01 *Cost of the Work*

A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.

5. Other costs consisting of the following:

a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are

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

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

c. *Construction Equipment Rental*

1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.

2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.

3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

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

1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, 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

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

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

13.02 *Allowances*

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances*: Contractor agrees that:

1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.

C. *Owner's Contingency Allowance*: Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision

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

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:

a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.

2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.

3. Adjusted unit prices will apply to all units of that item.

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

14.01 *Access to Work*

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

14.02 *Tests, Inspections, and Approvals*

A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;

2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;

3. by manufacturers of equipment furnished under the Contract Documents;

4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and

5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

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

E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

A. *Contractor's Obligation*: It is Contractor's obligation to assure that the Work is not defective.

B. *Engineer's Authority*: Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. *Notice of Defects*: Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. *Correction, or Removal and Replacement*: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. *Preservation of Warranties*: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

F. *Costs and Damages*: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs,

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

14.04 *Acceptance of Defective Work*

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

14.05 *Uncovering Work*

A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.

C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

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

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

14.07 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

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

15.01 *Progress Payments*

A. *Basis for Progress Payments*: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. *Applications for Payments*

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.

2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation

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

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

   a. the Work has progressed to the point indicated;

   b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

   c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

   a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or

   b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

    a. to supervise, direct, or control the Work;

    b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;

    c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;

    d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or

    e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:

    a. the Work is defective, requiring correction or replacement;

    b. the Contract Price has been reduced by Change Orders;

    c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

    d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

    e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*

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

E. *Reductions in Payment by Owner*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:

    a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

c. Contractor has failed to provide and maintain required bonds or insurance;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

f. The Work is defective, requiring correction or replacement;

g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

h. The Contract Price has been reduced by Change Orders;

i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;

j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;

k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or

l. Other items entitle Owner to a set-off against the amount recommended.

2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

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

15.03 *Substantial Completion*

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

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

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

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

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

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.

2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

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

15.06 *Final Payment*

A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.

2. The final Application for Payment must be accompanied (except as previously delivered) by:

   a. all documentation called for in the Contract Documents;

   b. consent of the surety, if any, to final payment;

   c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

d. a list of all duly pending Change Proposals and Claims; and

e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. *Engineer's Review of Final Application and Recommendation of Payment*: If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Notice of Acceptability*: In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.

D. *Completion of Work*: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.

E. *Final Payment Becomes Due*: Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 *Waiver of Claims*

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

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

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

15.08 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such adjacent areas;
2. correct such defective Work;
3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and
4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.

B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.

C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.

D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

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

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

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

16.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);

2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;

3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or

4. Contractor's repeated disregard of the authority of Owner or Engineer.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and

2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects,

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

F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate for Convenience*

A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The

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

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

A. *Disputes Subject to Final Resolution*: The following disputed matters are subject to final resolution under the provisions of this article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and

2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.

B. *Final Resolution of Disputes*: For any dispute subject to resolution under this article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;

2. agree with the other party to submit the dispute to another dispute resolution process; or

3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18—MISCELLANEOUS

18.01 *Giving Notice*

A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:

1. in person, by a commercial courier service or otherwise, to the recipient's place of business;

2. by registered or certified mail, postage prepaid, to the recipient's place of business; or

3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 *Computation of Times*

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

18.03 *Cumulative Remedies*

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

18.04 *Limitation of Damages*

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

18.05 *No Waiver*

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

18.06 *Survival of Obligations*

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

18.07 *Controlling Law*

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

18.08 *Assignment of Contract*

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

18.09 *Successors and Assigns*

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

18.10 *Headings*

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

1.0 FEDERAL GOVERNMENT PROVISIONS

APPENDIX G
Davis Bacon Act Requirements

All construction projects are subject to the Davis Bacon wage rate requirements and must include the appropriate sections of the following document in its entirety in the contract documents.

The vast majority of SRF projects will be bid by Governmental Entities (i.e., Cities, Towns, Authorities, Water Districts, Wastewater Districts). These projects must include the following language in construction contracts:

I.3. Contract and Subcontract Provisions
I.4. Contract Provisions for Contracts in Excess of $100,000 (if applicable)
I.5. Compliance Verification

This language may be found on pages DB-3-DB-11.

In certain cases, SRF projects may be bid by non-Governmental Entities (i.e., private water companies, private PWSs, etc.). These projects must include the following language in construction contracts:

II.3. Contract and Subcontract Provisions
II.4. Contract Provisions for Contracts in Excess of $100,000 (if applicable)
II.5. Compliance Verification

This language my be found on pages DB-11-DB-21

Preamble

With respect to the Clean Water and Safe Drinking Water State revolving Funds, EPA provides capitalization grants to each State which in turn provides subgrants or loans to eligible entities within the State. Typically, the subrecipients are municipal or other local governmental entities that manage the funds. For these types of recipients, the provisions set forth under Roman Numeral I, below, shall apply. Although EPA and the State remain responsible for ensuring subrecipients' compliance with the wage rate requirements set forth herein, those subrecipients shall have the primary responsibility to maintain payroll records as described in Section 3(ii)(A), below and for compliance as described in Section I-5.

Occasionally, the subrecipient may be a private for profit or not for profit entity. For these types of recipients, the provisions set forth in Roman Numeral II, below, shall apply. Although EPA and the State remain responsible for ensuring subrecipients' compliance with the wage rate requirements set forth herein, those subrecipients shall have the primary responsibility to maintain payroll records as described in Section II-3(ii)(A), below and for compliance as described in Section II-5.

I. Requirements For Subrecipients That Are Governmental Entities:

The following terms and conditions specify how recipients will assist EPA in meeting its Davis-Bacon (DB) responsibilities when DB applies to EPA awards of financial assistance with respect to State recipients and subrecipients that are governmental entities. If a subrecipient has

questions regarding when DB applies, obtaining the correct DB wage determinations, DB provisions, or compliance monitoring, it may contact the State recipient. If a State recipient needs guidance, the recipient may contact Valerie Marshall at EPA Region 1 (617-918-1674) for guidance. The recipient or subrecipient may also obtain additional guidance from DOL's web site at https://www.dol.gov/whd/govcontracts/dbra.htm

1. Applicability of the Davis- Bacon (DB) prevailing wage requirements.

DB prevailing wage requirements apply to the construction, alteration, and repair of treatment works carried out in whole or in part with assistance made available by a State water pollution control revolving fund and to any construction project carried out in whole or in part by assistance made available by a drinking water treatment revolving loan fund. If a subrecipient encounters a unique situation at a site that presents uncertainties regarding DB applicability, the subrecipient must discuss the situation with the recipient State before authorizing work on that site.

2. Obtaining Wage Determinations.

(a) Subrecipients shall obtain the wage determination for the locality in which a covered activity subject to DB will take place prior to issuing requests for bids, proposals, quotes or other methods for soliciting contracts (solicitation) for activities subject to DB. These wage determinations shall be incorporated into solicitations and any subsequent contracts. Prime contracts must contain a provision requiring that subcontractors follow the wage determination incorporated into the prime contract.

(i) While the solicitation remains open, the subrecipient shall monitor www.wdol.gov weekly to ensure that the wage determination contained in the solicitation remains current. The subrecipients shall amend the solicitation if DOL issues a modification more than 10 days prior to the closing date (i.e. bid opening) for the solicitation. If DOL modifies or supersedes the applicable wage determination less than 10 days prior to the closing date, the subrecipients may request a finding from the State recipient that there is not a reasonable time to notify interested contractors of the modification of the wage determination. The State recipient will provide a report of its findings to the subrecipient.

(ii) If the subrecipient does not award the contract within 90 days of the closure of the solicitation, any modifications or supersedes DOL makes to the wage determination contained in the solicitation shall be effective unless the State recipient, at the request of the subrecipient, obtains an extension of the 90 day period from DOL pursuant to 29 CFR 1.6(c)(3)(iv). The subrecipient shall monitor www.wdol.gov on a weekly basis if it does not award the contract within 90 days of closure of the solicitation to ensure that wage determinations contained in the solicitation remain current.

(b) If the subrecipient carries out activity subject to DB by issuing a task order, work assignment or similar instrument to an existing contractor (ordering instrument) rather than by publishing a solicitation, the subrecipient shall insert the appropriate DOL wage determination from www.wdol.gov into the ordering instrument.

(c) Subrecipients shall review all subcontracts subject to DB entered into by prime contractors to verify that the prime contractor has required its subcontractors to include the applicable wage determinations.

(d) As provided in 29 CFR 1.6(f), DOL may issue a revised wage determination applicable to a subrecipient's contract after the award of a contract or the issuance of an ordering instrument if DOL determines that the subrecipient has failed to incorporate a wage determination or has used a wage determination that clearly does not apply to the contract or ordering instrument. If this occurs, the subrecipient shall either terminate the contract or ordering instrument and issue a revised solicitation or ordering instrument or incorporate DOL's wage determination retroactive to the beginning of the contract or ordering instrument by change order. The subrecipient's contractor must be compensated for any increases in wages resulting from the use of DOL's revised wage determination.

3. Contract and Subcontract provisions.

(a) The Recipient shall insure that the subrecipient(s) shall insert in full in any contract in excess of $2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a treatment work under the CWSRF or a construction project under the DWSRF financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in § 5.1 or the FY 2012 Appropriations Act, the following clauses:

(1) Minimum wages.

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

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in §5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein:

Provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. Subrecipients may obtain wage determinations from the U.S. Department of Labor's web site, www.dol.gov.

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

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

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

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

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the subrecipient(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the subrecipient (s) to the State award official. The State award official will transmit the request, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification request within 30 days of receipt and so advise the State award official or will notify the State award official within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the subrecipient(s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the request and the local wage determination, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The request shall be sent to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

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

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

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

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the subrecipient, that is, the entity that receives the sub-grant or loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the subrecipient shall provide written confirmation in a form satisfactory to the State indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly payrolls. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at https://www.dol.gov/whd/forms/wh347.pdf or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the subrecipient(s) for transmission to the State or EPA if requested by EPA , the State, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the subrecipient(s).

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

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

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

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

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

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

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the State, EPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency or State may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees--

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

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

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

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

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

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

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

(9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29

CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and Subrecipient(s), State, EPA, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

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

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

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

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

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

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (a)(1) of this section the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (a)(1) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (a)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The subrecipient**,** upon written request of the EPA Award Official or an authorized representative of the Department of Labor, shall withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other

Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

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

(b) In addition to the clauses contained in Item 3, above, in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1, the Subrecipient shall insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Subrecipient shall insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

5. Compliance Verification

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

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

(c) The subrecipient shall periodically conduct spot checks of a representative sample of weekly payroll data to verify that contractors or subcontractors are paying the appropriate wage rates. The subrecipient shall establish and follow a spot check schedule based on its

assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, if practicable, the subrecipient should spot check payroll data within two weeks of each contractor or subcontractor's submission of its initial payroll data and two weeks prior to the completion date the contract or subcontract. Subrecipients must conduct more frequent spot checks if the initial spot check or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. In addition, during the examinations the subrecipient shall verify evidence of fringe benefit plans and payments thereunder by contractors and subcontractors who claim credit for fringe benefit contributions.

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

(e) Subrecipients must immediately report potential violations of the DB prevailing wage requirements to the EPA DB contact listed above and to the appropriate DOL Wage and Hour District Office listed at https://www.dol.gov/whd/whd_district_offices.pdf.

II. Requirements For Subrecipients That Are Not Governmental Entities

The following terms and conditions specify how recipients will assist EPA in meeting its DB responsibilities when DB applies to EPA awards of financial assistance with respect to subrecipients that are not governmental entities. If a subrecipient has questions regarding when DB applies, obtaining the correct DB wage determinations, DB provisions, or compliance monitoring, it may contact the State recipient for guidance. If a State recipient needs guidance, the recipient may contact Valerie Marshall at EPA Region 1 (617-918-1674) for guidance. The recipient or subrecipient may also obtain additional guidance from DOL's web site at https://www.dol.gov/whd/govcontracts/dbra.htm

Under these terms and conditions, the subrecipient must submit its proposed DB wage determinations to the State recipient for approval prior to including the wage determination in any solicitation, contract task orders, work assignments, or similar instruments to existing contractors.

1. Applicability of the Davis- Bacon (DB) prevailing wage requirements.

DB prevailing wage requirements apply to the construction, alteration, and repair of treatment works carried out in whole or in part with assistance made available by a State water pollution control revolving fund and to any construction project carried out in whole or in part by assistance made available by a drinking water treatment revolving loan fund. If a subrecipient encounters a unique situation at a site that presents uncertainties regarding DB applicability, the subrecipient must discuss the situation with the recipient State before authorizing work on that site.

2. Obtaining Wage Determinations.

(a) Subrecipients must obtain proposed wage determinations for specific localities at www.wdol.gov. After the Subrecipient obtains its proposed wage determination, it must submit the wage determination to (insert contact information for State recipient DB point of contact for wage determination) for approval prior to inserting the wage determination into a solicitation, contract or issuing task orders, work assignments or similar instruments to existing contractors (ordering instruments unless subsequently directed otherwise by the State recipient Award Official.

(b) Subrecipients shall obtain the wage determination for the locality in which a covered activity subject to DB will take place prior to issuing requests for bids, proposals, quotes or other methods for soliciting contracts (solicitation) for activities subject to DB. These wage determinations shall be incorporated into solicitations and any subsequent contracts. Prime contracts must contain a provision requiring that subcontractors follow the wage determination incorporated into the prime contract.

(i) While the solicitation remains open, the subrecipient shall monitor www.wdol.gov. on a weekly basis to ensure that the wage determination contained in the solicitation remains current. The subrecipients shall amend the solicitation if DOL issues a modification more than 10 days prior to the closing date (i.e. bid opening) for the solicitation. If DOL modifies or supersedes the applicable wage determination less than 10 days prior to the closing date, the subrecipients may request a finding from the State recipient that there is not a reasonable time to notify interested contractors of the modification of the wage determination. The State recipient will provide a report of its findings to the subrecipient.

(ii) If the subrecipient does not award the contract within 90 days of the closure of the solicitation, any modifications or supersedes DOL makes to the wage determination contained in the solicitation shall be effective unless the State recipient, at the request of the subrecipient, obtains an extension of the 90 day period from DOL pursuant to 29 CFR 1.6(c)(3)(iv). The subrecipient shall monitor www.wdol.gov on a weekly basis if it does not award the contract within 90 days of closure of the solicitation to ensure that wage determinations contained in the solicitation remain current.

(c) If the subrecipient carries out activity subject to DB by issuing a task order, work assignment or similar instrument to an existing contractor (ordering instrument) rather than by publishing a solicitation, the subecipient shall insert the appropriate DOL wage determination from www.wdol.gov into the ordering instrument.

(d) Subrecipients shall review all subcontracts subject to DB entered into by prime contractors to verify that the prime contractor has required its subcontractors to include the applicable wage determinations.

(e) As provided in 29 CFR 1.6(f), DOL may issue a revised wage determination applicable to a subrecipient's contract after the award of a contract or the issuance of an ordering instrument if DOL determines that the subrecipient has failed to incorporate a wage determination or has used a wage determination that clearly does not apply to the contract or ordering instrument. If this occurs, the subecipient shall either terminate the contract or ordering instrument and issue a revised solicitation or ordering instrument or incorporate DOL's wage determination retroactive to the beginning of the contract or ordering instrument by change order. The subrecipient's contractor must be compensated for any increases in wages resulting from the use of DOL's revised wage determination.

3. Contract and Subcontract provisions.

(a) The Recipient shall insure that the subrecipient(s) shall insert in full in any contract in excess of $2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a treatment work under the CWSRF or a construction project under the DWSRF financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in § 5.1 or the FY 2011 Full-Year Continuing Appropriation, the following clauses:

(1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in §5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. Subrecipients may obtain wage determinations from the U.S. Department of Labor's web site, www.dol.gov.

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

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

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

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

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the subrecipient(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the subrecipient(s) to the State award official. The State award official will transmit the report, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification request within 30 days of receipt and so advise the State award official or will notify the State award official within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the and the subrecipient(s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the request, and the local wage determination, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The request shall be sent to the EPA Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

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

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

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

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the subrecipient, that is, the entity that receives the sub-grant or loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the subrecipient shall provide written confirmation in a form satisfactory to the State indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly payrolls. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is

available for this purpose from the Wage and Hour Division Web site at https://www.dol.gov/whd/forms/wh347.pdf or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the subrecipient(s) for transmission to the State or EPA if requested by EPA , the State, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the subrecipient(s).

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

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

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

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

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

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

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the State, EPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency or State may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees--

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

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of

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

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

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

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

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

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

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

(10) Certification of eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

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

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

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

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

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

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (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 mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (b)(1) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The subrecipient shall upon the request of the EPA 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 with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

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

(c) In addition to the clauses contained in Item 3, above, in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1, the Subrecipient shall insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Subrecipient shall insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

5. Compliance Verification

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

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

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

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

(e) Subrecipients must immediately report potential violations of the DB prevailing wage requirements to the EPA DB contact listed above and to the appropriate DOL Wage and Hour District Office listed at https://www.dol.gov/whd/whd_district_offices.pdf.

Federal (Davis Bacon) Wage Rates

To be added

APPENDIX I

BUILD AMERICA, BUY AMERICA ACT (BABA)

AMERICAN IRON AND STEEL (AIS)

ATTACHMENTS

1. **Information Checklist for Waiver Request**
2. **HQ Review Checklist for Waiver Request**
3. **Example Loan Agreement Language**
4. **Sample Construction Contract Language**
5. **Sample Certification 1**
   Sample Certification 2

Appendix I
Build America, Buy America (BABA) Requirements

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF WATER

November 3, 2022

MEMORANDUM

SUBJECT: Build America, Buy America Act Implementation Procedures for EPA Office of Water Federal Financial Assistance Programs

FROM: RadhikaFox
Assistant Administrator

TO: EPA Regional Water Division Directors, Regions I - X
EPA Office of Water Office Directors

OVERVIEW

The Biden-Harris Administration recognized the Nation's critical need for infrastructure investment, championing the Bipartisan Infrastructure Law (BIL), which Congress passed on November 15, 2021 (also known as the Infrastructure Investment and Jobs Act (IIJA)). The BIL will provide an unprecedented level of federal investment in water and wastewater infrastructure in communities across America.

In Title IX of the IIJA, Congress passed the Build America, Buy America (BABA) Act, which establishes strong and permanent domestic sourcing requirements across all Federal financial assistance programs for infrastructure. The U.S. Environmental Protection Agency (EPA) Office of Water is honored to help lead the implementation of these provisions and is proud of its near decade of successful implementation of the American Iron and Steel (AIS) provisions for its flagship water infrastructure programs.

This is a transformational opportunity to build a resilient supply chain and manufacturing base for critical products here in the United States that will spur investment in good-paying American manufacturing jobs and businesses. EPA's efforts to implement BABA will help cultivate the domestic manufacturing base for a wide range of products commonly used across the water sector but not currently made domestically. This will take time, and flexibility will be important to ensure that EPA can leverage critical water investments on time and on budget to protect public health and improve water quality.

IMPLEMENTATION

Recognizing the opportunity and need for BABA implementation guidance, the Made in America Office (MIAO) of the Office of Management and Budget (OMB) published Initial Implementation Guidance on Application of Buy America Preference in Federal Financial Assistance Programs for Infrastructure (OMB Guidance M-22-11) on April 18, 2022. The guidance provides government-wide implementation direction for all Federal financial assistance programs for infrastructure. Despite the extensive guidance developed by MIAO, EPA's Office of Water infrastructure investment programs have received many questions that were not addressed in OMB Guidance M-22-11 or that require further clarification for EPA water infrastructure programs. The following questions and answers serve to supplement OMB Guidance M-22-11 with implementation procedures specific to EPA's relevant water infrastructure programs.

Section 70914(a) of the IIJA states when a Buy America preference under BABA applies: "Not later than… [May 14, 2022], the head of each Federal agency shall ensure that none of the funds made available for a Federal financial assistance program for infrastructure…may be obligated for a project unless all of the iron, steel, manufactured products, and construction materials used in the project are produced in the United States." Therefore, Federal financial infrastructure investments obligated on or after May 14, 2022, must comply with the BABA requirements. Absent a waiver, all iron, steel, manufactured products, and construction materials permanently incorporated into an infrastructure project subject to the BABA requirements must be produced in the United States. For many of EPA's Office of Water infrastructure investment programs, the vast majority of products permanently incorporated into construction, maintenance, or repair projects must comply with the BABA requirements, with the exception of select construction materials (cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives), which are specifically excepted by the BABA statute.

EPA's Office of Water implements many infrastructure investment programs subject to BABA requirements, including the following:

- Alaska Native Villages and Rural Communities Water Grant Program (ANV) (and any associated Interagency Agreements with the Indian Health Service)
- Clean Water and Drinking Water State Revolving Fund Programs (CW and DWSRF)
- Clean Water and Drinking Water Grants to U.S. Territories and the District of Columbia
- Clean Water Indian and Drinking Water Tribal Infrastructure Grant Set-aside (and any associated Interagency Agreements with the Indian Health Service)
- Coastal Wetlands Planning, Protection and Restoration Act, (CWPPRA) Programs
- Congressionally Directed Spending/Community Project Funding (also known as Community Grants)
- Geographic Programs[1]
- Gulf Hypoxia Program
- National Estuaries Program (CWA Section 320)

[1] Geographic Programs include: Great Lakes Restoration Initiative, Chesapeake Bay, San Francisco Bay, Puget Sound, Long Island Sound, Gulf of Mexico, South Florida, Lake Champlain, Lake Pontchartrain, Southern New England Estuaries, Columbia River Basin, Pacific Northwest

- 319 Nonpoint Source Management Program Implementation
- Reducing Lead in Drinking Water Grant Program (SDWA §1459B)
- Assistance for Small and Disadvantaged Communities Grants: Small, Underserved, and Disadvantaged Community Grant Program (SUDC), Emerging Contaminants in Small or Disadvantaged Communities (EC-SDC) and Drinking Water Infrastructure Resilience & Sustainability (SDWA §1459A)
- Sewer Overflow and Stormwater Reuse Municipal Grants (OSG)
- USMCA Implementing Legislation (Section 821 and Title IX, USMCA Supplemental Appropriations, 2020)
- U.S.-Mexico Border Water Infrastructure Program
- Voluntary School and Child Care Program Lead Testing and Remediation Grant Program (SDWA 1464(d))
- Water Infrastructure Finance and Innovation Act (WIFIA)

The questions and answers in this document apply to the implementation of BABA requirements for the Office of Water infrastructure programs listed above unless superseded by regulation, statute, or other applicable guidance. For many of the programs listed above which did not have domestic preference requirements prior to BABA, additional implementation details are pending or may be developed after the issuance of these procedures. In addition, EPA notes that more direction will be helpful to inform the determination and definition of domestic content in manufactured goods. Supplemental guidance on these and other issues, from either OMB or EPA, may be forthcoming. These implementation procedures may also apply to additional, unlisted EPA programs which may be required to apply BABA subsequent to publication of this memorandum (e.g., future funding programs which have been authorized, but not yet appropriated).

For more information on the BABA requirements, visit the EPA Office of Water's dedicated website – https://www.epa.gov/cwsrf/build-america-buy-america-baba – or contact your funding authority (such as your grants officer, portfolio manager, or state contact). For information on approved waivers, visit https://www.epa.gov/cwsrf/build-america-buy-america-baba-approved-waivers. You may also email questions to BABA-OW@epa.gov.

This Implementation Procedures document is organized to provide responses to questions in the following topic areas:

QUESTIONS AND ANSWERS

SECTION 1: GENERAL

- Q1.1: Will EPA provide documentation for BABA for bid solicitations and suggested contract language? Will EPA provide suggested language for Assistance Agreements?

    - A1.1: See Appendix 1, which includes suggested language for construction contracts which addresses the BABA requirements. In addition to the language suggested in Appendix 1, EPA also recommends that assistance recipients prepare contract bid solicitation documents with a statement for the consulting engineers and construction firms as follows: "By signing payment application and recommending payment, Contractor certifies they have reviewed documentation for all products and materials submitted for payment, and the certifications are sufficient to demonstrate compliance with Build America, Buy America Act requirements." In most cases, the assistance recipient's representatives assume the responsibility for their clients to conduct due diligence on compliance with applicable domestic preference requirements.

      All Federal Financial infrastructure assistance agreements subject to BABA must have a clause requiring compliance with the requirements. See Appendix 2 for example assistance agreement language.

- Q1.2: Would federally-financed infrastructure projects outside of the United States need to comply with the BABA requirements?

    - A1.2: No. According to the OMB Guidance (M-22-11), a "project" is defined as "…any activity related to the construction, alteration, maintenance, or repair of infrastructure in the United States." Therefore, the BABA requirements are not implicated for infrastructure projects occurring outside of the United States, such as projects funded through the United States-Mexico-Canada Agreement with infrastructure activities occurring in Mexico or Canada (that is, outside the United States).
    -

- Q1.3: If most of the project is BABA compliant, and a small portion is not, can an assistance recipient self-fund (i.e., paying with non-federal dollars) the non-compliant products?

    - A1.3: Any project that is funded in whole or in part with federal assistance must comply with the BABA requirements, unless the requirements are otherwise waived. All iron, steel, manufactured products, and construction materials used in a project must meet the BABA requirements unless waived. Absent a waiver, there is no "small portion" or product that does not need to satisfy the BABA requirements unless the requirements are waived (or specifically excluded as is the case for cement and cementitious materials; aggregates such as stone, sand, or gravel; aggregate binding agents or additives; or non-permanent products). An assistance recipient may request a waiver or inquire as to whether a broad waiver, such as a *de minimis* waiver, might apply.

- Q1.4: How do international trade agreements affect the implementation of the BABA requirements?

    - A1.4: The BABA requirements apply in a manner consistent with United States obligations under international trade agreements. Typically, these obligations only apply to direct procurement by the entities that are signatories to these trade agreements. In general, assistance recipients are not signatories to such agreements, so these trade agreements have no impact on BABA implementation. In the few instances where such an agreement applies to a municipality, that municipality is responsible for determining its applicability and requirements and communicating with the funding authority (such as EPA and/or a state) on the actions taken to comply with BABA.

SECTION 2: PRODUCT COVERAGE

- Q2.1: For products made of iron and steel, what is the difference between predominantly and primarily iron and steel?

    - A2.1: EPA considers the terms "predominantly" and "primarily" to be interchangeable, such that a product is considered predominantly (or primarily) iron and steel if it contains greater than 50 percent iron and steel by material cost.

- Q2.2: What is the definition of construction materials (with examples)?

    - A2.2: From OMB Guidance M-22-11: "construction materials" include an article, material, or supply (other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; aggregate binding agents or additives; or non-permanent products) that is or consists primarily of:
        - non-ferrous metals,
        - plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables), (including optic glass),
        - lumber, and
        - drywall.

      For example, a plate of glass would be a construction material under BABA, but a framed window that incorporates the glass into a frame would be a manufactured product. Another common construction material for water infrastructure projects would be polyvinyl chloride (PVC) pipe and fittings. However, if PVC components are incorporated into a more complex product such as instrumentation and control equipment or a water treatment unit, those items would be manufactured products.

- Q2.3: What are manufactured products (with examples)?

    - A2.3: From OMB Guidance M-22-11: "…all manufactured products used in the project are produced in the United States—this means the manufactured product was manufactured in the United States; and the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of the total

cost of all components of the manufactured product, unless another standard for determining the minimum amount of domestic content of the manufactured product has been established under applicable law or regulation…"

The manufactured products category would cover the majority of potential water infrastructure products, including complex products made up of a variety of material types and components. For water infrastructure projects, common manufactured products would include, but not be limited to, pumps, motors, blowers, aerators, generators, instrumentation and control systems, gauges, meters, measurement equipment, treatment equipment, dewatering equipment, actuators, and many other mechanical and electrical items.

- Q2.4: Which category will valves fall under for BABA? Will it differ from the American Iron and Steel (AIS) requirements?
    - A2.4: For programs that are subject to BABA and AIS (SRF, WIFIA, and Community Project Funding), projects using valves should classify them as iron and steel products under BABA as long as their material cost is made up of more than 50 percent iron and/or steel. Valves with 50 percent or less iron and/or steel by material cost would be considered manufactured products under the BABA requirements.

      In accordance with OMB Guidance M-22-11, an article, material, or supply should be classified into only one of the three categories: iron and steel, manufactured products, or construction materials. Under the AIS requirements, all valves made primarily of iron and steel (that is, those with iron and/or steel material cost greater than 50 percent) must comply with the AIS requirements. For BABA, EPA interprets Section IV of OMB Guidance M-22-11 to mean that iron and steel products are those items that are primarily iron and steel, the same as for the AIS requirements.

- Q2.5: Does EPA have a list of products to be classified as "Iron and Steel" under BABA?
    - A2.5: Although this list is not comprehensive, the following products were classified as AIS products if made primarily (more than 50 percent) of iron and/or steel by materials cost (for programs subject to both AIS and BABA, this list would be equivalent for "iron and steel" items or products under either requirement):

Products likely made "primarily" of iron and steel to be classified as Iron and Steel under BABA		
Lined and Unlined Pipe	Lined and Unlined Fittings	Tanks
Flanges	Pipe Clamps and Restraints	Structural Steel
Valves	Hydrants	Pre-Cast, Iron/Steel Reinforced Concrete (of all types, regardless of iron/steel content percentage)
Manhole Covers and other Municipal Castings	Access Hatches	Ballast Screens
Iron or Steel Benches	Bollards	Cast Bases
Cast Iron Hinged Hatches	Cast Iron Riser Rings	Catch Basin Inlets
Cleanout/Monument Boxes	Construction Covers and Frames	Curb and Corner Guards

Products likely made "primarily" of iron and steel to be classified as Iron and Steel under BABA		
Curb Boxes	Curb Openings	Curb Stops
Detectable Warning Plates	Downspout Shoes	Drainage Grates
Drainage Grate Frames and Curb Inlets	Inlets	Junction Boxes
Lampposts	Manhole Rings and Frames	Manhole Risers
Meter Boxes	Service Boxes	Steel Hinged Hatches
Steel Riser Rings	Trash Receptacles	Tree Grates
Tree Guards	Trench Grates	Valve Boxes
Valve Box Covers and Risers	Access Ramps	Aeration Pipes and Fittings (separate from aeration/blowers)
Angles	Backflow Preventers/Double Check Valves	Baffle Curtains
Iron or Steel Bar	Bathroom Stalls	Beam Clamps
Cable Hanging Systems	Clarifier Tanks	Coiled Steel
Column Piping	Concrete Reinforcing Bar, Wire, and Fibers	Condensate Sediment Traps
Corrugated Pipe	Couplings	Decking
Digestor Covers	Dome Structures	Door Hardware
Doors	Ductwork	Expansion Joints
Expansion Tanks (diaphragm, surge, and hydropneumatics)	Fasteners	Fencing and Fence Tubing
Fire Escapes	Flanged Pipe	Flap Gates
Framing	Gate Valves	Generic Hanging Brackets
Grating	Ground Testing Boxes	Ground Test Wells
Guardrails	HVAC Registers, Diffusers, and Grilles	Joists
Knife Gates	Ladders	Lifting Hooks, J-bar, Connectors within, and Anchors for Concrete
Lockers	Man Baskets and Material Platforms	Manhole Steps
Mud Valves	Municipal Casting Junctions	Non-mechanical (aka stationary) Louvers and Dampers
Overhead Rolling Doors/ Uplifting Doors (manual open, no motor)	Pipe Connectors	Pipe Hangers
Pipe Pilings (any type of steel piling)	Pipe Spool (pipe, flanges, connectors, etc.)	Pipe Supports
Pitless Adaptors	Pre-fab Steel Buildings/Sheds (simple structure, unfurnished)	Pre-stressed Concrete Cylinder Pipe (PCCP)
Railings	Reduced Pressure Zone (RPZ) Valves	Roofing
Service Saddles	Sheet Piling	Sinks (not part of eyewash systems)
Solenoid Valves	Stairs	Static Mixers
Stationary Screens	Surface Drains	Tapping Sleeves
Telescoping Valves	Tipping Buckets	Trusses
Tubing	Valve Stem Extensions	Valve Stems (excluding handwheels and actuators)
Wall Panels	Wall Sleeves/Floor Sleeves	Welding Rods
Well Casing	Well Screens	Wire
Wire Cloth	Wire Rod	Wire Rope and Cables

Q2.6: Does EPA have a list of products that could be made "primarily" of iron and steel but would be classified as "manufactured products" under BABA?

A2.6: Although this list is not comprehensive, the following products would be considered "manufactured products" under the BABA requirements, even if the item might be composed primarily of iron and steel by materials cost (Note: These items are not subject to the AIS requirements.):

Products likely made "primarily" of iron and steel to be classified as Manufactured Products under BABA		
Actuator Superstructures/ Support Structures	Aeration Nozzles and Injectors	Aerators
Analytical Instrumentation	Analyzers (e.g., ozone, oxygen)	Automated Water Fill Stations
Blowers/Aeration Equipment	Boilers, Boiler Systems	Chemical Feed Systems (e.g., polymer, coagulant, treatment chemicals)
Chemical Injection Quills	Chemical Injectors	Clarifier Mechanisms/Arms
Compressors	Controls and Switches	Conveyors
Cranes	Desiccant Air Dryer Tanks	Dewatering Equipment
Dewatering Roll-offs	Disinfection Systems	Drives (e.g., variable frequency drives)
Electric/Pneumatic/Manual Accessories Used to Operate Valves (such as electric valve actuators)	Electrical Cabinetry and Housings (such as electrical boxes/enclosures)	Electrical Conduit
Electrical Junction Boxes	Electronic Door Locks	Elevator Systems (hydraulic, etc.,)
Emergency Life Systems (including eyewash stations, emergency safety showers, fire extinguishers, fire suppression systems including sprinklers /piping/valves, first aid, etc.)	Exhaust Fans	Fall Protection Anchor Points
Fiberglass Tank w/Appurtenances	Filters (and appurtenances, including underdrains, backwash systems)	Flocculators
Fluidized Bed Incinerators	Galvanized Anodes/Cathodic Protection	Gear Reducers
Generators	Geothermal Systems	Grinders
Heat Exchangers	HVAC (excluding ductwork)	HVAC Dampers (if appurtenances to aerators/blowers)
HVAC Louvers (mechanical)	Intake and Exhaust Grates (if appurtenances to aerators/blowers)	Instrumentation
Laboratory Equipment	Ladder Fall Prevention Systems	Ladder Safety Posts
Lighting Fixtures	Lightning and Grounding Rods	Mechanical or Actuated Louvers/Dampers
Membrane Bioreactor Systems	Membrane Filtration Systems	Metal Office Furniture (fixed)
Meters (including flow, wholesale, water, and service connection)	Motorized Doors (unit)	Motorized Mixers
Motorized Screens (such as traveling screens)	Motors	Pelton Wheels
Pipeline Flash Reactors (similar to injectors)	Plate Settlers	Precast Concrete without Iron/Steel Reinforcement

Products likely made "primarily" of iron and steel to be classified as Manufactured Products under BABA		
Furnished Pre-fab Buildings (such as furnished with pumps, mechanics inside)	Presses (including belt presses)	Pressure Gauges
Pump Cans/Barrels and Strainers	Pumps	Mechanical Rakes
Safety Climb Cable	Sampling Stations (unless also act as hydrant)	Scrubbers
Sensors	Sequencing Batch Reactors (SBR)	Steel Shelving (fixed)
Slide and Sluice Gates	Spray Header Units	Steel Cabinets (fixed interior/furniture)
Supervisory Control and Data Acquisition (SCADA) Systems	Tracer Wire	Valve Manual Gears, Actuators, Handles
Voltage Transformer	Water Electrostatic Precipitators (WESP)	Water Heaters
Weir Gates		

- Q2.7: Is asphalt paving a covered product under BABA?
    - A2.7: No. EPA interprets Section 70917(c) of the IIJA to exclude asphalt from BABA requirements. Asphalt paving is a type of concrete composed of an aggregate material mixed with a binder (bitumen). EPA considers asphalt concrete to be excluded by section 70917(c) due to its similarities with cement and cementitious materials.

SECTION 3: CO-FUNDING

- Q3.1: If projects are co-funded with funding mechanisms that don't require BABA, must the entire project comply with BABA?
    - A3.1: Yes. Any project that is funded in whole or in part with federal assistance must comply with the BABA requirements, unless the requirements are otherwise waived. A "project" consists of all construction necessary to complete the building or work regardless of the number of contracts or assistance agreements involved so long as all the contracts and assistance agreements awarded are closely related in purpose, time, and place. This precludes the intentional splitting of projects into separate and smaller contracts or assistance agreements to avoid BABA's applicability on some portions of a larger project, particularly where the activities are integrally and proximately related to the whole. However, there are many situations in which major construction activities are clearly undertaken in separate phases that are distinct in purpose, time, or place, in which case, separate contracts or assistance agreements would carry separate requirements.

- Q3.2: How will project requirements be determined for co-funded projects subject to potentially different general applicability/programmatic waiver conditions (such as different adjustment period waivers)?

    - A3.2: OMB Guidance M-22-11 addresses cases with project co-funding from separate programs. EPA would apply the guidance's "cognizant" program determination to projects that are co-funded with different general applicability/programmatic waivers. For instance, if a project were co-funded between WIFIA and SRF and the majority of the Federal funding for the project is from WIFIA, then WIFIA would be the "cognizant" program for application and determination of waivers. In that case, any conditions from an applicable WIFIA waiver would apply.

SECTION 4: WAIVERS

- Q4.1: Who may apply for a waiver and how do you apply?

    - A4.1: Assistance recipients and their authorized representatives may apply for a project-specific waiver. EPA does not accept waiver requests from suppliers, distributors, or manufacturers unless the assistance recipient endorses and submits the request on its own behalf to the funding authority. In the case where multiple programs are providing federal funds to the project, the assistance recipient should submit the waiver request to the cognizant program, the one providing the greatest amount of federal funds for the project. For information on applying for cost waivers, see questions 4.4 and 4.5. For information on the SRF program roles and responsibilities, see question 7.6.

      Project-specific waiver requests should generally include: (1) a brief summary of the project, (2) a description and explanation of the need for the waiver for the product(s) in question, (3) a brief summary of the due diligence conducted in search of domestic alternatives (which could include correspondence between assistance recipient and supplier/distributors), (4) the quantity and materials of the product(s) in question, (5) all engineering specifications and project design considerations relevant to the product(s) in question, (6) the approximate unit cost of items (both foreign and domestic) in addition to an estimated cost of the materials and overall project, (7) the date any products will be needed on site in order to avoid significant project schedule disruptions, and (8) any other pertinent information relevant to EPA's consideration of the waiver (e.g., if relevant for SRF projects: whether the project is designated as an equivalency project, the date the plans and specifications were submitted to the state, the date of construction initiation, expected date of project completion, any special considerations such as local zoning and building ordinances, seismic requirements, or noise or odor control requirements).

      In the case of indirect federal assistance, such as the SRF programs, the state authority reviews and conveys the waiver request to EPA. States should submit waiver requests to the appropriate program waiver request inbox. For SRF projects, please use CWSRFWaiver@epa.gov or DWSRFWaiver@epa.gov.

- Q4.2: Can an assistance recipient request a waiver based on a specification written for a specific brand or model of product (that is, a specification that names a branded item or model)?

    - A4.2: In most cases, performance-based specifications are expected and required for the majority of infrastructure projects funded by EPA's financial assistance programs. In rare cases where "branded" or product-specific sourcing may be included in project specifications, it is suggested that the specifications include the item in question (that is, not simply a catalog page, but also materials of construction, sizing, quantities, and applicable engineering performance design characteristics for the project, etc.) in addition to the standard phrase "or equal." For the purposes of product alternative market research, EPA will evaluate the BABA requirements based on performance-based engineering specifications for the product(s) in question. If the project's specifications do not include performance-based specifications, or at least an "or equal" designation, EPA will base its research on an "or equal" designation using best professional judgment to the extent practicable.

- Q4.3: If a manufactured product is not readily available domestically, will EPA provide short-term "limited availability" product waivers?

    - A4.3: EPA will address the unavailability of domestic products through the waiver process, including potential national short-term waivers for specific products, if appropriate. To the extent practicable and with the intent to maximize domestic market and supply chain development, EPA intends to address issues of broad product unavailability with targeted, time-limited, and conditional waivers, as prescribed in OMB Guidance M-22-11. EPA will follow its robust and thorough product research processes (those put into place for the AIS requirements for the SRF and WIFIA programs and expanded for the new BABA requirements) to identify and determine those products for which proposed national/general applicability waivers may be appropriate.

- Q4.4: What information is needed when applying for a cost waiver under BABA?

    - A4.4: As part of the cost waiver request, the assistance recipient must demonstrate that implementation of the BABA requirements will increase the overall project cost more than 25 percent. Depending on the circumstances of the overall project cost increases, documentation to justify the cost waiver can vary but may include itemized cost estimates or bid tabulations comparing project costs with and without BABA implementation. Assistance recipients should begin assessing the potential cost impacts of the BABA requirements during the design phase of a project.

- Q4.5: Can administrative costs associated with tracking and verification of certifications be considered when determining if the cost of a project increases by 25 percent or more?

    - A4.5: Yes. Section 70914(b)(3) of the IIJA states that a waiver may be provided if the overall cost of the project increases by more than 25 percent due to the "inclusion of iron, steel, manufactured products, or construction materials produced in the United States." EPA interprets this to mean that the "inclusion" of the BABA-covered products could encompass

reasonable administrative costs associated with complying with the BABA requirements, such as staff, contractor, and technological resources to collect and track BABA compliance documentation.

- Q4.6: How can assistance recipients and construction contractors address product delivery delays?

    - A4.6: Assistance recipients should reasonably plan for material procurement to account for known potential supply chain issues or extended lead times and shall notify the funding authority well in advance of the issues so that prompt attention can be given to explore options. Where extended lead times for compliant products are impacting project schedules and may significantly impact construction progress, timely communication with the funding agency is important. For products that are unavailable within a reasonable timeframe to meet the objectives and schedule of a project, EPA may consider a non-availability waiver with adequate justification. An assistance recipient would need to apply for the waiver and contact its funding authority (such as EPA and/or a state) to initiate the waiver process.

SECTION 5: DOCUMENTING COMPLIANCE

- Q5.1: Who will be responsible for BABA enforcement?

    - A5.1: Responsibility for BABA implementation applies at all levels, from manufacturers to suppliers and distributors, construction contractors, assistance recipients, and funding authorities.

      The manufacturers have responsibility to provide adequate and accurate documentation of the products manufactured. If suppliers and distributors are involved, they are responsible for passing along compliance documentation for products supplied to projects that are subject to the BABA requirements.

      The assistance recipient and their representatives are primarily responsible for ensuring the documentation collected for products used on the project is sufficient to document compliance with the BABA requirements.

      The funding authority is responsible for providing oversight and guidance as needed to ensure the proper implementation of the requirements. The Uniform Grants Guidance (UGG) (Title 2 of the Code of Federal Regulations (CFR) Part 200) applies to many Federal financial assistance agreements that will include BABA requirements. The general provisions of 2 CFR Part 200 determine the responsible party for the grant funding authority.

      For information on SRF program roles and responsibilities, see question 7.6.

      At all levels, where fraud, waste, abuse, or any violation of the law is suspected, the Office of Inspector General (OIG) should be contacted immediately. The OIG can be reached at 1-888-546-8740 or OIG_Hotline@epa.gov. More information can be found at this website: http://www.epa.gov/oig/hotline.htm.

- Q5.2: When will the BABA requirements be assessed for compliance? Do assistance recipients need to have waivers for potential non-domestic products before assistance agreements are in place, at the time products are procured or products are incorporated into the project (i.e., used)?

    - A5.2: Compliance is assessed where the domestic product is used (or installed) at the project site. Proper compliance documentation, whether it is a BABA certification letter or a waiver, should accompany a product prior to its "use", in accordance with Section 70914(a) of IIJA. This may occur prior to assistance agreements being in place but is not necessary. Additionally, communication of BABA requirements through appropriate Terms and Conditions in financial assistance agreements and in project solicitation and contract documents is key in ensuring all parties involved are informed of the requirements for the project before construction is underway.

- Q5.3: How can product compliance with the BABA requirements be demonstrated?

    - A5.3: Assistance recipients and their representatives should ensure that the products delivered to the construction site are accompanied by proper documentation that demonstrate compliance with the law and be made available to the funding authority upon request. The documentation may be received and maintained in hard copy, electronically, or could be embedded in construction management software. The use of a signed certification letter for the project is the most direct and effective form of compliance documentation for ensuring products used on site are BABA-compliant prior to their installation; however, other forms of documentation are also acceptable as long as collectively, the following can be demonstrated:

        (1) Documentation linked to the project. For example, this can be in the form of the project name, project location, contract number, or project number.
        (2) Documentation linked to the product used on the project. For example, description of product(s) (simple explanation sufficient to identify the product(s)), or an attached (or electronic link to) purchase order, invoice, or bill of lading.
        (3) Documentation includes statement attesting that the products supplied to the assistance recipient are compliant with BABA requirement. Reference to the Infrastructure Investment and Jobs Act ("IIJA") or the Bipartisan Infrastructure Law (BIL) are also acceptable. For iron and steel items under BABA, references to the American Iron and Steel (AIS) requirements are also acceptable and reciprocal with BABA for such items.
        (4) Documentation that manufacturing occurred in the United States, which could include, for example, the location(s) of manufacturing for each manufacturing step that is being certified. It is acceptable for manufactured products to note a single point of manufacturing, documenting that the final point of manufacturing is in the United States. Note that each BABA category may require different determinations for compliance.
        (5) Signature of company representative (on company letterhead and signature can be electronic). The signatory of the certifying statement affirms their knowledge of the manufacturing processes for the referenced product(s) and attests that the product meets the BABA requirements.

In addition to compliance documentation, assistance recipients or their representatives should also conduct a visual inspection of the product when it arrives to the project site, especially for iron and steel products which are often stamped with the country of origin. (Note: A country of origin stamp alone is not sufficient verification of compliance with BABA and assistance receipts should not rely on it to ensure compliance.)

EPA may develop alternative procedures for demonstrating compliance. Additional project- or program-specific instructions may be developed on a case-by-case basis in order to meet individual circumstances.

- Q5.4: Will EPA provide a form or template for tracking and documenting compliance?
    - A5.4: EPA does not require a specified format for tracking or documenting compliance. Assistance recipients are free to develop any system (from simple to complex software) for tracking items used on the project and the accompanying compliance documentation, e.g., certification letters, applicable waivers, if it helps with implementation and compliance. Elements that may help with keeping track of compliance may include: product description, quantity required/used, product category (i.e., iron and steel, manufactured product, or construction material), status of obtaining certification letter, product cost, and whether the item might qualify as *de minimis*, or qualify under another applicable waiver.
- Q5.5: If a manufacturer claims to comply with the Buy American Act, does it also comply with BABA?
    - A5.5: No. With the exception of the AIS requirements – which EPA interprets to be equivalent to the "iron and steel" requirements under BABA – EPA does not have an interpretation about the comparability of other domestic preference requirements relative to BABA. Any products that are to be certified as compliant with BABA should include a specific reference to the BABA requirements and appropriate attestation from a responsible manufacturing company official. See Question 5.3 for EPA's recommendations for BABA certification letters.
- Q5.6: How will assistance recipients manage certification letters for hundreds, possibly thousands of products?
    - A5.6: EPA recognizes that the new BABA requirements will cover most products used in typical water and wastewater infrastructure projects, and that the number of items which may require certification at large and/or complex projects may reach several hundred. EPA is concerned about the potential administrative burden that this would place on assistance recipients. EPA recommends that projects with a high number of potentially covered products meet with their funding authority about potential compliance strategies to minimize burden and streamline compliance activity. Assistance recipients should prepare contract bid solicitation documents with a statement for the consulting engineers and construction firms as follows: "By signing payment application and recommending payment, Contractor certifies they have reviewed documentation for all products and materials submitted for payment, and the documentation is sufficient to demonstrate compliance with Build America,

Buy America Act requirements." In most cases, the assistance recipient's representatives may assume the responsibility for their clients to conduct due diligence on compliance with applicable domestic preference requirements.

- Q5.7: Who is responsible for documenting the 55 percent content requirement for manufactured products under BABA? What if the final manufacturer cannot trace or verify domestic origin for all components?
    - A5.7: The manufacturer who signs a certification letter is responsible for documenting compliance with any of the three categories of products (iron and steel, manufactured products, or construction materials). For manufactured products, BABA requires that greater than 55 percent of the total cost of all components of the manufactured product be from domestic sources. EPA recommends that the certification letter for manufactured products document whether the item passes the content test in the final product along with a statement attesting to compliance with the BABA requirements for manufactured products.

- Q5.8: How do final product fabricators document compliance when the final step of manufacturing may be simply assembling components?
    - A5.8: It is acceptable, in many cases, especially for highly complex manufactured products that utilize many sub-components, for the final point of assembly to certify without using a "step certification" process. Multiple certifications (i.e., step certifications) or a singular certification can be used for a product, as long as the certifying official is willing to attest to the product's compliance with BABA requirements at all stages of manufacturing.

- Q5.9: Will Material Test Reports be acceptable in lieu of a BABA certification for iron and steel?
    - A5.9: Material Test Reports (MTRs, commonly referred to as "Mill Certifications" or "Mill Certs") provide the chemical composition of steel and iron from a mill or foundry. If an MTR accompanies the delivery of steel or iron to a project site with an invoice or bill of lading, EPA will consider it sufficient to demonstrate compliance (equivalent to a certification letter) as long as the MTR includes a manufacturer representative's signature in addition to the location (city and state) of the mill/foundry. It is common for MTRs to be the first letter in a "step certification" if the product is further fabricated or painted, etc., by another manufacturer.

- Q5.10: Can a manufacturer use a fillable certification letter for products?
    - A5.10: EPA recommends that certifications be signed by representatives of the manufacturing entity. EPA does not oppose manufacturers using forms to internally develop letters within their company, thereby providing signed, non-manipulable certification letters to suppliers, distributors, and/or assistance recipients. A fillable form that can be changed by someone outside of the manufacturer after signature does not demonstrate compliance and may create compliance concerns for the manufacturer or assistance recipient.

- Q5.11: Are product certifications from suppliers and distributors allowed?

    - A5.11: EPA recommends that representatives of product manufacturers certify compliance and discourages suppliers and distributors from creating certification letters. EPA does not rule out the possibility that a third-party certification process, such as a certification by a distributor, may be viable. However, EPA is currently not aware of a system or proposed system that meets the EPA's recommendations for documentation of product certification.

- Q5.12: How long should assistance recipients keep compliance documentation?

    - A5.12: Assistance recipients should apply recordkeeping requirements for the project according to the procedures dictated by the funding authority. For most EPA grant programs, this is prescribed in the UGG at 2 CFR 200.334-200.338; e.g., the SRF programs require a minimum of three years. Other funding programs may require longer documentation retention periods.

SECTION 6: PROGRAMS WITH AMERICAN IRON AND STEEL REQUIREMENTS

- Q6.1: Does BABA supersede the American Iron and Steel (AIS) Requirements?

    - A6.1: The BABA requirements for items considered "iron and steel" are equivalent to those for covered iron and steel products under the AIS requirements in the Clean Water Act and the Safe Drinking Water Act. These requirements apply to the CWSRF, DWSRF, WIFIA, and Water infrastructure Community Grants. BABA includes a "Savings Provision" (Section 70917(b)) that states that BABA does not affect existing domestic content procurement preferences for infrastructure projects funded by Federal financial assistance programs that meet the requirements of section 70914. EPA views the AIS requirements as meeting the "iron and steel" product requirements of BABA Section 70914, as they both include the key requirement that items made of iron and steel be wholly manufactured in the United States from the point of melting and/or pouring the iron or steel components through final manufacturing step. Because of the "Savings Provision" of Section 70917, the AIS requirements satisfy the "iron and steel" requirements of BABA. For the programs that have AIS requirements, EPA intends to implement BABA requirements the same way for iron and steel items as it has done for AIS products.

- Q6.2: For iron and steel products, does a manufacturer need to demonstrate compliance from initial melting through the finished product?

    - A6.2: For iron and steel products, the BABA requirements are the same as the existing AIS requirements, in that all of the iron and steel in a covered product (that is, the product is comprised of more than 50 percent iron and steel by material cost) must be melted and poured in the United States and all subsequent manufacturing processes (such as grinding, rolling, bending, reheating, and casting) must occur in the United States.

Q6.3: Will EPA apply the same manufacturing standards for BABA iron and steel products as for the American Iron and Steel (AIS) requirements?

- A6.3: Yes. For AIS, EPA did not require raw materials used in the production of steel or iron to be domestically sourced. For BABA, EPA interprets the requirements to be the same. Hence, like AIS, raw materials in the production of iron and steel subject to BABA requirements would not need to be domestically sourced. The key step for both AIS and BABA domestic iron and/or steel production is the melting/pouring (that is, the location of the furnace), which must be in the United States.

- Q6.4: Will the certification process be similar to the process established for the American Iron and Steel requirements?

  - A6.4: EPA expects the certification process for the BABA requirements to be very similar to that established for the AIS requirements. For iron and steel products, the process should remain the same for AIS and BABA. EPA recommends for manufactured products and for construction materials that certification letters include direct reference to the product/material content requirements under BABA, in addition to an affirmative statement verifying that the product meets the BABA requirements.

- Q6.5: Will duplicate certification letters be required for AIS and BABA for iron/steel products?

  - A6.5: No. Compliance with BABA requirements will be sufficient to demonstrate compliance with AIS requirements for iron and steel products. If a project is subject to BABA, the only demonstration of compliance necessary is with the BABA requirements, of which the iron and steel requirements are equivalent to those of the AIS statutory requirements: the iron or steel in a product made primarily or predominantly of iron and steel (comprising more than 50 percent iron and steel by material cost) must be melted and/or poured in the United States and all subsequent manufacturing processes must occur in the United States.

SECTION 7: PROGRAM-SPECIFIC ISSUES

- Q7.1.: How do the BABA requirements apply to Community Grants?

  - A7.1: The Community Project Funding/Congressionally Directed Spending grants for the construction of drinking water, wastewater, and stormwater infrastructure and for water quality protection are subject to the requirements specified in the explanatory statement accompanying the Consolidated Appropriations Act (Explanatory Statement for Division G of P.L. 117-13, the Consolidated Appropriations Act of 2022). The explanatory statement asserts: "Applicable Federal requirements that would apply to a Clean Water State Revolving Fund or Drinking Water State Revolving Fund project grant recipient shall apply to a grantee receiving a CPF grant under this section." Therefore, the federally funded Community Project Funding/Congressionally Directed Spending grants are subject to the same requirements that apply to CWSRF or DWSRF projects, including BABA and AIS requirements. See also A1.2.

- Q7.2: Should SRF projects covered by the BABA SRF Projects Design Planning Adjustment Period Waiver follow the same procedures for demonstrating compliance as outlined for American Iron and Steel requirements?

    - A7.2: Yes. The SRF Design Planning Adjustment Period waiver does not waive the iron and steel requirements under BABA. The SRF programs have existing domestic preference requirements for SRF projects under CWA Section 608 and SDWA Section 1452(a)(4) (AIS requirements) to use iron and steel products that are produced in the United States. Sections 70917(a) and (b) of BIL explain the application of BABA to existing domestic preference requirements. Specifically, the savings provision in Section 70917(b) states that existing domestic preference requirements that meet BABA requirements are not affected by BABA. The statutory AIS requirements were existing at the time BABA became law and satisfy the BABA iron and steel requirements. Therefore, the statutory AIS requirements that have previously applied to SRF-funded projects will continue to do so, and compliance with AIS requirements will satisfy the BABA iron and steel requirements. Demonstration of compliance for iron and steel products will follow the AIS implementation policies for projects subject to the waiver.

- Q7.3: For SRF programs, is BABA considered a federal cross-cutting authority? (i.e., do "equivalency" rules apply?)

    - A7.3: Yes, BABA is considered a federal cross-cutting requirement that applies to SRF assistance equivalent to the federal capitalization grant (i.e., "equivalency" projects). EPA's SRF regulations at 40 CFR 35.3145 and 35.3575 require states and recipients of SRF funds equivalent to the amount of the federal capitalization grant to comply with federal cross-cutting requirements. Section 70914 of the IIJA, which states when a Buy America preference applies, explains that "none of the funds made available for a Federal financial assistance program for infrastructure…may be obligated for a project unless all of the iron, steel, manufactured products, and construction materials used in the project are produced in the United States." Therefore, BABA only applies to projects funded in an amount equivalent to the federal capitalization grant and not to those projects receiving funds in excess of the capitalization grant (i.e., "non-equivalency" projects). (Note: The AIS requirements continue to apply for all SRF projects, including non-equivalency projects, and all WIFIA and Community Grant projects, because equivalency does not apply.)

- Q7.4: Do the BABA requirements apply to Drinking Water State Revolving Fund set-asides?

    - A7.4: Due to requirements related to the deposit of funds in the DWSRF program, almost all of the funds used to conduct set-aside activities are Federal dollars. Therefore, Federal cross-cutting requirements must be applied to all set-aside activities. However, in the case of most set-aside activities, the cross-cutting requirements will not be implicated because of the nature of the activities conducted under the set-asides. Because the BABA requirements only apply to infrastructure, and infrastructure typically is not an eligible set-aside expenditure (with one potential exception being loans for incentive-based source water protection

measures under the Local Assistance and Other State Programs Set-Aside), the BABA requirements will not apply to most set-aside activities.

- Q7.5: What if an SRF project is refinanced using Federal financial assistance on or after May 14, 2022?

    - A7.5: If an SRF project began construction, financed from another funding source, prior to May 14, 2022, but is refinanced through an assistance agreement executed on or after that date, BABA requirements will apply to all construction that occurs on or after May 14, 2022, through completion of construction, unless a waiver applies. There is no retroactive application of the BABA requirements where a refinancing occurs for an SRF project that has completed construction prior to May 14, 2022. (Note: If SRF funding is used for the refinancing, the AIS requirements may still apply depending on the timing of construction.)

- Q7.6: What are the roles and responsibilities for SRF programs for BABA implementation?

    - A7.6: Implementation of the BABA requirements for the State Revolving Fund programs will continue the roles and responsibilities from the successful AIS implementation process.

      As with AIS, it is both the assistance recipient's and the state's responsibility to ensure compliance with the BABA requirements. The state is the recipient of a federal capitalization grant and must comply with all grant conditions, including a condition requiring adherence to BABA requirements.

      Consequently, states are strongly advised to conduct site visits of projects during construction and review documentation demonstrating the assistance recipient's proof of compliance. In EPA's experience, most states conduct periodic site visits and arrange timely meetings with funded projects. Observed best practices typically include a meeting early in the process (sometimes before bid and usually prior to commencing construction) and at least one project site visit during the construction process. Assistance recipients must maintain documentation of compliance with the BABA requirements, as explained in question 5.3. The documents must be kept by the assistance recipient and should be reviewed by the state during project reviews.

      The state's role in the waiver process is to review any waiver requests submitted to the state to ensure that all necessary information has been provided by the assistance recipient prior to forwarding the request to EPA. If a state finds the request lacking, the state should work with the assistance recipient to help obtain complete information. Question 4.1 explains the information needed by EPA to expediently review a waiver request.

      In order to implement the BABA requirements, EPA has developed an approach for effective and efficient implementation of the waiver process to allow projects to proceed in a timely manner. The framework described below will allow states, on behalf of the assistance recipients, to apply for waivers of the BABA requirements directly to EPA Headquarters. Only waiver requests received and/or endorsed from states will be considered. Pursuant to BABA, EPA has the responsibility to make findings as to the issuance of waivers to the BABA requirements.

Step-by-step SRF Waiver Process

The waiver process begins with the assistance recipient. To fulfill the BABA requirements, the assistance recipient must in good faith design the project (where applicable) and solicit bids for construction with American-made iron and steel, manufactured goods, and construction materials. It is essential that the assistance recipient include the BABA terms in any request for proposals or solicitations for bids, and in all contracts (see Appendix 2 for sample construction contract language). The assistance recipient may receive a waiver at any point before, during, or after the bid process, if one or more of three statutory conditions is demonstrated to EPA and approved.

To apply for a project-specific waiver, the assistance recipient should email the request in the form of a Word document (.doc) or editable PDF (.pdf) to the funding program. It is strongly recommended that each state identify a person or persons for BABA communications. The state designee(s) will review the application for the waiver and determine whether the necessary information has been included (Note: More information may be provided in the future regarding what information is required to be included in waiver requests). Once the waiver application is complete, the designee will forward the application to CWSRFWaiver@epa.gov or DWSRFWaiver@epa.gov.

Evaluation by EPA

After receiving an application for waiver of the BABA requirements and ensuring sufficient information was provided, EPA will publish the request on its website for 15 days and receive public comment. EPA will then determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver.

In the event that EPA finds that adequate documentation and justification has been submitted, the Administrator may grant a waiver to the assistance recipient. EPA will notify the state designee whether a waiver request has been approved or not approved as soon as such a decision has been made. Granting such a waiver is a four-step process:

1. Research – After receiving an application for a waiver, EPA will perform market research to determine whether the iron, steel, manufactured goods, or construction materials are available domestically.

2. Posting – After research, if no domestic product has been identified, EPA is required to publish the application and all material submitted with the application on EPA's website for 15 days. During that period, the public will have the opportunity to review the request and provide informal comment to EPA. The website can be found at: https://www.epa.gov/cwsrf/build-america-buy-america-baba-waivers-open-public-comment.

3. Evaluation – After receiving an application for waiver of the BABA requirements, EPA will determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver to determine whether or not to grant the waiver.

3. Signature of waiver approval by the Administrator or another agency official with delegated authority – As soon as the waiver is signed and dated, EPA will notify the State SRF program and post the signed waiver on the Agency's website. The assistance recipient should keep a copy of the signed waiver in its project files.

(Note: Additional steps may be required in the future regarding the waiver process depending on additional guidance from OMB)

APPENDIX 1

Example Build America, Buy America (BABA) Act Construction Contract Language

ALL CONSTRUCTION CONTRACTS MUST HAVE A CLAUSE REQUIRING COMPLIANCE WITH THE BABA REQUIREMENTS. THIS IS AN EXAMPLE OF WHAT COULD BE INCLUDED IN A PROJECT'S CONSTRUCTION CONTRACT. EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THIS CLAUSE WITH RESPECT TO STATE OR LOCAL LAW:

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

APPENDIX 2

Example Build America, Buy America (BABA) Act Assistance Agreement Language

ALL FEDERAL FINANCIAL INFRASTRUCTURE ASSISTANCE AGREEMENTS MUST HAVE A CLAUSE REQUIRING COMPLIANCE WITH THE BABA REQUIREMENTS. THIS IS AN EXAMPLE OF WHAT COULD BE INCLUDED IN AN ASSISTANCE AGREEMENT (E.G., SRF LOAN AGREEMENT). EPA MAKES NO CLAIMS REGARDING THE LEGAL SUFFICIENCY OF THIS CLAUSE WITH RESPECT TO STATE LAW:

Comply with all federal requirements applicable to the assistance received (including those imposed by the Infrastructure Investment and Jobs Act ("IIJA"), Public Law No. 117-58) which the Participant understands includes, but is not limited to, the following requirements: that all of the iron and steel, manufactured products, and construction materials used in the Project are to be produced in the United States ("Build America, Buy America Requirements") unless (i) the Participant has requested and obtained a waiver from the cognizant Agency[1] pertaining to the Project or the Project is otherwise covered by a general applicability waiver; or (ii) all of the contributing Agencies have otherwise advised the Participant in writing that the Build America, Buy America Requirements are not applicable to the Project.

Comply with all record keeping and reporting requirements under all applicable legal authorities, including any reports required by the funding authority (such as EPA and/or a state), such as performance indicators of program deliverables, information on costs and project progress. The Participant understands that (i) each contract and subcontract related to the Project is subject to audit by appropriate federal and state entities and (ii) failure to comply with the applicable legal requirements and this Agreement may result in a default hereunder that results in a repayment of the assistance agreement in advance of the maturity of the Bonds, termination and/or repayment of grants, cooperative agreements, direct assistance or other types of financial assistance, and/or other remedial actions.

[1] From OMB Guidance M-22-11: To avoid a need for duplicative waiver requests from entities that receive funding for one infrastructure project through multiple Federal agencies, the Federal agency contributing the greatest amount of Federal funds for the project should be considered the "Cognizant Agency for Made in America" and should take responsibility for coordinating with the other Federal awarding agencies. Such coordination will provide uniform waiver criteria and adjudication processes, minimize duplicative efforts among Federal agencies, and reduce burdens on recipients. The Cognizant Agency for Made in America shall be responsible for consulting with the other Federal awarding agencies, publicizing the proposed joint waiver, and submitting the proposed joint waiver for review to MIAO.

APPENDIX I
AMERICAN IRON AND STEEL (AIS) REQUIREMENTS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAR 20 2014

OFFICE OF WATER

MEMORANDUM

SUBJECT: Implementation of American Iron and Steel provisions of P.L. 113-76, Consolidated Appropriations Act, 2014

FROM: For Andrew D. Sawyers, Director
Office of Wastewater Management (4201M)

Peter C. Grevatt, Director
Office of Ground Water and Drinking Water (4601M)

TO: Water Management Division Directors
Regions I - X

P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an "American Iron and Steel (AIS)" requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use iron and steel products that are produced in the United States for projects for the construction, alteration, maintenance, or repair of a public water system or treatment works if the project is funded through an assistance agreement executed beginning January 17, 2014 (enactment of the Act), through the end of Federal Fiscal Year 2014.

Section 436 also sets forth certain circumstances under which EPA may waive the AIS requirement. Furthermore, the Act specifically exempts projects where engineering plans and specifications were approved by a State agency prior to January 17, 2014.

The approach described below explains how EPA will implement the AIS requirement. The first section is in the form of questions and answers that address the types of projects that must comply with the AIS requirement, the types of products covered by the AIS requirement, and compliance. The second section is a step-by-step process for requesting waivers and the circumstances under which waivers may be granted.

Implementation

The Act states:

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

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

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

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

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

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

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

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

(e) The Administrator may retain up to 0.25 percent of the funds appropriated in this Act for the Clean and Drinking Water State Revolving Funds for carrying out

the provisions described in subsection (a)(1) for management and oversight of the requirements of this section.

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

The following questions and answers provide guidance for implementing and complying with the AIS requirements:

Project Coverage

1) What classes of projects are covered by the AIS requirement?

All treatment works projects funded by a CWSRF assistance agreement, and all public water system projects funded by a DWSRF assistance agreement, from the date of enactment through the end of Federal Fiscal Year 2014, are covered. The AIS requirements apply to the entirety of the project, no matter when construction begins or ends. Additionally, the AIS requirements apply to all parts of the project, no matter the source of funding.

2) Does the AIS requirement apply to nonpoint source projects or national estuary projects?

No. Congress did not include an AIS requirement for nonpoint source and national estuary projects unless the project can also be classified as a 'treatment works' as defined by section 212 of the Clean Water Act.

3) Are any projects for the construction, alteration, maintenance, or repair of a public water system or treatment works excluded from the AIS requirement?

Any project, whether a treatment works project or a public water system project, for which engineering plans and specifications were approved by the responsible state agency prior to January 17, 2014, is excluded from the AIS requirements.

4) What if the project does not have approved engineering plans and specifications but has signed an assistance agreement with a CWSRF or DWSRF program prior to January 17, 2014?

The AIS requirements do not apply to any project for which an assistance agreement was signed prior to January 17, 2014.

5) What if the project does not have approved engineering plans and specifications, but bids were advertised prior to January 17, 2014 and an assistance agreement was signed after January 17, 2014?

If the project does not require approved engineering plans and specifications, the bid advertisement date will count in lieu of the approval date for purposes of the exemption in section 436(f).

6) What if the assistance agreement that was signed prior to January 17, 2014, only funded a part of the overall project, where the remainder of the project will be funded later with another SRF loan?

If the original assistance agreement funded any construction of the project, the date of the original assistance agreement counts for purposes of the exemption. If the original assistance agreement was only for planning and design, the date of that assistance agreement will count for purposes of the exemption only if there is a written commitment or expectation on the part of the assistance recipient to fund the remainder of the project with SRF funds.

7) What if the assistance agreement that was signed prior to January 17, 2014, funded the first phase of a multi-phase project, where the remaining phases will be funded by SRF assistance in the future?

In such a case, the phases of the project will be considered a single project if all construction necessary to complete the building or work, regardless of the number of contracts or assistance agreements involved, are closely related in purpose, time and place. However, there are many situations in which major construction activities are clearly undertaken in phases that are distinct in purpose, time, or place. In the case of distinct phases, projects with engineering plans and specifications approval or assistance agreements signed prior to January 17, 2014 would be excluded from AIS requirements while those approved/signed on January 17, 2014, or later would be covered by the AIS requirements.

8) What if a project has split funding from a non-SRF source?

Many States intend to fund projects with "split" funding, from the SRF program and from State or other programs. Based on the Act language in section 436, which requires that American iron and steel products be used in any project for the construction, alteration, maintenance, or repair of a public water system or treatment works receiving SRF funding between and including January 17, 2014 and September 30, 2014, any project that is funded in whole or in part with such funds must comply with the AIS requirement. A "project" consists of all construction necessary to complete the building or work regardless of the number of contracts or assistance agreements involved so long as all contracts and assistance agreements awarded are closely related in purpose, time and place. This precludes the intentional splitting of SRF projects into separate and smaller contracts or assistance agreements to avoid AIS coverage on some portion of a larger

project, particularly where the activities are integrally and proximately related to the whole. However, there are many situations in which major construction activities are clearly undertaken in separate phases that are distinct in purpose, time, or place, in which case, separate contracts or assistance agreement for SRF and State or other funding would carry separate requirements.

9) What about refinancing?

If a project began construction, financed from a non-SRF source, prior to January 17, 2014, but is refinanced through an SRF assistance agreement executed on or after January 17, 2014 and prior to October 1, 2014, AIS requirements will apply to all construction that occurs on or after January 17, 2014, through completion of construction, unless, as is likely, engineering plans and specifications were approved by a responsible state agency prior to January 17, 2014. There is no retroactive application of the AIS requirements where a refinancing occurs for a project that has completed construction prior to January 17, 2014.

10) Do the AIS requirements apply to any other EPA programs, besides the SRF program, such as the Tribal Set-aside grants or grants to the Territories and DC?

No, the AIS requirement only applies to funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j–12)

Covered Iron and Steel Products

11) What is an iron or steel product?

For purposes of the CWSRF and DWSRF projects that must comply with the AIS requirement, an iron or steel product is one of the following made primarily of iron or steel that is permanently incorporated into the public water system or treatment works:

Lined or unlined pipes or fittings;
Manhole Covers;
Municipal Castings (defined in more detail below);
Hydrants;
Tanks;
Flanges;
Pipe clamps and restraints;
Valves;
Structural steel (defined in more detail below);
Reinforced precast concrete; and
Construction materials (defined in more detail below).

12) What does the term 'primarily iron or steel' mean?

'Primarily iron or steel' places constraints on the list of products above. For one of the listed products to be considered subject to the AIS requirements, it must be made of greater than 50% iron or steel, measured by cost. The cost should be based on the material costs.

13) Can you provide an example of how to perform a cost determination?

For example, the iron portion of a fire hydrant would likely be the bonnet, body and shoe, and the cost then would include the pouring and casting to create those components. The other material costs would include non-iron and steel internal workings of the fire hydrant (i.e., stem, coupling, valve, seals, etc). However, the assembly of the internal workings into the hydrant body would not be included in this cost calculation. If one of the listed products is not made primarily of iron or steel, United States (US) provenance is not required. An exception to this definition is reinforced precast concrete, which is addressed in a later question.

14) If a product is composed of more than 50% iron or steel, but is not listed in the above list of items, must the item be produced in the US? Alternatively, must the iron or steel in such a product be produced in the US?

The answer to both question is no. Only items on the above list must be produced in the US. Additionally, the iron or steel in a non-listed item can be sourced from outside the US.

15) What is the definition of steel?

Steel means an alloy that includes at least 50 percent 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.

16) What does 'produced in the United States' mean?

Production in the United States of the iron or steel products used in the project requires that all manufacturing processes, including application of coatings, must take place in the United States, with the exception of metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating. Further, if a domestic iron and steel product is taken out of the US for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron ore, limestone and iron and steel scrap are not covered by the AIS requirement, and the

material(s), if any, being applied as a coating are similarly not covered. Non-iron or steel components of an iron and steel product may come from non-US sources. For example, for products such as valves and hydrants, the individual non-iron and steel components do not have to be of domestic origin.

17) Are the raw materials used in the production of iron or steel required to come from US sources?

No. Raw materials, such as iron ore, limestone, scrap iron, and scrap steel, can come from non-US sources.

18) If an above listed item is primarily made of iron or steel, but is only at the construction site temporarily, must such an item be produced in the US?

No. Only the above listed products made primarily of iron or steel, permanently incorporated into the project must be produced in the US. For example trench boxes, scaffolding or equipment, which are removed from the project site upon completion of the project, are not required to be made of U.S. Iron or Steel.

19) What is the definition of 'municipal castings'?

Municipal castings are cast iron or steel infrastructure products that are melted and cast. They typically provide access, protection, or housing for components incorporated into utility owned drinking water, storm water, wastewater, and surface infrastructure. They are typically made of grey or ductile iron, or steel. Examples of municipal castings are:

Access Hatches;
Ballast Screen;
Benches (Iron or Steel);
Bollards;
Cast Bases;
Cast Iron Hinged Hatches, Square and Rectangular;
Cast Iron Riser Rings;
Catch Basin Inlet;
Cleanout/Monument Boxes;
Construction Covers and Frames;
Curb and Corner Guards;
Curb Openings;
Detectable Warning Plates;
Downspout Shoes (Boot, Inlet);
Drainage Grates, Frames and Curb Inlets;
Inlets;
Junction Boxes;
Lampposts;
Manhole Covers, Rings and Frames, Risers;

Meter Boxes;
Service Boxes;
Steel Hinged Hatches, Square and Rectangular;
Steel Riser Rings;
Trash receptacles;
Tree Grates;
Tree Guards;
Trench Grates; and
Valve Boxes, Covers and Risers.

20) What is 'structural steel'?

Structural steel is rolled flanged shapes, having at least one dimension of their cross-section three inches or greater, which are used in the construction of bridges, buildings, ships, railroad rolling stock, and for numerous other constructional purposes. Such shapes are designated as wide-flange shapes, standard I-beams, channels, angles, tees and zees. Other shapes include H-piles, sheet piling, tie plates, cross ties, and those for other special purposes.

21) What is a 'construction material' for purposes of the AIS requirement?

Construction materials are those articles, materials, or supplies made primarily of iron and steel, that are permanently incorporated into the project, not including mechanical and/or electrical components, equipment and systems. Some of these products may overlap with what is also considered "structural steel". This includes, but is not limited to, the following products: wire rod, bar, angles, concrete reinforcing bar, wire, wire cloth, wire rope and cables, tubing, framing, joists, trusses, fasteners (i.e., nuts and bolts), welding rods, decking, grating, railings, stairs, access ramps, fire escapes, ladders, wall panels, dome structures, roofing, ductwork, surface drains, cable hanging systems, manhole steps, fencing and fence tubing, guardrails, doors, and stationary screens.

22) What is not considered a 'construction material' for purposes of the AIS requirement?

Mechanical and electrical components, equipment and systems are not considered construction materials. Mechanical equipment is typically that which has motorized parts and/or is powered by a motor. Electrical equipment is typically any machine powered by electricity and includes components that are part of the electrical distribution system.

The following examples (including their appurtenances necessary for their intended use and operation) are NOT considered construction materials: pumps, motors, gear reducers, drives (including variable frequency drives (VFDs)), electric/pneumatic/manual accessories used to operate valves (such as electric valve actuators), mixers, gates, motorized screens (such as traveling screens), blowers/aeration equipment, compressors, meters, sensors, controls and switches, supervisory control and

data acquisition (SCADA), membrane bioreactor systems, membrane filtration systems, filters, clarifiers and clarifier mechanisms, rakes, grinders, disinfection systems, presses (including belt presses), conveyors, cranes, HVAC (excluding ductwork), water heaters, heat exchangers, generators, cabinetry and housings (such as electrical boxes/enclosures), lighting fixtures, electrical conduit, emergency life systems, metal office furniture, shelving, laboratory equipment, analytical instrumentation, and dewatering equipment.

23) If the iron or steel is produced in the US, may other steps in the manufacturing process take place outside of the US, such as assembly?

No. Production in the US of the iron or steel used in a listed product requires that all manufacturing processes must take place in the United States, except metallurgical processes involving refinement of steel additives.

24) What processes must occur in the US to be compliant with the AIS requirement for reinforced precast concrete?

While reinforced precast concrete may not be at least 50% iron or steel, in this particular case, the reinforcing bar and wire must be produced in the US and meet the same standards as for any other iron or steel product. Additionally, the casting of the concrete product must take place in the US. The cement and other raw materials used in concrete production are not required to be of domestic origin.

If the reinforced concrete is cast at the construction site, the reinforcing bar and wire are considered to be a construction material and must be produced in the US.

Compliance

25) How should an assistance recipient document compliance with the AIS requirement?

In order to ensure compliance with the AIS requirement, specific AIS contract language must be included in each contract, starting with the assistance agreement, all the way down to the purchase agreements. Sample language for assistance agreements and contracts can be found in Appendix 3 and 4.

EPA recommends the use of a step certification process, similar to one used by the Federal Highway Administration. The step certification process is a method to ensure that producers adhere to the AIS requirement and assistance recipients can verify that products comply with the AIS requirement. The process also establishes accountability and better enables States to take enforcement actions against violators.

Step certification creates a paper trail which documents the location of the manufacturing process involved with the production of steel and iron materials. A step certification is a process under which each handler (supplier, fabricator, manufacturer,

processor, etc) of the iron and steel products certifies 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. Typically, it includes the name of the manufacturer, the location of the manufacturing facility where the product or process took place (not its headquarters), a description of the product or item being delivered, and a signature by a manufacturer's responsible party. Attached, as Appendix 5, are sample certifications. These certifications should be collected and maintained by assistance recipients.

Alternatively, the final manufacturer that delivers the iron or steel product to the worksite, vendor, or contractor, may provide a certification asserting that all manufacturing processes occurred in the US. While this type of certification may be acceptable, it may not provide the same degree of assurance. Additional documentation may be needed if the certification is lacking important information. Step certification is the best practice.

26) How should a State ensure assistance recipients are complying with the AIS requirement?

In order to ensure compliance with the AIS requirement, States SRF programs must include specific AIS contract language in the assistance agreement. Sample language for assistance agreements can be found in Appendix 3.

States should also, as a best practice, conduct site visits of projects during construction and review documentation demonstrating proof of compliance which the assistance recipient has gathered.

27) What happens if a State or EPA finds a non-compliant iron and/or steel product permanently incorporated in the project?

If a potentially non-compliant product is identified, the State should notify the assistance recipient of the apparent unauthorized use of the non-domestic component, including a proposed corrective action, and should be given the opportunity to reply. If unauthorized use is confirmed, the State can take one or more of the following actions: request a waiver where appropriate; require the removal of the non-domestic item; or withhold payment for all or part of the project. Only EPA can issue waivers to authorize the use of a non-domestic item. EPA may use remedies available to it under the Clean Water Act, the Safe Drinking Water Act, and 40 CFR part 31 grant regulations, in the event of a violation of a grant term and condition.

It is recommended that the State work collaboratively with EPA to determine the appropriate corrective action, especially in cases where the State is the one who identifies the item in noncompliance or there is a disagreement with the assistance recipient.

If fraud, waste, abuse, or any violation of the law is suspected, the Office of Inspector General (OIG) should be contacted immediately. The OIG can be reached at 1-

888-546-8740 or OIG_Hotline@epa.gov. More information can be found at this website: https://oig.hhs.gov/fraud/report-fraud/

28) How do international trade agreements affect the implementation of the AIS requirements?

The AIS provision applies in a manner consistent with United States obligations under international agreements. Typically, these obligations only apply to direct procurement by the entities that are signatories to such agreements. In general, SRF assistance recipients are not signatories to such agreements, so these agreements have no impact on this AIS provision. In the few instances where such an agreement applies to a municipality, that municipality is under the obligation to determine its applicability and requirements and document the actions taken to comply for the State.

Waiver Process

The statute permits EPA to issue waivers for a case or category of cases where EPA finds (1) that applying these requirements would be inconsistent with the public interest; (2) iron and steel products are not produced in the US in sufficient and reasonably available quantities and of a satisfactory quality; or (3) inclusion of iron and steel products produced in the US will increase the cost of the overall project by more than 25 percent.

In order to implement the AIS requirements, EPA has developed an approach to allow for effective and efficient implementation of the waiver process to allow projects to proceed in a timely manner. The framework described below will allow States, on behalf of the assistance recipients, to apply for waivers of the AIS requirement directly to EPA Headquarters. Only waiver requests received from states will be considered. Pursuant to the Act, EPA has the responsibility to make findings as to the issuance of waivers to the AIS requirements.

Definitions

The following terms are critical to the interpretation and implementation of the AIS requirements and apply to the process described in this memorandum:

Reasonably Available Quantity: The quantity of iron or steel products is available or will be available at the time needed and place needed, and in the proper form or specification as specified in the project plans and design.

Satisfactory Quality: The quality of iron or steel products, as specified in the project plans and designs.

Assistance Recipient: A borrower or grantee that receives funding from a State CWSRF or DWSRF program.

Step-By-Step Waiver Process

Application by Assistance Recipient

Each local entity that receives SRF water infrastructure financial assistance is required by section 436 of the Act to use American made iron and steel products in the construction of its project. However, the recipient may request a waiver. Until a waiver is granted by EPA, the AIS requirement stands, except as noted above with respect to municipalities covered by international agreements.

The waiver process begins with the SRF assistance recipient. In order to fulfill the AIS requirement, the assistance recipient must in good faith design the project (where applicable) and solicit bids for construction with American made iron and steel products. It is essential that the assistance recipient include the AIS terms in any request for proposals or solicitations for bids, and in all contracts (see Appendix 3 for sample construction contract language). The assistance recipient may receive a waiver at any point before, during, or after the bid process, if one or more of three conditions is met:

1. Applying the American Iron and Steel requirements of the Act would be inconsistent with the public interest;
2. Iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or
3. Inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

Proper and sufficient documentation must be provided by the assistance recipient. A checklist detailing the types of information required for a waiver to be processed is attached as Appendix 1.

Additionally, it is strongly encouraged that assistance recipients hold pre-bid conferences with potential bidders. A pre-bid conference can help to identify iron and steel products needed to complete the project as described in the plans and specifications that may not be available from domestic sources. It may also identify the need to seek a waiver prior to bid, and can help inform the recipient on compliance options.

In order to apply for a project waiver, the assistance recipient should email the request in the form of a Word document (.doc) to the State SRF program. It is strongly recommended that the State designate a single person for all AIS communications. The State SRF designee will review the application for the waiver and determine whether the necessary information has been included. Once the waiver application is complete, the State designee will forward the application to either of two email addresses. For CWSRF waiver requests, please send the application to: cwsrfwaiver@epa.gov. For DWSRF waiver requests, please send the application to: dwsrfwaiver@epa.gov.

Evaluation by EPA

After receiving an application for waiver of the AIS requirements, EPA Headquarters will publish the request on its website for 15 days and receive informal comment. EPA Headquarters will then use the checklist in Appendix 2 to determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver – that it is quantitatively and qualitatively sufficient – and to determine whether or not to grant the waiver.

In the event that EPA finds that adequate documentation and justification has been submitted, the Administrator may grant a waiver to the assistance recipient. EPA will notify the State designee that a waiver request has been approved or denied as soon as such a decision has been made. Granting such a waiver is a three-step process:

1. Posting – After receiving an application for a waiver, EPA is required to publish the application and all material submitted with the application on EPA's website for 15 days. During that period, the public will have the opportunity to review the request and provide informal comment to EPA. The website can be found at: http://water.epa.gov/grants_funding/aisrequirement.cfm

2. Evaluation – After receiving an application for waiver of the AIS requirements, EPA Headquarters will use the checklist in Appendix 2 to determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver – that it is quantitatively and qualitatively sufficient – and to determine whether or not to grant the waiver.

3. Signature of waiver approval by the Administrator or another agency official with delegated authority – As soon as the waiver is signed and dated, EPA will notify the State SRF program, and post the signed waiver on our website. The assistance recipient should keep a copy of the signed waiver in its project files.

Public Interest Waivers

EPA has the authority to issue public interest waivers. Evaluation of a public interest waiver request may be more complicated than that of other waiver requests so they may take more time than other waiver requests for a decision to be made. An example of a public interest waiver that might be issued could be for a community that has standardized on a particular type or manufacturer of a valve because of its performance to meet their specifications. Switching to an alternative valve may require staff to be trained on the new equipment and additional spare parts would need to be purchased and stocked, existing valves may need to be unnecessarily replaced, and portions of the system may need to be redesigned. Therefore, requiring the community to install an alternative valve would be inconsistent with public interest.

EPA also has the authority to issue a public interest waiver that covers categories of products that might apply to all projects.

EPA reserves the right to issue national waivers that may apply to particular classes of assistance recipients, particular classes of projects, or particular categories of iron or steel products. EPA may develop national or (US geographic) regional categorical waivers through the identification of similar circumstances in the detailed justifications presented to EPA in a waiver request or requests. EPA may issue a national waiver based on policy decisions regarding the public's interest or a determination that a particular item is not produced domestically in reasonably available quantities or of a sufficient quality. In such cases, EPA may determine it is necessary to issue a national waiver.

If you have any questions concerning the contents of this memorandum, you may contact us, or have your staff contact Jordan Dorfman, Attorney-Advisor, State Revolving Fund Branch, Municipal Support Division, at dorfman.jordan@epa.gov or (202) 564-0614 or Kiri Anderer, Environmental Engineer, Infrastructure Branch, Drinking Water Protection Division, at anderer.kirsten@epa.gov or (202) 564-3134.

Attachments

Attachment 1: Information Checklist for Waiver Request

The purpose of this checklist is to help ensure that all appropriate and necessary information is submitted to EPA. EPA recommends that States review this checklist carefully and provide all appropriate information to EPA. This checklist is for informational purposes only and does not need to be included as part of a waiver application.

Items	✓	Notes
General • Waiver request includes the following information: — Description of the foreign and domestic construction materials — Unit of measure — Quantity — Price — Time of delivery or availability — Location of the construction project — Name and address of the proposed supplier — A detailed justification for the use of foreign construction materials • Waiver request was submitted according to the instructions in the memorandum • Assistance recipient made a good faith effort to solicit bids for domestic iron and steel products, as demonstrated by language in requests for proposals, contracts, and communications with the prime contractor		
Cost Waiver Requests • Waiver request includes the following information: — Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products — Relevant excerpts from the bid documents used by the contractors to complete the comparison — Supporting documentation indicating that the contractor made a reasonable survey of the market, such as a description of the process for identifying suppliers and a list of contacted suppliers		
Availability Waiver Requests • Waiver request includes the following supporting documentation necessary to demonstrate the availability, quantity, and/or quality of the materials for which the waiver is requested: — Supplier information or pricing information from a reasonable number of domestic suppliers indicating availability/delivery date for construction materials — Documentation of the assistance recipient's efforts to find available domestic sources, such as a description of the process for identifying suppliers and a list of contacted suppliers. — Project schedule — Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of construction materials • Waiver request includes a statement from the prime contractor and/or supplier confirming the non-availability of the domestic construction materials for which the waiver is sought • Has the State received other waiver requests for the materials described in this waiver request, for comparable projects?		

Attachment 2: HQ Review Checklist for Waiver Request

Instructions: To be completed by EPA. Review all waiver requests using the questions in the checklist, and mark the appropriate box as Yes, No or N/A. Marks that fall inside the shaded boxes may be grounds for denying the waiver. If none of your review markings fall into a shaded box, the waiver is eligible for approval if it indicates that one or more of the following conditions applies to the domestic product for which the waiver is sought:

1. The iron and/or steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality.
2. The inclusion of iron and/or steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

Review Items	Yes	No	N/A	Comments
Cost Waiver Requests • Does the waiver request include the following information? — Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products				
— Relevant excerpts from the bid documents used by the contractors to complete the comparison				
— A sufficient number of bid documents or pricing information from domestic sources to constitute a reasonable survey of the market				
• Does the Total Domestic Project exceed the Total Foreign Project Cost by more than 25%?				
Availability Waiver Requests • Does the waiver request include supporting documentation sufficient to show the availability, quantity, and/or quality of the iron and/or steel product for which the waiver is requested? — Supplier information or other documentation indicating availability/delivery date for materials — Project schedule — Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of materials				
• Does supporting documentation provide sufficient evidence that the contractors made a reasonable effort to locate domestic suppliers of materials, such as a description of the process for identifying suppliers and a list of contacted suppliers?				
• Based on the materials delivery/availability date indicated in the supporting documentation, will the materials be unavailable when they are needed according to the project schedule? (By item, list schedule date and domestic delivery quote date or other relevant information)				
• Is EPA aware of any other evidence indicating the non-availability of the materials for which the waiver is requested? Examples include: — Multiple waiver requests for the materials described in this waiver request, for comparable projects in the same State — Multiple waiver requests for the materials described in this waiver request, for comparable projects in other States — Correspondence with construction trade associations indicating the non-availability of the materials				
• Are the available domestic materials indicated in the bid documents of inadequate quality compared those required by the project plans, specifications, and/or permits?				

Attachment 3: Example Loan Agreement Language

ALL ASSISTANCE AGREEMENT MUST HAVE A CLAUSE REQUIRING COMPLIANCE WITH THE AIS REQUIREMENT. THIS IS AN EXAMPLE OF WHAT COULD BE INCLUDED IN SRF ASSISTANCE AGREEMENTS. EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THIS CLAUSE WITH RESPECT TO STATE LAW:

Comply with all federal requirements applicable to the Loan (including those imposed by the 2014 Appropriations Act and related SRF Policy Guidelines) which the Participant understands includes, among other, requirements that all of the iron and steel products used in the Project are to be produced in the United States ("American Iron and Steel Requirement") unless (i) the Participant has requested and obtained a waiver from the Agency pertaining to the Project or (ii) the Finance Authority has otherwise advised the Participant in writing that the American Iron and Steel Requirement is not applicable to the Project.

Comply with all record keeping and reporting requirements under the Clean Water Act/Safe Drinking Water Act, including any reports required by a Federal agency or the Finance Authority such as performance indicators of program deliverables, information on costs and project progress. The Participant understands that (i) each contract and subcontract related to the Project is subject to audit by appropriate federal and state entities and (ii) failure to comply with the Clean Water Act/Safe Drinking Water Act and this Agreement may be a default hereunder that results in a repayment of the Loan in advance of the maturity of the Bonds and/or other remedial actions.

Attachment 4: Sample Construction Contract Language

ALL CONTRACTS MUST HAVE A CLAUSE REQUIRING COMPLIANCE WITH THE AIS REQUIREMENT. THIS IS AN EXAMPLE OF WHAT COULD BE INCLUDED IN ALL CONTRACTS IN PROJECTS THAT USE SRF FUNDS. EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THIS CLAUSE WITH RESPECT TO STATE OR LOCAL LAW:

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

Attachment 5: Sample Certification 1

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

Date

Company Name

Company Address

City, State Zip

Subject: BABA and AIS Certification for Project (XXXXXXXXXX)

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

BIL extends this procurement requirement to all construction projects going forward with the inclusion of the Build America, Buy America Act (BABA). Starting on May 14, 2022, all steel, iron, manufactured products, 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, and drywall used in infrastructure projects for federal financial assistance programs must be produced in the United States.

Item, Products and/or Materials:

1. Xxxx
2. Xxxx
3. Xxxx

Such process took place at the following location:

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

Signed by company representative

Attachment 5: Sample Certification 2

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

Date

Company Name

Company Address

City, State Zip

Subject: BABA and AIS Certification for Project (XXXXXXXXXX)

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

BIL extends this procurement requirement to all construction projects going forward with the inclusion of the Build America, Buy America Act (BABA). Starting on May 14, 2022, all steel, iron, manufactured products, non-ferrous metals, plastic and polymer-based products (including polyvinyl chloride, composite building materials, and polymers used in fiber optic cables), glass (including optic glass), lumber, and drywall used in infrastructure projects for federal financial assistance programs must be produced in the United States.

Item, Products and/or Materials:

1. Xxxx
2. Xxxx
3. Xxxx

Such process took place at the following location:

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

Signed by company representative

SECTION 007300.16 - SUPPLEMENTARY CONDITIONS
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SECTION 007300.16 - SUPPLEMENTARY CONDITIONS

PART 1 - AMENDMENTS TO GENERAL CONDITIONS

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

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

SC-1.01A.39.

Delete paragraph 1.01A.39. of the General Conditions in its entirety and replace with the following:

39. Specifications - Sections included under Division 01 through Division 50 of the Project Manual.

ARTICLE 2 - PRELIMINARY MATTERS

SC-2.01C.

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

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

SC-3.01G.

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

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

ARTICLE 4 - COMMENCEMENT AND PROGRESS OF THE WORK

SC-4.01A.

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

A. The Contract Time will commence to run on the Effective Date of the Agreement.

SC-4.03A.

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

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

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

SC-5.01A.

Add the following new paragraph immediately after Paragraph 5.01A. of the General Conditions which is to read as follows:

1. If all lands and rights-of-way are not obtained as herein contemplated before construction begins, Contractor shall begin the Work upon such land and rights-of-way as Owner has previously acquired.

SC-5.03

Delete Paragraph 5.03 A.1 of the General Conditions in its entirety and replace it with the following:

1. Those reports of explorations and tests of subsurface conditions at or contiguous to the Site that Engineer has used in preparing the Contract Documents. Engineer has relied upon the data obtained from subsurface investigations made at the site in the form of a test boring. Such data is in the form of boring logs which are included in the Appendix to the Project Manual. Such logs and samples are not part of the Contract Documents. In the preparation of Drawings and Specifications, the Engineer has relied upon the following reports and tests of subsurface physical conditions at the site. Copies of these reports are included in the appendix to the Project Manual Such reports are not part of the Contract Documents.

Boring and rock core information - Subsurface Exploration Data Report by CME Associates, Inc. dated July 21, 2023

SC-5.06

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

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

ARTICLE 6 - BONDS AND INSURANCE

SC-6.02D

Add the following paragraphs immediately after Paragraph 6.02D of the General Conditions which are to read as follows:

1. Contractor shall provide evidence of its insurance coverage on the ACORD certificate of insurance form and shall include the following statement in its entirety in the section of the form entitled "Description of Operations/Locations/Vehicles/Special Items."

2. The City of Rome and CDM Smith NY Inc., and their subsidiaries, officers, directors, partners, employees and other consultants and subcontractors are named as additional insureds with respect to the insured's Commercial General Liability, Automobile Liability and Pollution Liability Insurance Policies. All insurers waive all rights of subrogation against the City of Rome and CDM Smith NY Inc., their subsidiaries, officers, directors, partners, employees and other consultants and subcontractors. All insurance is primary for all claims covered thereby. Commercial General Liability Insurance includes contractual liability coverage.

SC-6.02.G.

Replace the existing Paragraph 6.02.G with the following:

G. Contractor shall purchase and maintain a separate Owner's Protective Liability policy, issued to Owner at the expense of Contractor, including Owner and Engineer as named insured. This insurance shall provide coverage for not less than the following amounts:

Each Occurrence	$1,000,000
Aggregate	$2,000,000

SC-6.03

Add new Subparagraph 6.03.A.1 as follows:

1. Contractor's Insurance
    a. Workers' Compensation: Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:
        1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.
        2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).
        3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).
        4. Foreign voluntary worker compensation (if applicable)

5. Stop Gap Employer Liability for work in ND, OH, WA, WY & Puerto Rico
6. The limits of liability for the workers compensation insurance required by Paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by law.

(1) Worker's Compensation — Statutory

General Aggregate	$2,000,000
Products Completed Operations Aggregate	$2,000,000
Personal and Advertising Injury	$1,000,000
Each Occurrence	$2,000,000
Fire Damage	$50,000
Medical Expense	$5,000

(2) U.S. Longshoremen's and Harbor Workers' Compensation Act — $1,000,000

(3) Admiralty Jurisdiction, Coverage/Program II — $1,000,000

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

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

    1) Such insurance shall be maintained for three years after final payment.
    2) Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.

6. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to tort liability and coverage of Contractor’s contractual indemnity obligations in Paragraph 7.18.
7. Severability of interest.
8. Underground, explosion, and collapse coverage.
9. Personal injury coverage.

10. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.
11. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.
12. There shall be no specific exclusions associated with scope or work or any cross-suit exclusions for Additional Insureds.
13. Commercial General Liability Insurance shall not be less than the following amounts.

General Aggregate	$2,000,000
Products Completed Operations Aggregate	$2,000,000
Personal and Advertising Injury	$1,000,000
Each Occurrence	$2,000,000
Fire Damage	$50,000
Medical Expense	$5,000

General Aggregate: $2,000,000

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

Combined Single Limit of Liability	$1,000,000

Business Automobile Liability (AL) with limits of insurance of not less than $1,000,000, Combined Single Limit. AL coverage must include coverage for liability arising out of all owned, leased, hired and non-owned automobiles.

OWNER and ENGINEER shall be included as additional insureds on the CONTRACTOR's AL policy. The AL coverage for the additional insured shall apply as primary and non-contributing insurance before any insurance maintained by the additional insureds.

d. Umbrella or Excess Liability:

Each Occurrence Limit	$5,000,000
Aggregate	$5,000,000

e. Contractor's Pollution Liability:

Bodily Injury	$1,000,000
Property Damage	$500,000
	OR
Combined Single Limit	$1,000,000

f. Contractor's Professional Liability:

Each Claim	$1,000,000
Annual Aggregate	$2,000,000

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

SC 6.03 B

Add a new subparagraph 6.03 B .6 as follows

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

SC 6.03 C.1 Additional Insureds

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

The City of Rome and CDM Smith NY Inc., and their subsidiaries officers, directors, partners, employees and other consultants and subcontractors are named as additional insureds. All insurers waive all rights of subrogation against the City of Rome and CDM Smith NY Inc., their subsidiaries, officers, directors, partners, employees and other consultants and subcontractors.

ARTICLE 7 - CONTRACTOR'S RESPONSIBILITIES

SC-7.03

Add the following 2 new paragraphs immediately after Paragraph 7.03C. of the General Conditions which are to read as follows:

D. Regular working hours are defined as 8 hours per day, Monday through Friday, excluding holidays, between the hours of 7:00 AM and 7:00 PM. Requests to work other than regular working hours shall be submitted to Engineer not less than 48 hours prior to any proposed weekend work or scheduled extended

work weeks. Occasional unscheduled overtime on weekdays may be permitted provided two hours' notice is given to Engineer.

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

SC-7.02E.

Add the following new paragraphs immediately after what will be Paragraph 7.03E. (or 7.03D. if D and E are not used) of the General Conditions, which are to read as follows:

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

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

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

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

J. Except as may be otherwise required by law, all claims and disputes pertaining to the classification of labor employed on the project under this Contract shall be decided by the governing body having jurisdiction.

K. Contractor and all Subcontractors shall comply with the Regulations of the Secretary of Labor made pursuant to the Anti-Kickback Act of June 30, 1940 (40 U.S.C. 276c) and all amendments or modifications thereto. Contractor and all Subcontractors shall furnish Owner with weekly Statements of Compliance. In case of Subcontracts, Contractor shall cause appropriate provision to be inserted in all subcontracts for the Work which Contractor may let to ensure compliance with said Anti-Kickback Act

by all Subcontractors subject thereto, and Contractor shall be responsible for the submission of all Statements of Compliance required of Subcontractors by said Anti-Kickback Act except as the Secretary of Labor may specifically provide for reasonable limitations, variations, and exemptions from the requirements thereof. These Regulations are part of this Contract and are included in PART II of these Supplementary Conditions.

SC-7.10A

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

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

SC-7.15A.

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

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

SC-7.17A.

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

1. The Contractor guarantees that the Work and Services to be performed under the Contract, and all workmanship, materials and equipment performed, furnished, used or installed in the construction of the same shall be free from defects and flaws, and shall be performed and furnished in strict accordance with the Drawings, Specifications, and other Contract Documents, that the strength of all parts of all manufactured equipment shall be adequate and as specified and that the performance test requirements of the Contract shall be fulfilled. This guarantee shall be for a period of one year from and after the date of substantial completion. If part of the Work is accepted in accordance with Paragraph 15.04 of the General Conditions, the guarantee for that part of the Work shall be for a period of one year from the date fixed for such acceptance.

2. If at any time within the said period of guarantee any part of the Work requires repairing, correction or replacement, the Owner may notify the Contractor in writing to make the required repairs, correction or replacements. If the Contractor neglects to commence making such repairs, corrections or replacements to the satisfaction of the Owner within seven (7) days from the date of receipt of such notice, or having commenced fails to prosecute such Work with diligence, the Owner may employ other persons to make said repairs, correction or replacements, and charge the costs, including compensation for additional professional services, to the Contractor.

3. The Contractor’s guarantee under Paragraph 7.17A, is in addition to the Contractor’s express or implied warranties under this Contract and State law and in no way diminish any other rights that the Owner may have against the Contractor.

SC-7.17E.

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

F. Manufacturer's Guaranty/Warranty

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

2. The manufacturer warrants and guarantees for a period of one year from the date of Substantial Completion, or such longer period that may be specified in the Contract Documents, that all materials and equipment furnished and installed shall be free from flaws, defects in material and workmanship and shall be in conformance with the Contract Documents.

SC-7.18A.

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

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall defend, indemnify and hold harmless Owner, 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 reasonable fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost or loss or damage:

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

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

ARTICLE 8. OTHER WORK AT THE SITE

SC-8.03 A

Delete paragraph 8.03 A of the General Conditions in its entirety and replace with the following.

A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner for whom the Owner is responsible 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 not institute any action, legal or equitable, against Owner, Engineer, Engineer's Consultants or the Construction Coordinator or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any arbiter which seeks to impose liability on or to recover damages from Owner, Engineer, Engineer's Consultants or the Construction Coordinator on account of any such damage or claim. If Contractor is delayed at any time in performing or furnishing Work by any act or neglect of a separate contractor and Owner and Contractor are unable to agree as to the extent of any adjustment in Contract Times attributable thereto, Contractor may make a claim for an extension of times in accordance with Article 12. An extension of the Contract Times shall be Contractor's exclusive remedy with respect to Owner, Engineer, Engineer's Consultants and Construction Coordinator for any delay, disruption, interference or hindrance caused by any separate contractor. This paragraph does not prevent recovery from Owner, Engineer, Engineer's Consultant or Construction Coordinator for activities that are their respective responsibilities.

SC-8.03C.

Delete Paragraph 8.03C of the General Conditions in its entirety and replace with the following.

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, Engineer's Consultants, the Construction Coordinator or any person 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, Contractor shall, to the fullest extent permitted by Laws and Regulations defend, indemnify and hold Owner, Engineer, Engineer's Consultants and the Construction Coordinator harmless from and against all claims, damages, losses and expenses (including, but not limited to, fees of engineers, architects, attorneys and other professionals, and court and arbitration or mediation costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any separate contractor against Owner, Engineer, Engineer's Consultants or the Construction Coordinator to the extent based on a claim arising out of Contractor's performance of the Work.

ARTICLE 9 – OWNER'S RESPONSIBILITIES

ARTICLE 10 - ENGINEER'S STATUS DURING CONSTRUCTION

SC-10.03 Resident Project Representative

SC-10.03C.

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

C. The Resident Project Representative (RPR) will be Engineer's representative at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions.

1. 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.

2. Schedules: Review the progress schedule, schedule of Shop Drawing and Sample submittals, and Schedule of Values prepared by Contractor and consult with Engineer concerning acceptability.

3. 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.

4. 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.

5. Interpretation of Contract Documents: Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.

6. Shop Drawings and Samples:

   a. 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.

7. 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.

8. Review of Work and Rejection of Defective Work:

a. Conduct on-Site observations of Contractor's work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.

b. Report to Engineer whenever RPR believes that any part of Contractor's work in progress is defective, will not produce a completed Project that conforms generally to the Contract Documents, or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.

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

a. Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate Owner's personnel, 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.

10. Records:

a. Prepare a daily report or keep a diary or log book, recording Contractor's hours on the Site, Subcontractors present at the Site, weather conditions, data relative to questions of Change Orders, Field Orders, Work Change Directives, or changed conditions, Site visitors, deliveries of equipment or materials, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to Engineer.

b. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.

c. Maintain records for use in preparing Project documentation.

11. Reports:

a. Furnish to Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the Progress Schedule and schedule of Shop Drawing and Sample submittals.

b. 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.

12. 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.

13. 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.

14. 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.

D. The RPR shall not:

1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).

2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.

3. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.

4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor's work.

5. Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.

6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.

7. Accept Shop Drawing or Sample submittals from anyone other than Contractor.

8. Authorize Owner to occupy the Project in whole or in part.

ARTICLE 11 - CHANGES TO THE CONTRACT

ARTICLE 12 - CLAIMS

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

SC-13.01B.1.

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

Such employees shall include foremen at the site.

SC-13.01B.1.

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

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

SC-13.02.

Delete Paragraph 13.02 of the General Conditions in its entirety.

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

SC-14.06A.

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

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

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

SC-15.01B.4.

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

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

SC-15.01D.1.

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

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

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

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

SC-15.02

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

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

C. Contractor shall defend, indemnify and save Owner and Engineer harmless from all claims growing out of the lawful demands of Subcontractors, laborers, workmen, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this Contract. Contractor shall at Owner's request, furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged,

or waived. If Contractor fails to do so, then Owner may, after having served written notice on the said Contractor either pay unpaid bills, of which Owner has written notice, direct, or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to Contractor shall be resumed, in accordance with the terms of this Contract, but in no event shall the provisions of this sentence be construed to impose any obligations upon Owner to either Contractor or Contractor's Surety. In paying any unpaid bills of the Contractor, Owner shall be deemed the agent of Contractor and any payment so made by Owner shall be considered as payment made under the Contract by Owner to Contractor and Owner shall not be liable to Contractor for any such payment made in good faith.

SC-15.06B.

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

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

SC-15.06E.

ARTICLE 16 - SUSPENSION OF WORK AND TERMINATION

SC-16.02A.4.

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

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

ARTICLE 17 - FINAL RESOLUTION OF DISPUTES

SC-17.01A

Insert new paragraph 17.01A.3 of the General Conditions as follows:

3. Either Owner or Contractor may request mediation of any Claim. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of this Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract.

SC-17.01B.

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

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

ARTICLE 18 - MISCELLANEOUS

SC-18.10

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

18.11 Addresses

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

18.12 Wage Rates

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

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

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

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

PART 2 - FEDERAL, STATE AND LOCAL GOVERNMENT PROVISIONS

Federal, State and Local Government Provisions included herein, have been selected from those to which specific references have been made elsewhere in the Contract Documents. Each and every other provision of law or clause required by law to be inserted in this Contract shall be deemed to be also inserted herein in accordance with Paragraph 3.01H of the Supplementary Conditions.

1.0. FEDERAL GOVERNMENT PROVISIONS

1.1. Davis Bacon Act Requirements

1.2. Federal Wage Rates

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

1.4. This Contract is Federally assisted. The Contractor must comply with the the Contract Work Hours and Safety Standards Act, Title VI of the Civil Rights Act of 1964 and Executive Orders 11246 and 11375.

1.5. Build America, Buy America Act Requirements

This project is subject to American Iron and Steel and the Build America, Buy America Act (BABA).

1.6 Prohibition of Certain Telecommunications and Video Surveillance Services or Equipment

Requirements of 2 CFR 200.216 apply as detailed in Section 007344.

1.7. Project Signage

Project signs or other means of publicizing the project to comply with the “Guidelines for Enhanced Public Awareness of SRF Assistance Agreements” issued by the United States Environmental Protection Agency on June 3, 2015, or the “Guidelines for Implementing the Bipartisan Infrastructure Law Signage Term and Condition for the State Revolving Fund Programs” issued by the United States Environmental Protection Agency on December 8, 2022, as applicable, regarding the use of signs or other methods of enhancing awareness of SRF project.

2022 BIL guidance: https://www.whitehouse.gov/wp-content/uploads/2022/08/Building-A-Better-America-Brand-Guide.pdf

2015 guidance: https://www.epa.gov/sites/default/files/2016-07/documents/guidelines_for_enhancing_public_awareness_srf.pdf

1.8 Federal Disadvantaged Business Enterprises and Equal Employment Opportunities

The Equal Employment Opportunities requirements and DBE requirements described in Section 007344 apply.

2.0. STATE GOVERNMENT PROVISIONS

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

Refer to Articles in Section 007300.21

3.0 CITY OF ROME, NEW YORK PROVISIONS

Refer to Articles in Section 007300.21

END OF SECTION 007300.16

"General Decision Number: NY20250001 01/03/2025

Superseded General Decision Number: NY20240001

State: New York

Construction Type: Heavy Dredging

Counties: New York Statewide.
STATEWIDE

New York

All dredging, except self-propelled hopper dredges, on the Atlantic Coast and tributary waters emptying into the Atlantic Ocean.

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 $17.75 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025.
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 $13.30 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 2025.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

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

Modification Number | Publication Date
0 | 01/03/2025

ENGI0025-001 10/01/2023

STATEWIDE

	Rates	Fringes
Dredging:		
CLASS A1	$ 45.26	15.17+a+b
CLASS A2	$ 40.33	14.82+a+b
CLASS B1	$ 39.14	14.74+a+b
CLASS B2	$ 36.84	14.58+a+b
CLASS C1	$ 35.83	14.26+a+b
CLASS C2	$ 34.68	14.18+a+b
CLASS D	$ 28.81	13.77+a+b

CLASSIFICATIONS:
CLASS A1: Deck Captain; Mechanical Dredge Operator, Leverman, Licensed Tug Operator over 1000 HP.
CLASS A2: Crane Operator (360 swing).
CLASS B1: Derrick Operator (180 swing), Spider/Spill Barge Operator, Engineer, Electrician, Chief Welder, Chief Mate, Fill Placer, Operator II, Maintenance Engineer, Licensed Boat Operator, Licensed Crew Boat Operator.
CLASS B2: Certified Welder.
CLASS C1: Mate, Drag Barge Operator, Assistant Fill Placer, Welder, Steward.
CLASS C2: Boat Operator.
CLASS D: Oiler, Deckhand, Shoreman, Rodman, Scowman, Cook, Messman, Porter/Janitor.

INCENTIVE PAY: (Add to Hourly Rate)
Operator (NCCCO License/Certification) $1.80 Licensed Tug Operator over 1000 HP (Assigned as Master) (USCG licensed Master of Towing Vessels (MOTV) $1.80; Licensed Boat Operator (Assigned as lead boat captain) USCG licensed boat operator $1.30; Engineer (QMED and Tankerman endorsement or licensed engineer (USCG) $1.80
Oiler (QMED and Tankerman endorsement (USCG) $1.80; All classifications (Tankerman endorsement only) USCG $1.55; Deckhand or Mate (AB with Lifeboatman endorsement (USCG) $1.80; All classifications (lifeboatman endorsement only (USCG) $1.55; Welder (ABS certification) $1.55

FOOTNOTES APPLICABLE TO ABOVE CRAFTS:
a. PAID HOLIDAYS: New Year's Day, Martin Luther King, Jr.'s Birthday, Memorial Day, Good Friday, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day and Christmas Day
b. VACATION: Eight percent (8%) of the straight time rate, multiplied by the total hours worked.

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

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this

contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at https://www.dol.gov/agencies/whd/government-contracts.

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

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

Union Rate Identifiers

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

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

Union Average Rate Identifiers

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

A UAVG rate will be updated once a year, usually in January, to

reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

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

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

State Adopted Rate Identifiers

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

WAGE DETERMINATION APPEALS PROCESS

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

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

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

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

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

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

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

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

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

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

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

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END OF GENERAL DECISION"

"General Decision Number: NY20250014 01/03/2025

Superseded General Decision Number: NY20240014

State: New York

Construction Types: Heavy and Highway
HEAVY & HIGHWAY CONSTRUCTION

County: Oneida County in New York.

HEAVY AND HIGHWAY CONSTRUCTION PROJECTS

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(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 $17.75 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025.
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 $13.30 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 2025.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

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

Modification Number	Publication Date
0	01/03/2025

BRNY0002-009 06/01/2018

UTICA CHAPTER

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 37.23	19.51+a

FOOTNOTE:
a. Paid Holidays: Memorial Day, July the 4th, Labor Day, and Thanksgiving Day (provided the employee is employed one (1) day before and one (1) day after the holiday).

CARP0277-001 07/01/2024

HEAVY & HIGHWAY CONSTRUCTION

	Rates	Fringes
Carpenters:		
Carpenters, Millwrights, Piledrivers	$ 42.28	26.26

ELEC0043-001 06/01/2024

	Rates	Fringes
CABLE SPLICER	$ 51.70	33.47
ELECTRICIAN	$ 47.00	33.33

ELEC1249-003 05/01/2023

	Rates	Fringes
ELECTRICIAN (LINE CONSTRUCTION: LIGHTING AND TRAFFIC SIGNAL Including any and all Fiber Optic Cable necessary for Traffic Signal Systems, Traffic Monitoring systems and Road Weather information systems)		
Flagman	$ 29.59	7%+35.40
Groundman (Truck Driver)	$ 39.46	7%+35.40
Groundman Truck Driver (tractor trailer unit)	$ 41.92	7%+35.40
Lineman & Technician	$ 49.32	7%+35.40
Mechanic	$ 39.46	7%+35.40

FOOTNOTE:

a. New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day, plus President's Day, Good Friday, Decoration Day, Election Day for the President of the United States and Election Day for the Governor of the State of New York, provided the employee works the day before or the day after the holiday.

ELEC1249-004 05/01/2023

	Rates	Fringes
ELECTRICIAN (Line		

Construction)

Overhead and underground distribution and maintenance work and all overhead and underground transmission line work including any and all fiber optic ground wire, fiber optic shield wire or any other like product by any other name manufactured for the dual purpose of ground fault protection and fiber optic capabilities :		
Flagman	$ 34.44	7%+35.40
Groundman digging machine operator	$ 51.66	7%+35.40
Groundman truck driver (tractor trailer unit)	$ 48.79	7%+35.40
Groundman Truck driver	$ 45.92	7%+35.40
Lineman and Technician	$ 57.40	7%+38.40
Mechanic	$ 45.92	7%+35.40
Substation:		
Cable Splicer	$ 63.14	7%+38.40
Flagman	$ 34.44	7%+35.40
Ground man truck driver	$ 45.92	7%+35.40
Groundman digging machine operator	$ 51.66	7%+35.40
Groundman truck driver (tractor trailer unit)	$ 48.79	7%+35.40
Lineman & Technician	$ 57.40	7%+38.40
Mechanic	$ 45.92	7%+35.40
Switching structures; railroad catenary installation and maintenance, third rail type underground fluid or gas filled transmission conduit and cable installations (including any and all fiber optic ground product by any other name manufactured for the dual purpose of ground fault protection and fiber optic capabilities), pipetype cable installation and maintenance jobs or projects, and maintenance bonding of rails; Pipetype cable installation		
Cable Splicer	$ 64.59	7%+38.40
Flagman	$ 35.23	7%+35.40
Groundman Digging Machine Operator	$ 52.85	7%+35.40
Groundman Truck Driver (tractor-trailer unit)	$ 49.91	7%+35.40
Groundman Truck Driver	$ 46.98	7%+35.40
Lineman & Technician	$ 58.72	7%+38.40
Mechanic	$ 46.98	7%+35.40

FOOTNOTE:

a. PAID HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, Good Friday, Independence Day, Labor Day, Thanksgiving Day, Christmas Day, and Election Day for the President of the United States and Election Day for the Governor of New York State, provided the employee works two days before or two days after the holiday.

ELEC1249-008 01/01/2024

	Rates	Fringes
ELECTRICIAN (Line Construction)		
TELEPHONE, CATV FIBEROPTICS CABLE AND EQUIPMENT		
Cable splicer	$ 39.24	3%+5.70
Groundman	$ 19.74	3%+5.70
Installer Repairman-Teledata		
Lineman/Technician-Equipment Operator	$ 37.24	3%+5.70
Tree Trimmer	$ 31.45	3%+10.48

a. New Year's Day, President's Day, Good Friday, Decoration Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, Day after Thanksgiving, Christmas Day.

ENGI0158-020 07/01/2024

	Rates	Fringes
Power equipment operators:		
GROUP 1	$ 53.51	32.30
GROUP 2	$ 52.63	32.30
GROUP 3	$ 49.35	32.30
GROUP 4	$ 59.51	32.30
GROUP 5	$ 58.01	32.30
GROUP 6	$ 56.51	32.30
GROUP 7	$ 54.86	32.30

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Asphalt Curb Machine, Self Propelled, Slipform, Automated Concrete Spreader (CMI Type), Automatic Fine Grader, Backhoe (Except Tractor Mounted, Rubber Tired), Backhoe Excavator Full Swing (CAT 212 or similar type), Back Filling Machine, Belt Placer (CMI Type), Blacktop Plant (Automated), Boom truck , Cableway, Caisson Auger, Central Mix Concrete Plant (Automated), Concrete Curb Machine, Self Propelled, Slipform, Concrete Pump, Crane, Cherry Picker, Derricks (steel erection), Dragline, Overhead Crane (Gantry or Straddle type), Pile Driver, Truck Crane, Directional Drilling Machine, Dredge, Dual Drum Paver, Excavator (All Purpose Hydraulically Operated) (Gradall or Similar), Front End Loader (4 cu. yd. and Over), Head Tower (Sauerman or Equal), Hoist (Two or Three Drum), Holland Loader, Maintenance Engineer, Mine Hoist, Mucking Machine or Mole Pavement Breaker(SP) Wertgen; PB-4 and similar type, Power Grader, Profiler (over 105 H.P.) Quad 9, Quarry Master (or equivalent), Scraper, Fireman, Fork Lift, Form Tamper, Grout Pump, Gunite Machine, Hammers (Hydraulic self-propelled), Hydra-Spiker, ride-on,

Hydraulic Pump (jacking system), Hydro-Blaster (Water), Mulching Machine, Oiler, Parapet Concrete or Pavement, Shovel, Side Boom, Slip Form Paver, Tractor Drawn, BeltType Loader, Truck or Trailer Mounted Log , Chipper (Self Feeder), Tug Operator (Manned Rented Equipment Excluded), Tunnel Shovel

GROUP 2: Asphalt Paver, Backhoe (Tractor Mounted, Rubber Tired), Bituminous Recycler Machine, Bituminous Spreader and Mixer, Blacktop Plant (NonAutomated), Blast or Rotary Drill (Truck or Tractor Mounted), Boring Machine, Cage Hoist, Central Mix Plant (NonAutomated) and All Concrete Batching Plants, Cherry Picker (5 tons capacity and under), Concrete Paver (Over 16S), Crawler Drill, Self-contained, Crusher, Diesel Power Unit, Drill Rigs, Tractor Mounted, Front End Loader (Under 4 cu. yd.), Greaseman/Lubrication Engineer, HiPressure Boiler (15 lbs. and over), Hoist (One Drum), Hydro-Axe, Kolman Plant Loader and Similar Type Loaders, L.C.M. Work Boat Operator, Locomotive Mixer (for stabilized base selfpropelled), Monorail Machine, Plant Engineer, Profiler (105 H.P. and under), Grinder, Post Hole Digger and Post Driver, Power Broom (towed), Power Heaterman, Power Sweeper, Revinius Widener, Roller (Grade and Fill), Scarifier, ride-on, Shell Winder, Skid steer loader (Bobcat or similar), Span-Saw, ride-on, Steam Cleaner, Pug Mill, Pump Crete Ready Mix Concrete Plant Refrigeration Equipment (for soil stabilization)Road Widener, Roller (all above subgrade), Sea Mule, Self-contained Ride-on Rock Drill, Excluding Air-Track Type Drill, Skidder, Tractor with Dozer and/or Pusher, Trencher. Tugger Hoist, Vermeer saw (ride on, any size or type), Winch, Winch Cat

GROUP 3: A Frame Winch Hoist on Truck , Articulated Heavy Hauler, Aggregate Plant, Asphalt or Concrete Grooving, Machine (ride on), Ballast Regulator, Ride-on Boiler (used in conjunction with production), Bituminous Heater, self-propelled, Boat (powered), Cement and Bin Operator, Compressors, Dust Collectors, Generators, Pumps, Welding Machines, Light Plants, Heaters (hands-off equipment), Concrete Pavement Spreader and Finisher, Concrete Paver or Mixer (16S and under), Concrete Saw (self-propelled), Conveyor, Deck Hand, Directional Drill Machine Locator, Drill, (Core), Drill, (Well,) Farm Tractor with accessories, Fine Grade Machine, Tamper, ride-on, Tie Extractor, ride-on, Tie Handler, ride-on, Tie Inserter, ride-on, Tie Spacer, ride-on, Tire Repair, Track Liner, ride-on, Tractor, Tractor (with towed accessories), Vibratory Compactor, Vibro Tamp, Well Point

GROUP 4: Tower Cranes

GROUP 5: Cranes 50 tons and over

GROUP 6: Cranes 49 tons and below

GROUP 7: Master Mechanic

FOOTNOTE:

a. New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day provided the employee has worked the working day before and the working day after the holiday.

IRON0440-001 07/01/2024

REMANINDER OF COUNTY

	Rates	Fringes
IRONWORKER		
Structural, Ornamental, Rodman, Machinery Mover, Rigger, Fence Erector, Reinforcement, and Stone Derrickman	$ 33.50	32.03

LABO0035-002 07/01/2017

	Rates	Fringes
LABORER		
GROUP 1	$ 28.05	23.74+a
GROUP 2	$ 28.25	23.74+a
GROUP 3	$ 28.45	23.74+a
GROUP 4	$ 28.65	23.74
GROUP 5	$ 24.00	20.64+a

FOOTNOTE:

a. Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day and New Year's Day provided the employee must work the day before and the work the day after a holiday to receive holiday pay.

GROUP 1: Laborers, flagman, outboard and handboats

GROUP 2: Bull Float, Chain Saw, Concrete aggregate bin, Concrete Bootman, Gin Buggy, Hand or Machine Vibrator, Jackhammer, Mason Tender, Mortor Mixer, Pavement Breaker, Handlers of all steel mesh, Small generators for laborers's tools, Installation of bridge drainage; Pipelayers, Vibrator type rollers, Tamper, Drill doctor, Tail or Screw Operator on asphalt paver, Water pump operator (1 1/2"" and single diaphram), Nozzle (aphlat, gunnite, seeding and sand blasting), Laborers on chain link fence erection, Rock splitter and power unit, Pusher type concrete saw and all other gas, electric, oil, and Air tool operators, Wrecking laborers

GROUP 3: All rock or drilling machine operators (except quarry master and similar type), Acetylene torch operators, and Asphalt paver, Powerman

GROUP 4: Blasterers, form setters, stone and granite curb setters

GROUP 5: Hazardous waste removal

PAIN0004-020 05/01/2023

	Rates	Fringes
Painters:		
Bridges	$ 42.06	30.59

PAIN0677-002 05/01/2023

	Rates	Fringes
GLAZIER	$ 26.80	24.19

PLUM0112-005 05/01/2024

	Rates	Fringes
PLUMBER (Including Steamfitting)		
Northern Zone	$ 43.65	32.70

SFNY0669-001 01/01/2024

	Rates	Fringes
SPRINKLER FITTER	$ 42.73	27.05

TEAM0182-001 06/01/1996

	Rates	Fringes
Truck drivers:		
GROUP 1	$ 17.37 **	7.70+a
GROUP 2	$ 17.42 **	7.70+a
GROUP 3	$ 17.47 **	7.70+a
GROUP 4	$ 17.62 **	7.70+a
GROUP 5	$ 17.77	7.70+a

FOOTNOTES:

PAID HOLIDAYS: A-New Year's Day, B-Memorial Day, C-Independence Day, D-Labor Day, E-Thanksgiving Day, F-Christmas Day

a. Paid Holidays: Independence Day and Labor Day provided the employee works his scheduled day before and his scheduled day after the holiday and is on the payroll week in which the holiday falls.

TRUCK DRIVERS:

GROUP 1: Pickups, panel trucks, flatboy material truck (straight jobs), single axle dump trucks, dumpsters, receives, greasers, truck tiremen.

GROUP 2: Tandems, batch trucks, mechanics.

GROUP 3: Semi-trailers, low-boy trucks, asphalt distributors trucks, agitator, mixer trucks and dumpcrete type vehicles, truck mechanic, fuel truck.

GROUP 4: Specialized earth moving equipment-euclid type or similar off-highway equipment where not self-loader, and straddle (ross) carrier, self contained concrete unit

GROUP 5: Off-highway tandem back-dump, twin engine equipment and double hitched equipment where not self-loaded.

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

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** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 ($17.75) or 13658 ($13.30). Please see the Note at the top of the wage determination for more information. Please also note that the minimum wage requirements of Executive Order 14026 are not currently being enforced as to any contract or subcontract to which the states of Texas, Louisiana, or Mississippi, including their agencies, are a party.

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

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

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

Union Rate Identifiers

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

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates

in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

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

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

Survey Rate Identifiers

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

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

State Adopted Rate Identifiers

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

WAGE DETERMINATION APPEALS PROCESS

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

a) a survey underlying a wage determination
b) an existing published wage determination

c) an initial WHD letter setting forth a position on
a wage determination matter
d) an initial conformance (additional classification
and rate) determination

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

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

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

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

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

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

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

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

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

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END OF GENERAL DECISION"

SECTION 007300.21

SUPPLEMENTARY CONDITIONS
ADDITIONAL ARTICLES

These Supplementary Conditions add new topics to the Standard General Conditions of the Construction Contract (EJCDC Document C-700, 2018 Edition) and other provisions of the Contract Documents.

Articles and paragraphs herein are numbered as a continuation of the General Conditions. Some numbers in sequence may not appear because those numbered Articles and paragraphs are not applicable to this Project and have been deleted when transferring this Section from the office master document.

TABLE OF CONTENTS

SUPPLEMENTARY CONDITIONS - ADDITIONAL ARTICLES

ARTICLE 19. PROVISIONS REQUIRED BY LAW DEEMED INSERTED

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

ARTICLE 20. NEW YORK STATE NONDISCRIMINATION CLAUSES

During the performance of this contract, the Contractor agrees as follows:

20.1 The Contractor shall not discriminate against any employee or applicant for employment because of race, creed, color, or national origin, and will take affirmative action to ensure that they are afforded equal employment opportunities without discrimination because of race, creed, color or national origin. Such action shall be taken with reference but not limited to: recruitment, employment, job assignment, promotion, upgrading, demotion, transfer, layoff or termination, rates of pay other forms of compensation, and selection for training or retraining, including apprenticeship and on-the-job training.

20.2 The Contractor will send to each labor union or representative of workers with which he/she has or is bound by a collective bargaining or other agreement or understanding, a notice, to be provided by the State Commission for Human Rights, advising such labor union or representative of the Contractor's agreement under clauses (20.1) through (20.8) hereinafter called nondiscrimination clauses. If the Contractor was directed to do so by the contracting agency as part of the bid or negotiation of this contract, the Contractor shall request the labor union or representative to furnish him/her with a written statement that such labor union or representative will not discriminate because of race, creed, color or national origin and that such labor union or representative either will affirmatively cooperate within the limits of its legal and contractual authority in the implementation of the policy and provisions of these nondiscrimination clauses, or that it consents and agrees that recruitment, employment, and the terms and conditions of employment under this contract shall be in accordance with the purposes and provisions of these nondiscrimination clauses. If such labor union or representative fails or refuses to comply with such a request that it furnish such a statement, the Contractor shall promptly notify the State Commission for Human Rights of such failure or refusal.

20.3 The Contractor will post and keep posted in conspicuous places, available to employees and applicants for employment, notices to be provided by the State Commission for Human Rights setting forth the substance of the provisions of clauses (20.1) through (20.2) and such provisions of the State's Laws against discrimination as the State Commission for Human Rights shall determine.

20.4 The Contractor will state, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, that all qualified applicants will be afforded equal employment opportunities without discrimination because of race, creed, color or national origin.

20.5 The Contractor will comply with the provisions of the Executive Law, Human Rights Law, Article 15, and will furnish all information and reports deemed necessary by the State Commission for Human Rights under these nondiscrimination clauses and such sections of the Executive Law, and will permit access to his/her books, records and accounts by the State Commission for Human Rights, the Attorney

General, District Commissioner of Housing and Community Renewal and the Industrial Commission for

purposes of investigation to ascertain compliance with these nondiscrimination clauses of the Executive Law, Human Rights Law, Article 15.

20.6 This Contract may be forthwith canceled, terminated or suspended, in whole or in part by the contracting agency upon the basis of a finding made by the State Commission for Human Rights that the Contractor has not complied with these nondiscrimination clauses, and the Contractor may be declared ineligible for future contracts made by or on behalf of the Site or a public authority or agency of the State or housing authority, or an urban renewal agency, or contract requiring the approval of the Commissioner of Housing and Community Renewal, until he/she has satisfied the State Commission for Human Rights after conciliation efforts by the Commission have failed to achieve compliance with these nondiscrimination clauses and after a verified complaint has been filed with the Commission, notice thereof has been afforded him/her to be heard publicly before three members of the Commission. Such sanctions may be imposed and remedies invoked independently of or in addition to sanctions and remedies otherwise provided by law.

20.7 If this contract is canceled or terminated under clause (20.6), in addition to other rights of the contracting agency provided in this Contract upon its breach by the Contractor, the Contractor will hold the contracting agency harmless against any additional expenses or costs incurred by the contracting agency in completing the work or in purchasing the services, materials, equipment or supplies contemplated by the contract, and the contracting agency may withhold payments from the Contractor in an amount sufficient for this purpose and recourse may be had against the surety on the performance bond if necessary.

20.8 The Contractor will include the provisions of clauses (20.1) through (20.7) in every subcontract or purchase order altered only to reflect the proper identity of the parties in such manner that such provisions will be binding upon each subcontractor or vendor as to operations to be performed within the State of New York. The Contractor will take such actions in enforcing such provisions of such subcontract or purchase order as the contracting agency may direct, including sanctions or remedies for non-compliance. If the Contractor becomes involved in or is threatened with litigation with a subcontractor or vendor as a result of such direction by the contracting agency the Contractor shall promptly so notify the Attorney General, requesting him/her to intervene and to protect the interests of the State of New York.

ARTICLE 21. NEW YORK STATE NON-COLLUSIVE BIDDING CERTIFICATION

In addition to the other provisions herein contained to be done or performed by the Contractor as part of this Contract, the said Contractor certifies, pursuant to the provisions of Section 103-d of the New York State General Municipal Law that:

21.1 By submission of this bid, each bidder and such person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of his/her knowledge and belief:

A. The prices in this bid have been arrived at independently without collusion, consultation, communication or agreement, for the purpose of restricting competition, as to any competitor; and

B. Unless otherwise required by law, the prices which have been quoted in this bid have not knowingly been disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor; and

C. No attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

21.2 A bid shall not be considered for award nor shall any award be made where A, B, and C above have not been complied with; provided however, that if in any case the bidder cannot make the foregoing certification, the bidder shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefore. Where A and C above have not been complied with, the bid shall not be considered for award nor shall any award be made unless the head of the purchasing unit of the political subdivision, public department, agency or official thereof to which the bid is made, or his designee, has determined that such disclosure was not made for the purpose of restricting competition.

The fact that a bidder (1) has published price lists, rates, or tariffs covering items being procured, (2) has informed prospective customers of proposed or pending publication of new or revised price lists for such items, or (3) has sold the same items to other customers at the same prices being bid, does not constitute, without more, a disclosure within the meaning of subparagraph (A).

Any bid hereafter made to any political subdivision of state or any public department, agency or official thereof by a corporate bidder for work or services performed or to be performed or goods sold or to be sold, where competitive bidding is required by statute, rule, regulation, or local law, and where such bid contains the certification referred to in subdivision (A) of this section, shall be deemed to have been authorized by the board of directors of the bidder, and such authorization shall be deemed to include the signing and submission of the bid and the inclusion therein of the certificate as to non-collusion as the act and deed of the corporation.

ARTICLE 22. NY STATE REVOLVING FUND PROGRAM REQUIREMENTS

22.1 The project is being funded by the Drinking Water State Revolving Fund (DWSRF). As such, the Contractor must comply with the terms and conditions required by the NY State Revolving Fund Program Requirements Bid Packet – Construction Contracts, included as Section 007344 of these Contract Documents.

22.2 Both the Federal Davis-Bacon Act Prevailing Wage Requirements and New York State Prevailing Wage Requirements apply. If the two wage schedules are different for a specific trade or occupation, the Contractor shall pay the higher of the two rates including fringes.

A. Davis-Bacon minimum wage requirements and rate schedules are included as Section 007300.27 of these Contract Documents.

B. New York State minimum wage rate schedules are included as Section 007345 of these Contract Documents.

C. The labor on this contract shall be performed in all respects in full accordance with the Labor Law of the State of New York. In accordance with Section 220, Subdivision 3, and Section 220-D, of the Labor Law, the Industrial Commissioner has designated as the minimum hourly rates to be paid to employees on this work the rates shown on the attached schedules which shall be posted in a prominent and convenient place for the inspection of the Contractor's employees. Article 8, Section 220 of the Labor Law, as amended by Chapter 750 of the Laws of 1956, provides, among other things, that it shall be the duty of the fiscal officer to make a determination of the schedule of wages and supplements to be paid to all laborers, workmen and mechanics employed on public work projects.
   The amount of supplements listed on the enclosed schedule does not necessarily include all types of

prevailing supplements.

D. The Contractor shall make provision for disability benefits, workmen's compensation, unemployment insurance and social security, as required by law.

ARTICLE 23. PROTECTION OF EXISTING FACILITIES

23.1 The Contractor shall conduct his/her operations and take all special temporary and permanent precautions necessary to insure a stable and secure job, and as may be required by the contract documents, the Engineer, the Owner, and the public utilities, to protect and sustain in normal service all existing structures, equipment, utility lines, roadways, and subsurface, submerged and overhead facilities which are to remain in place and undisturbed by his/her operations under this contract completely at his/her own expense, unless otherwise provided for in the contract documents. The Contractor shall be held accountable for damage resulting from failure to exercise proper judgment in the progress of the work.

23.2 When power poles, light poles, pipes, or portions of any other existing structures, or utilities, either visible or underground, constitute an unavoidable interference to his/her operations, the Contractor shall consult with the owner of such facility prior to performing any work at or near the same. If permitted by the owner of the facility, the Contractor shall relocate or temporarily remove, and later restore, the interfering portion of the facility, as directed by said owner and the project Owner, through the Engineer. If the owner of the facility so elects, he will perform such work with his own forces. Under either arrangement, the work shall be done at the Contractor's expense unless stated otherwise in the contract documents.

23.3 The Contractor shall immediately notify the Engineer and the owner of any facilities which are disturbed, damaged or injured as a result of the Contractor's operations. The Contractor shall consult with the owner of such facility as to the proper method of replacing, repairing, or restoring the affected facilities to the conditions which existed prior to the Contractor's operations. If permitted by the owner of the facility, the Contractor shall, at his/her own expense, replace, repair, or restore the affected facilities to their original condition, to the satisfaction of said owner.

23.4 In the event that the owner of the facility desires to use his/her own forces to perform the replacement, repairing or restoring of affected facilities, the Contractor shall reimburse the owner of said facilities for such expenses as said owner may accrue in performing such work. The Contractor shall not be entitled to receive additional compensation under this contract for such work.

23.5 Upon learning of the existence and location of any utility omitted from or shown incorrectly on the contract drawings the Contractor shall notify the utility owner and the Engineer and assumes full responsibility for that utility's protection or relocation as described above.

ARTICLE 24. MATERIALS FOUND AT THE SITE

24.1 All timbers, fences, buildings, stone, sand, utility lines, pipes, and any other appurtenances, materials, or articles of value found on lands or in excavations within the contract limits shall be brought to the attention of the Engineer.

24.2 If such items are found in or upon lands of the Owner, they shall remain the property of the Owner.

Such materials may, therefore be used by the Contractor in the work at the discretion of the Engineer or the Owner, for purposes for which they are acceptable. If not otherwise claimed by the Owner of his/her

representatives, such items shall be considered waste and shall be disposed of by the Contractor as stipulated hereafter.

24.3 If such items are found in or upon lands or easements being used in the project but being owned by parties other than the Owner, they shall remain the property of such other owners. If claimed by these owners, the items shall be turned over to these owners at the site of the work as the Engineer directs. If such items are not claimed by these owners, they may similarly be used in the work as stipulated in the preceding paragraph or be considered waste and be disposed of by the Contractor as stipulated hereafter.

24.4 Disposal of waste materials shall be the Contractor's responsibility as an integral part of the contract and shall be done without special payment from the Owner. The decision as to whether disposal takes place inside or outside of the project limits shall be subject to control by the Engineer. If disposal takes place within the project limits, it shall be done by the Contractor subject to the direction and satisfaction of the Engineer. Waste material shall not be sold to parties within the project limits. If disposal takes place outside the project limits, it shall be done by the Contractor exclusively at his/her discretion and be solely his/her responsibility. The Contractor will be required to show the Engineer how he/she plans to dispose of the waste (i.e., unsuitable backfill, rock, etc.) in an environmentally acceptable manner. The Engineer will require copies of release forms from property owners who have agreed with Contractor to accept spoil materials.

ARTICLE 25. OPERATION OF VALVES AND HYDRANTS

25.1 Operation of all valves and hydrants under pressure shall be done by representatives of the Owner or owner of the utility of the locality where the work is performed, or under their direct supervision and with their approval.

25.2 The Contractor shall give sufficient notice to the Engineer when and where he/she desires operation of valves and hydrants so that the Owner can be contacted and be present.

ARTICLE 26. USE AND PROTECTION OF WATERS IN NEW YORK STATE

The Contractor is advised that any work or operations which in any way disturb or affect the streambed or banks of any stream which is classified by the New York State Department of Environmental Conservation falls under the control and supervision of the Department of Environmental Conservation. In compliance with the law, the Contractor will be required to contact the Local Permit Agent of NYSDEC and advise him/her of his/her intent to impact said stream. They will then advise the Contractor of the procedures and conditions to be followed.

END OF SECTION 007300.21

NEW YORK STATE | Environmental Facilities Corporation

KATHY HOCHUL
Governor

MAUREEN A. COLEMAN
President and CEO

Mandatory State Revolving Fund Equivalency Project Terms and Conditions

For Equivalency Projects Funded with NYS Clean Water State Revolving Fund or Drinking Water State Revolving Fund

Identify Contract Type prior to Advertisement for Bid:

- ☒ **Construction**
  - ☒ **Treatment Works and Drinking Water Projects**
  - ☐ **Non-Treatment Works**
- ☐ **Non-Construction**

Effective October 1, 2023

New York State Environmental Facilities Corporation
625 Broadway, Albany, NY 12207-2997
P: (518) 402-6924
www.efc.ny.gov

Contents

INTRODUCTION

The terms and conditions below must be incorporated verbatim into contracts receiving SRF financial assistance. Additional information relating to each of the requirements is included in the companion guidance document.

REQUIRED CONTRACT LANGUAGE

COMMONLY USED TERMS

The following commonly used terms are defined herein as follows:

Broker means a firm that does not itself perform, manage or supervise the work of its contract or subcontract in a manner consistent with the normal business practices for contractors or subcontractors in its line of business.

Construction means the process by which a contractor or subcontractor builds, alters, repairs, remodels, improves or demolishes infrastructure.

Contract means an agreement between a Recipient and a Contractor.

Contractor means all bidders, prime contractors, non-construction service providers, and consultants as hereinafter defined, unless specifically referred to otherwise.

Equivalency means projects in the amount equal to the funds "directly made available" by an Environmental Protection Agency (EPA) Capitalization Grant and funding for those projects is considered federal funds, or federal financial assistance. The Equivalency designation is indicated in the Intended Use Plan.

Manufactured products means articles, materials, or supplies that have been processed into a specific form and shape or combined with other articles, materials, or supplies to create a product with different properties than the individual articles, materials, or supplies. If an item is classified under Build America, Buy America as an iron or steel product, a construction material, or a section 70917(c) material under 2 CFR § 184.4(e), then it is not a manufactured product.

Manufacturer means a firm that operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment required under the Contract and of the general character described by the specifications.

MBO is designated and employed by the Recipient as a Minority Business or Compliance Officer responsible for MWBE/DBE/SDVOB/EEO reporting and compliance.

Non-Construction Provider means any individual or business enterprise that provides one or more of the following: legal, engineering, financial advisory, technical, or other professional services, supplies, commodities, equipment, materials, or travel.

Recipient means the party, other than EFC, to a grant agreement or a project finance agreement with EFC through which funds for the payment of amounts due thereunder are being paid in whole or in part. Responsible through Project Finance Agreement (PFA) to comply with EFC requirements.

State means the State of New York.

Subcontract means an agreement between a Contractor and a Subcontractor.

Subcontractor means any individual or business enterprise that has an agreement, purchase order, or any other contractual arrangement with a Contractor.

Supplier means a firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles or equipment of the general character described by the specifications and required under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business.

Treatment Works is defined in Clean Water Act (CWA) Section 212, this does not include nonpoint source projects as defined in CWA Section 319 and estuary management program projects as defined in CWA Section 320.

SECTION 1 FEDERAL ARCHITECTURAL AND ENGINEERING PROCUREMENT REQUIREMENTS

Any Architectural and Engineering (A/E) services for all Clean Water State Revolving Fund (CWSRF) projects and for Drinking Water State Revolving Fund (DWSRF) projects receiving federal grant are required to be procured in compliance with 40 USC 1101 et. seq., and 48 CFR Part 36 Subpart 36.6. The Recipient must certify compliance to receive financing. Disregard this section if it does not apply to this Contract.

SECTION 2 REQUIREMENTS AND PROCEDURES FOR BUSINESS PARTICIPATION OPPORTUNITIES FOR FEDERAL DISADVANTAGED BUSINESS ENTERPRISES AND EQUAL EMPLOYMENT OPPORTUNITIES FOR WOMEN AND MINORITY GROUP MEMBERS

The Equal Employment Opportunities requirements of this section apply to all Contracts and Subcontracts, with the exception of: (1) the requirements under Title VII of the Civil Rights Act of 1964 and 41 CFR Part 60-1 Subpart A which apply only to construction Contracts and Subcontracts; and (2) the Federal Affirmative Action Regulations requirements which apply only to construction Contracts and Subcontracts greater than $10,000.

The Disadvantaged Business Enterprises ("DBE") requirements of this section apply to construction, equipment, services, and/or supplies Contracts.

I. General Provisions

A. Contractors and Subcontractors are required to comply with the following provisions:

1. 40 CFR Part 33 ("Federal DBE Regulations") for contracts under EPA financial assistance agreements, as those terms are defined therein.

2. Title VI of the Civil Rights Act of 1964 and 40 CFR Part 7 ("Title VI") for any program or activity receiving federal financial assistance, as those terms are defined therein.

3. Title VII of the Civil Rights Act of 1964 and 41 CFR Part 60-1 Subpart A ("Title VII") for construction contracts related to any government programs providing federal financial assistance, as those terms are defined therein.

4. 41 CFR Part 60-4 ("Federal Affirmative Action Regulations") for federal or federally assisted construction contracts in excess of $10,000, as those terms are defined therein.

5. Section 504 of the Rehabilitation Act of 1973 ("Section 504") for any program or activity receiving federal financial assistance, as those terms are defined therein.

6. The Age Discrimination Act of 1975 ("Age Discrimination Act") for any program or activity receiving federal financial assistance, as those terms are defined therein.

7. Section 13 of the Federal Water Pollution Control Act ("Clean Water Act") Amendments of 1972 ("Section 13") for any program or activity receiving federal financial assistance under the Clean Water Act, as those terms are defined therein.

B. Upon request from the Recipient and/or EFC, Contractor will provide complete responses to inquiries and all DBE and EEO records available within a reasonable time or as otherwise determined by EFC.

C. Failure to comply with all of the requirements herein may result in a finding by the Recipient that the Contractor is non-responsive, non-responsible, and/or has breached the Contract, leading to the withholding of funds or such other actions or enforcement proceedings as allowed by the Contract.

D. If any terms or provisions herein conflict with Federal DBE Regulations, Title VI, Title VII, or Federal Affirmative Action Regulations, such law and regulations shall supersede these requirements.

E. The Contractor and Subcontractor shall not discriminate on the basis of race, color, national origin, age, disability, or sex in the performance of this Contract. The Contractor and Subcontractor 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 and 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.

II. Equal Employment Opportunities (EEO)

A. Contractors and Subcontractors shall have instituted grievance procedures to assure the prompt and fair resolution of complaints when a violation of Title VI of the Civil Rights Act of 1964 or Title 40 CFR Part 7 is alleged.

B. For federally assisted construction Contracts, the Contractor and Subcontractor will comply with the requirements of 41 CFR § 60-1.4(b) and (c), and such provisions are hereby incorporated by reference. These provisions require, in part, that the Contractor and Subcontractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The Contractor and Subcontractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

C. The Contractor shall comply with the provisions of the Human Rights Law (Executive Law Article 15), Title VI, Title VII, the Federal Affirmative Action Regulations, Section 504, Age Discrimination Act, Section 13, and all other State and Federal statutory and constitutional non-discrimination provisions. The Contractor and Subcontractors shall not discriminate against any employee or applicant for employment because of race, creed (religion), color, sex, national origin, sexual orientation, military status, age, disability, predisposing genetic characteristic, marital status or domestic violence victim status, and shall also follow the requirements of the Human Rights Law with regard to non-discrimination on the basis of prior criminal conviction and prior arrest.

D. Pursuant to 41 CFR § 60-1.7 for federally assisted construction Contracts, Contractor and Subcontractor will annually file an EEO-1 Report with the Joint Reporting Committee for the Office of Federal Contract Compliance Programs (OFCCP) and the Equal Employment Opportunity Commission (EEOC) according to the instructions provided at

https://www.eeoc.gov/employers/eeo-1-survey/eeo-1-instruction-booklet, if Contractor or Subcontractor:

1. Is not exempt from compliance pursuant to 41 CFR § 60-1.5;
2. Has 50 or more employees;
3. Is a prime Contractor or first tier Subcontractor; or Subcontractor below the first tier which performs construction work at the site of construction; and
4. Has a Contract, Subcontract, or purchase order amounting to $50,000 or more.

E. Pursuant to 40 CFR § 7.95, the Contractor shall display a copy of the EEO notice at the project site in a visible location. The notice shall accommodate individuals with impaired vision or hearing and should be provided in languages other than English where appropriate. The notice must also identify the employee responsible for its EEO compliance. See guidance document for sample notice.

F. For federal or federally assisted construction contracts in excess of $10,000, the Contractor and Subcontractor will comply with the Affirmative Action Regulations and such provisions are hereby incorporated by reference. These provisions require, in part, that the Contractor and Subcontractor place affirmative action goals on Contracts and Subcontracts, as established by the United States Department of Labor. See guidance document for goals.

G. The Contractor will include the provisions of Subdivisions II(A) and II(B) in every Subcontract in such a manner that the requirements of these subdivisions will be binding upon each Subcontractor as to work in connection with the Contract.

III. Good Faith Efforts and Fair Share Objectives for DBEs

A. Fair Share Objectives for this Contract are 20%

B. Good Faith Efforts

Pursuant to 40 CFR § 33.301, the Contractor must demonstrate and document "good faith efforts" to provide meaningful participation by DBEs as Subcontractors or Suppliers in the performance of the Contract.

1. For purposes of demonstrating good faith efforts and achieving the fair share objectives established herein, the Contractor should seek out the participation of the following certified entities:
    a. DBEs certified by the Small Business Administration (SBA), directory available at: https://web.sba.gov/pro-net/search/dsp_dsbs.cfm
    b. DBEs certified by state DOTs on behalf of the United States Department of Transportation (USDOT), directories by state available at https://www.transportation.gov/DBE%20State%20Websites, including:
    c. DBEs certified in New York State: https://nysucp.newnycontracts.com/
        i. DBEs certified in New Jersey: https://njucp.dbesystem.com/
        ii. DBEs certified in Connecticut: https://biznet.ct.gov/DOT_DBE/dbesearch.aspx

2. Participation of Brokers and Truckers/Haulers
    a. Contractors cannot count the participation of a DBE who acts as a Broker or passive conduit of funds without performing, managing, or supervising the work of its contract or subcontract in a manner consistent with normal business practices. If 50% or more of the total dollar amount of a DBE's prime contract or subcontract is subcontracted to a non–DBE, the DBE prime contractor or subcontractor will be presumed to be a Broker.
    b. Contractors may count the participation of a DBE trucker/hauler only if the trucker/hauler is performing a "commercially useful function," according to the following factors:

i. The DBE must be responsible for the management and supervision of the entire trucking/hauling operation for which it is responsible on a particular contract, and there cannot be a contrived arrangement for the purpose of meeting DBE objectives.
ii. The DBE must itself own and operate at least one fully licensed, insured, and operational truck used on the contract.

C. DBE Utilization Plan

1. The Contractor represents and warrants that Contractor has submitted a completed copy of the EFC DBE Utilization Plan with all required bid forms to the MBO no later than the execution date of this Contract.

2. The Contractor agrees to use such DBE Utilization Plan for the performance of DBEs on the Contract.

3. The Contractor further agrees that a failure to submit and/or use such DBE Utilization Plan shall constitute a material breach of the terms of the Contract. Upon the occurrence of such a material breach, the Recipient shall be entitled to any remedy provided herein, including but not limited to, a finding that the Contractor is not responsive.

4. The Contractor must report any changes to the Utilization Plan after Contract award and during the term of the Contract to the MBO. The Contractor shall indicate the changes to the Recipient in the Quarterly Report immediately following the change. See Section III(E), *Quarterly Report*. At EFC's discretion, an updated DBE Utilization Plan form and good faith effort documentation may be required to be submitted. When a change order is executed the change order and supporting documentation should be submitted to the MBO and a revised Utilization Plan may be required at EFC's discretion.

5. The Contractor shall submit copies of all fully executed subcontracts, agreements, and purchase orders that are referred to in the DBE Utilization Plan to the MBO within 30 days of their execution.

D. Submission of Good Faith Effort Documentation

1. If the Contractor, after making good faith efforts, is unable to meet the DBE fair share objectives, the Contractor must submit documentation showing good faith efforts made by the Contractor to meet the fair share objectives. Such documentation should be submitted to the MBO in accordance with the instructions on the DBE Utilization Plan.

2. If the MBO, upon review of the DBE Utilization Plan and updated Quarterly Reports determines that the Contractor is failing or refusing to comply with the good faith effort requirements or that the good faith efforts are not in the requested format, the Recipient may issue a notice of deficiency to the Contractor. The Contractor must respond to the notice of deficiency within a reasonable time and provide documentation showing good faith efforts as requested.

E. Quarterly Report

1. The Contractor agrees to submit a Quarterly Report to the MBO by the fifteenth business day following the end of each calendar quarter over the term of this Contract documenting the payments made and the progress towards achievement of the DBE fair share objectives of the Contract. The Quarterly Report must be supplemented with proof of payment by the Contractor to its Subcontractors (e.g., copies of both sides of a cancelled check) and proof that Subcontractors have been paid within 30 days of receipt of payment from the Recipient. The final Quarterly Report must reflect all Utilization Plan revisions, final adjusted payments to subcontractors, and all change orders and be marked as "final".

2. The Contractor agrees to submit any other information as may be requested by the MBO or EFC during the term of the Contract as needed to assist EFC for completion of federal reporting to EPA.

F. Other Requirements

1. All contracts shall comply with the contract administration requirements outlined at 40 CFR 33.302.

2. Contractor and Subcontractors shall assist EFC and the Recipient as necessary with complying with the recordkeeping and reporting requirements outlined at 40 CFR Part 33 Subpart E.

SECTION 3 BUILD AMERICA, BUY AMERICA (BABA) ACT AND AMERICAN IRON AND STEEL (AIS) REQUIREMENTS

Applicable to all contracts for DWSRF or CWSRF Treatment Works projects.

I. BABA Requirements

The requirements of this subsection shall not apply to CWSRF or DWSRF Contracts or Subcontracts which have been notified by EFC they are waived pursuant to the Build America, Buy America Act, Pub .L. No. 117-58, section 70914, and 2 CFR Part 184, including, but not limited to, the Adjustment Period Waiver for CWSRF and DWSRF projects that initiated project design planning prior to May 14, 2022. Disregard this subsection if the Contract or Subcontract is eligible for such a waiver, however, note that Subsection II below on AIS Requirements still applies.

If such Contracts or Subcontracts are not eligible for such a waiver, then the DWSRF or CWSRF Contract or Subcontract shall be subject to the Build America, Buy America Act, and the regulations promulgated thereafter (Pub. L. No. 117-58, §§ 70901-70953, and 2 CFR Part 184), which requires, among other things, that no SRF funds "may be obligated for a project unless all of the iron, steel, manufactured products, and construction materials used in the project are produced in the United States."

The Contractor shall submit with their bid or proposal documents an executed BABA Contractor's Certification on the form attached hereto as Attachment 2 acknowledging to and for the benefit of the Recipient of the Clean Water State Revolving Fund ("CWSRF") or the Drinking Water State Revolving Fund ("DWSRF") financial assistance that the Contractor understands the goods and services under this Agreement are being funded with monies made available by the New York State Environmental Facilities Corporation ("EFC") through the CWSRF or the DWSRF and that such funding is subject to certain statutory restrictions requiring that certain iron, steel, manufactured products, and construction materials used in the project be produced in the United States ("BABA Requirement") including iron, steel, manufactured products, and construction materials provided by the Contractor pursuant to this Agreement.

The Contractor hereby represents and warrants that:

(a) the Contractor has reviewed and understands the BABA Requirement,
(b) all of the iron, steel, manufactured products, and construction materials covered by the BABA Requirement incorporated in the project will be and/or have been produced in the United States in a manner that complies with the BABA Requirement, unless a waiver of the requirement is approved, and
(c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the BABA Requirement, as may be requested by the Recipient.

Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by

the Contractor shall permit the Recipient to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Recipient resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the EFC or any damages owed to the EFC by the Recipient). While the Contractor has no direct contractual privity with the EFC, as a lender to the Recipient for the funding of this project, the Recipient and the Contractor agree that the EFC is a third-party beneficiary and neither this paragraph, nor any other provision of this Agreement necessary to give this paragraph force or effect, shall be amended or waived without the prior written consent of the EFC.

II. AIS Requirements

The requirements of this section apply to (1) all contracts for which Part 1 of this section does not apply, (2) all Construction Contracts and Subcontracts for DWSRF projects and CWSRF Treatment Works projects and (3) all contracts for the purchase of iron and steel products for a DWSRF project or CWSRF Treatment Works project. Disregard this section if it does not apply to this Contract or Subcontract.

The Contractor shall submit with their bid or proposal documents an executed AIS Contractors Certification on the form attached hereto as Attachment 3 acknowledging to and for the benefit of the Recipient of the Clean Water State Revolving Fund ("CWSRF") or the Drinking Water State Revolving Fund ("DWSRF") financial assistance that the Contractor understands the goods and services under this Agreement are being funded with monies made available by the New York State Environmental Facilities Corporation ("EFC") through the CWSRF or the DWSRF and that such funding is subject to certain statutory restrictions requiring that certain iron and steel products used in the project be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contractor pursuant to this Agreement.

The Contractor hereby represents and warrants that:

(a) the Contractor has reviewed and understands the American Iron and Steel Requirement,
(b) all of the iron and steel products covered by the American Iron and Steel Requirement incorporated in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and
(c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Recipient.

Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Recipient to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Recipient resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the EFC or any damages owed to the EFC by the Recipient). While the Contractor has no direct contractual privity with the EFC, as a lender to the Recipient for the funding of this project, the Recipient and the Contractor agree that the EFC is a third-party beneficiary and neither this paragraph, nor any other provision of this Agreement necessary to give this paragraph force or effect, shall be amended or waived without the prior written consent of the EFC.

SECTION 4 DAVIS-BACON (DB) PREVAILING WAGE REQUIREMENTS

The requirements of this section apply to all Construction Contracts and Subcontracts greater than $2,000 for either DWSRF projects or CWSRF Treatment Works projects. Disregard this section if it does not apply to this Contract or Subcontract.

For Contracts in Excess of $2,000:

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 (1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein provided that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (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. The Davis-Bacon poster (WH-1321) can be found at https://www.dol.gov/whd/regs/compliance/posters/davis.htm. Wage determinations may be obtained from the US Department of Labor's website, https://sam.gov/content/wage-determinations.

(ii)(A) The contracting officer 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 contracting officer shall approve a request for an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

1. The work to be performed by the classification requested is not performed by a classification in the wage determination;
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 contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification request within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30–day period that additional time is necessary.

(C) In the event the Contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the request and the local wage determination, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The request shall be sent to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of

receipt of the request and so advise the contracting officer or will notify the contracting officer within the 30–day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (1) (ii)(B) or (C) of this section, shall be paid to all workers performing work in the classification under this Contract from the first day on which work is performed in the classification.

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

(iv) If the Contractor does not make payments to a trustee or other third person, the Contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program *provided* that the Secretary of Labor has found, upon the written request of the Contractor, that the applicable standards of the Davis–Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account asset for the meeting of obligations under the plan or program.

2. Withholding. The Recipient shall upon its own action or upon written request of the EPA Award Official or an authorized representative of the Department of Labor withhold or cause to be withheld from the Contractor under this Contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis–Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the Contractor or any Subcontractor the full amount of wages required by the Contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the Contract, the 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.

(ii)(A) The Contractor shall submit weekly for each week in which any Contract work is performed a copy of all payrolls to the Recipient. Such documentation shall be available on request of EFC or EPA. As to each payroll copy received, the Recipient shall provide written confirmation in a form satisfactory to EFC indicating whether or not the project is in compliance with the requirements of 29 CFR § 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls submitted shall set out accurately and completely all of the information

required to be maintained under 29 CFR § 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division Web site at https://www.dol.gov/agencies/whd/government-contracts/construction/forms or its successor site. The prime Contractor is responsible for the submission of copies of payrolls by all Subcontractors. Contractors and Subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the Recipient, for transmission to EFC, EPA if requested by EPA, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime Contractor to require a Subcontractor to provide addresses and social security numbers to the prime Contractor for its own records, without weekly submission to the Recipient (or the applicant, sponsor, or owner).

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

1. That the payroll for the payroll period contains the information required to be provided under 29 CFR § 5.5(a)(3)(ii), the appropriate information is being maintained under 29 CFR § 5.5 (a)(3)(i), 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 (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 (3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the Recipient, EFC, EPA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the Contractor or Subcontractor fails to submit the required records or to make them available, the Recipient, EFC, or EPA may, after written notice to the Contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR § 5.12.

4. Apprentices and trainees.

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90

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

(ii) Trainees. Except as provided in 29 CFR § 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

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

5. Compliance with Copeland Act Requirements. The Contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this Contract.

6. Subcontracts. The Contractor or Subcontractor shall insert in any Subcontracts the clauses contained in 29 CFR § 5.5(a)(1) through (10) and such other clauses as the Recipient may by appropriate

instructions require, and also a clause requiring the Subcontractors to include these clauses in any lower tier subcontracts. The prime Contractor shall be responsible for the compliance by any Subcontractor or lower tier subcontractor with all the Contract clauses in 29 CFR § 5.5.

7. Contract Termination: Debarment. A breach of the contract clauses in 29 CFR § 5.5 may be grounds for termination of the Contract, and for debarment as a Contractor and a Subcontractor as provided in 29 CFR § 5.12.

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

9. Disputes Concerning Labor Standards. Disputes arising out of the labor standards provisions of this Contract shall not be subject to the general disputes clause of this Contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the Contractor (or any of its Subcontractors) and the Recipient, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

(i) By entering into this Contract, the Contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the Contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

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

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

For Contracts in Excess of $100,000:

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

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1) of this section the Contractor and any Subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such Contractor and Subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1) of this section, in the sum of $25 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1) of this section.

3. Withholding for unpaid wages and liquidated damages. The 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 any monies payable on account of work performed by the Contractor or Subcontractor under any such Contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or Subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2) of this section.

4. Subcontracts. The Contractor or Subcontractor shall insert in any Subcontracts the clauses set forth in paragraphs (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 (1) through (4) of this section.

5. In any Contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR § 5.1, the Contractor or Subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the Contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the records to be maintained under this paragraph shall be made available by the Contractor or Subcontractor for inspection, copying, or transcription by authorized representatives of the Recipient and the Department of Labor, and the Contractor or Subcontractor will permit such representatives to interview employees during working hours on the job.

SECTION 5 REQUIREMENTS REGARDING SUSPENSION AND DEBARMENT

The requirements of this section apply to all Contracts and Subcontracts.

Contractor and any Subcontractors shall comply with, Subpart C of 2 CFR Part 180 as implemented and supplemented by 2 CFR Part 1532. The Contractor is not a debarred or suspended party under 2 CFR Part 180 or 2 CFR Part 1532, or 29 CFR § 5.12. Neither the Contractor nor any of its Subcontractors have contracted with, or will contract with, any debarred or suspended party under the foregoing regulations.

In addition, the Contractor and any Subcontractors have not been debarred from or deemed ineligible for Government contracts or federally assisted Construction contracts pursuant to Executive Order 12549.

The Contractor and any Subcontractors have not been deemed ineligible to submit a bid on or be awarded a public contract or subcontract pursuant to Article 8 of the State Labor Law, specifically Labor Law § 220-b. In addition, neither the Contractor nor any Subcontractors have contracted with, or will contract with, any party that has been deemed ineligible to submit a bid on or be awarded a public contract or subcontract under Labor Law § 220-b.

In addition, the Contractor and any Subcontractors have not been deemed ineligible to submit a bid and have not contracted with and will not contract with any party that has been deemed ineligible to submit a bid under Executive Law § 316.

SECTION 6 RESTRICTIONS ON LOBBYING

The requirements of this section apply to all Contracts and Subcontracts greater than $100,000. Disregard this section if it does not apply to this Contract or Subcontract.

The Contractor and any Subcontractor bidding or proposing a Contract or Subcontract in excess of $100,000 shall submit with their bid or proposal documents an executed Certification Regarding Lobbying pursuant to 40 CFR Part 34 (“Lobbying Certification”) in the form attached hereto as Attachment 4, consistent with the prescribed form provided in Appendix A to 40 CFR Part 34.

SECTION 7 PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT

The requirements of this section apply to all Contracts and Subcontracts.

This prohibition is effective for obligations and expenditures of EPA financial assistance funding on or after 8/13/2020.

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

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

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

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

Contractors and Subcontractors shall not procure or install prohibited equipment, systems, or services, including equipment, systems, or services produced or provided by entities identified in section 889, that are recorded in the System for Award Management exclusion list located at https://sam.gov/SAM/ .

SECTION 8 CONSTRUCTION SIGNS

The requirements of this section apply to all EFC projects. Specific federal Bipartisan Infrastructure Law (BIL) signage is required for projects receiving financing from BIL.

If Contractor is expected to provide and install an EFC or BIL Construction Sign, a specification will be included in the enclosed contract documents.

ATTACHMENTS (Required Forms)

Attachment 1 – EFC DBE Utilization Plan

NYS Environmental Facilities Corporation
Disadvantaged Business Enterprise (DBE) Utilization Plan

Instructions for Contractors & Service Providers:

Contractors and Service Providers must complete Sections 2 and 3. **Submit the completed, signed (electronic signature box checked and dated) form to the Recipient's Minority Business Officer (MBO) no later than the date of contract execution.** Incomplete forms will be found deficient. If more than 10 subcontractors are used, additional pages for Section 3 can be obtained from EFC.

If the prime contract is being performed by the parties to a Joint Venture, Teaming Agreement, or Mentor-Protégé Agreement that includes a certified DBE, please contact EFC for assistance.

DBEs on this form may include disadvantaged firms certified by the New York State Unified Certification Program (NYSUCP), and disadvantaged firms certified by the Small Business Administration. In addition, the participation of DBEs will be credited according to the following requirements:

- Contractors cannot count the participation of a DBE who acts as a broker or passive conduit of funds without performing, managing, or supervising the work of its contract or subcontract in a manner consistent with normal business practices. If 50% or more of the total dollar amount of a DBE's prime contract or subcontract is subcontracted to a non–DBE, the DBE prime contractor or subcontractor will be presumed to be a broker.
- Contractors may count the participation of a DBE trucker/hauler only if the trucker/hauler is performing a "commercially useful function," according to the following factors:
    - The DBE must be responsible for the management and supervision of the entire trucking/hauling operation for which it is responsible on a particular contract, and there cannot be a contrived arrangement for the purpose of meeting DBE objectives.
    - The DBE must itself own and operate at least one fully licensed, insured, and operational truck used on the contract.

See the Mandatory Equivalency Terms and Conditions or consult your designated MBO for further guidance.

Instructions for Minority Business Officers (MBO):

The MBO must complete Section 1. Email the completed, signed (electronic signature box checked and dated) form to your EFC Program Compliance Specialist.

The subject heading of the email to the EFC Program Compliance Specialist should follow the format "UP, Project Number, Contractor." EFC will review the Utilization Plan and email the MBO an acceptance or denial.

If the Utilization Plan will not meet or exceed the DBE fair share objective, then the good faith effort documentation noted in Section 4 must be submitted with this form.

NYS Environmental Facilities Corporation
Disadvantaged Business Enterprise (DBE) Utilization Plan

SECTION 1: MUNICIPAL INFORMATION			
Recipient/Municipality:	**County:**		
Project No.:	**Contract ID:**	**Registration No. (NYC only):**	
Minority Business Officer:	**Email:**	**Phone #:**	
Address of MBO:			
Electronic Signature of MBO: ☐ I certify that the information submitted herein is true, accurate and complete to the best of my knowledge and belief.			**Date:**

SECTION 2: PRIME CONTRACTOR / SERVICE PROVIDER INFORMATION				
Firm Name:			**Contract Type:** ☒ Construction ☐ Other Services	
Is the Prime Firm certified as a DBE? ☐ Yes ☐ No If yes, please include Prime information in Section 3.				
Address:		**Phone #:**	**Fed. Employer ID #:**	
Description of Work:		**Email:**		
Award Date:	**Start Date:**	**Completion Date:**	**DBE Fair Share Objective**	**PROPOSED DBE Participation**
Total Contract Amount: $ **DBE Eligible Contract Amount: $** (DBE Fair Share Objectives are applied to this amount and includes all change orders, amendments, & specialty waivers)			**Total: 20**% $	**Total:** % $
If fair share objectives are not met, documentation must be attached: ☐ No Participation ☐ Short of the DBE Fair Share Objective				
☐ **Specialty Equipment/Services:** must be of SIGNIFICANT cost – attach list of cost and type of equipment and good faith effort documentation				

NYS Environmental Facilities Corporation
Disadvantaged Business Enterprise (DBE) Utilization Plan

SECTION 3: DBE SUBCONTRACTOR INFORMATION			
This Submittal is:	☐ The First/Original Utilization Plan ☐ Revised Utilization Plan #:		
DBE Subcontractor Information		**Contract Amount**	**For EFC Use:**
Business Name:	**Fed. Employer ID#:**		
Address:	**Phone #:**		
Scope of Work:	**Email:**		
Certifying Entity: ☐ DOT in State of _______; or ☐ SBA ☐ Other (indicate entity): _________________	**Start Date:** **Completion Date:**		
Business Name:	**Fed. Employer ID#:**		
Address:	**Phone #:**		
Scope of Work:	**Email:**		
Certifying Entity: ☐ DOT in State of _______; or ☐ SBA ☐ Other (indicate entity): _________________	**Start Date:** **Completion Date:**		
Business Name:	**Fed. Employer ID#:**		
Address:	**Phone #:**		
Scope of Work:	**Email:**		
Certifying Entity: ☐ DOT in State of _______; or ☐ SBA ☐ Other (indicate entity): _________________	**Start Date:** **Completion Date:**		
Business Name:	**Fed. Employer ID#:**		
Address:	**Phone #:**		
Scope of Work:	**Email:**		
Certifying Entity: ☐ DOT in State of _______; or ☐ SBA ☐ Other (indicate entity): _________________	**Start Date:** **Completion Date:**		
Business Name:	**Fed. Employer ID#:**		
Address:	**Phone #:**		
Scope of Work:	**Email:**		
Certifying Entity: ☐ DOT in State of _______; or ☐ SBA ☐ Other (indicate entity): _________________	**Start Date:** **Completion Date:**		

NYS Environmental Facilities Corporation
Disadvantaged Business Enterprise (DBE) Utilization Plan

SECTION 3: DBE SUBCONTRACTOR INFORMATION continued			
Business Name:	**Fed. Employer ID#:**		
Address:	**Phone #:**		
Scope of Work:	**Email:**		
Certifying Entity: ☐ DOT in State of _______; or ☐ SBA ☐ Other (indicate entity): _________________	**Start Date:** **Completion Date:**		
Business Name:	**Fed. Employer ID#:**		
Address:	**Phone #:**		
Scope of Work:	**Email:**		
Certifying Entity: ☐ DOT in State of _______; or ☐ SBA ☐ Other (indicate entity): _________________	**Start Date:** **Completion Date:**		
Business Name:	**Fed. Employer ID#:**		
Address:	**Phone #:**		
Scope of Work:	**Email:**		
Certifying Entity: ☐ DOT in State of _______; or ☐ SBA ☐ Other (indicate entity): _________________	**Start Date:** **Completion Date:**		
Business Name:	**Fed. Employer ID#:**		
Address:	**Phone #:**		
Scope of Work:	**Email:**		
Certifying Entity: ☐ DOT in State of _______; or ☐ SBA ☐ Other (indicate entity): _________________	**Start Date:** **Completion Date:**		
Business Name:	**Fed. Employer ID#:**		
Address:	**Phone #:**		
Scope of Work:	**Email:**		
Certifying Entity: ☐ DOT in State of _______; or ☐ SBA ☐ Other (indicate entity): _________________	**Start Date:** **Completion Date:**		

NYS Environmental Facilities Corporation
Disadvantaged Business Enterprise (DBE) Utilization Plan

SECTION 4: GOOD FAITH EFFORT DOCUMENTATION
Utilization Plans that do not meet the Fair Share Objective must be accompanied by the documentation requested in numbers 1 – 7, as listed below. Specialty Equipment Exclusion requests must be accompanied by the documentation requested in number 8 – 12, as listed below. Specialty Services Exclusion requests must be accompanied by the documentation requested in number 13, as listed below. Please contact the MBO and/or EFC for assistance or to request sample documentation.

Provide the following:

1. A letter of explanation detailing the scope of work, DBE search results, and results of good faith efforts that were made.

2. A scope of work that shows what subcontracting opportunities are in the contract. This could be an engineering proposal, schedule of values, or other similar documents.

3. Screenshots of search results (using commodity codes) from DBE Directories of all certified DBEs that were solicited for purposes of complying with your DBE fair share objective. Each search should be saved as an individual file.

4. A log of solicitation results, consisting of the list of DBE firms solicited for the contract and the outcome of the solicitations. The log should be broken out into separate areas for each task that is solicited (e.g., trucking, materials, electricians). The log should show that each firm was contacted twice by two different methods (e.g., email and phone); who was spoken to; what was said; and the final outcome of the solicitation.

5. List of the general circulation, trade association, and DBE oriented publications and dates of publication soliciting for certified DBE participation as a subcontractor/supplier and copies of such solicitations.

6. Description of the negotiations between the contractor and certified DBEs for the purposes of complying with the DBE goals of this contract.

7. Any other information deemed relevant to the request.

EFC and the MBO reserve the right to request additional information and/or documentation.

Documentation for Requests for Specialty Equipment Exclusions:

8. A letter of explanation containing information about the equipment, why the equipment is specialty and why no DBE firms could be utilized to provide the equipment.

9. Copies of the appropriate pages of the technical specification related to the equipment showing the choices for manufacturers or other information that limits the choice of vendor.

10. Letter, email, or screenshot of website from the manufacturer listing their distributors in NYS and the locations.

11. Screenshots of DBE Directory searches for the manufacturer and distributor showing that they are not found in the Directory.

12. An invoice or executed purchase order showing the value of the equipment.

NYS Environmental Facilities Corporation
Disadvantaged Business Enterprise (DBE) Utilization Plan

Documentation for Requests for Specialty Service Exclusions:

13. A letter of explanation containing information about the scope of work and why no DBE firms could be subcontracted to provide that service.

SIGNATURE	
Electronic Signature of Contractor: ☐ I certify that the information submitted herein is true, accurate and complete to the best of my knowledge and that all DBE subcontractors will participate in subcontracts in accordance with the requirements of 40 CFR Part 33. **Name** (Please Type)**:**	**Date:**

Attachment 2 – BABA Contractor's Certification

BABA CONTRACTOR CERTIFICATION

FOR EQUIVALENCY CONSTRUCTION CONTRACTS PAID FOR WITH FUNDS THROUGH

THE NYS CLEAN WATER STATE REVOLVING FUND, OVERFLOW AND STORMWATER GRANTS
OR

THE NYS DRINKING WATER STATE REVOLVING FUND VIA THE

NYS ENVIRONMENTAL FACILITIES CORPORATION

Project Title: _____

Contractor's Name: _____

Contract ID: _____

SRF Project No.: _____

SRF Recipient Name: _____

I certify that all iron and steel, manufactured products and construction materials permanently incorporated into the project under this construction contract will be and/or have been produced in the United States, in accordance with the requirements of the United States Environmental Protection Agency and Pub. L. No. 117-58 and any regulations promulgated thereunder. I will develop and maintain the necessary documentation to demonstrate that the applicable products permanently incorporated into the project were produced in the United States and make such documentation available to The New York State Environmental Facilities Corporation or their authorized representatives, upon request.

Signature: _____

Name (print): _____

Title: _____

Date: _____

Attachment 3 – AIS Contractor's Certification

AIS CONTRACTOR CERTIFICATION

FOR CONSTRUCTION CONTRACTS FUNDED THROUGH

THE NYS CLEAN WATER STATE REVOLVING FUND, OVERFLOW AND STORMWATER GRANTS
OR

THE NYS DRINKING WATER STATE REVOLVING FUND VIA THE

NYS ENVIRONMENTAL FACILITIES CORPORATION

Project Title: _____

Contractor's Name: _____

Contract ID: _____

SRF Project No.: _____

SRF Recipient Name: _____

I certify that the iron and steel products permanently incorporated into the public water system or wastewater treatment works project under this construction contract will be and/or have been produced in the United States, in accordance with the requirements of the United States Environmental Protection Agency and 33 U.S.C. § 1388, 42 U.S.C. § 300j-12(a)(4) and any regulations promulgated thereunder. I will develop and maintain necessary documentation to demonstrate that the iron and steel products permanently incorporated into the project were produced in the United States, and make such documentation available to The New York State Environmental Facilities Corporation or their authorized representatives, upon request.

Signature: _____

Name (print): _____

Title: _____

Date: _____

Attachment 4 – Lobbying Certification

New York State Environmental Facilities Corporation
CERTIFICATION REGARDING LOBBYING
FOR
CONTRACTS, GRANTS, LOANS, AND
COOPERATIVE AGREEMENTS
40 CFR Part 34

SRF Project No.:
Recipient:
Project Description:

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

Signature:
Name:
Title:
Company Name:
Date:
Contract ID:

NEW YORK STATE | Environmental Facilities Corporation

KATHY HOCHUL
Governor

MAUREEN A. COLEMAN
President and CEO

Guidance For Mandatory State Revolving Fund Equivalency Project Terms and Conditions

For Equivalency Projects Funded with NYS Clean Water State Revolving Fund or Drinking Water State Revolving Fund

Effective October 1, 2023

New York State Environmental Facilities Corporation
625 Broadway, Albany, NY 12207-2997
P: (518) 402-6924
www.efc.ny.gov

Contents

INTRODUCTION

The New York State Environmental Facilities Corporation ("EFC") implements the New York State Revolving Fund ("SRF") for both Clean Water and Drinking Water projects. The SRF encompasses several funding programs, including, but not limited to, the SRF financial assistance loan programs, emerging contaminant grants, and the lead service line replacement program.

This Guidance on Mandatory SRF Terms and Conditions provides a brief description of federal program requirements for Contracts and Subcontracts funded in whole or part by the New York State Clean Water and Drinking Water SRFs, and guidance materials to assist entities in complying with these requirements. Contracts that do not meet the required conditions may not be eligible, in whole or in-part, for financing.

The Guidance Materials are for informational purposes only and are not intended to be used as contractual language. Please do not incorporate the Guidance Materials into any Contracts or Subcontracts.

PROGRAM REQUIREMENTS SUMMARY

The following requirements apply to Equivalency projects funded with the NYS Clean Water State Revolving Fund or Drinking Water State Revolving Fund. Note some requirements do not apply to non-Treatment Works projects, as discussed within the relevant sections of this guidance:

- Architectural and Engineering (A/E) Procurement pursuant to 40 U.S.C. 1101 et seq. and 48 Code of Federal Regulations (CFR) Part 36 Subpart 36.6;
- Participation by Disadvantaged Business Enterprises ("DBE") in United States Environmental Protection Agency ("EPA") Programs pursuant to 40 CFR Part 33;
- Equal Employment Opportunities pursuant to Titles VI and VII of the Civil Rights Act of 1964, 40 CFR Part 7, and 41 CFR Part 60-1 Subpart A;
- Affirmative Action requirements pursuant to 41 CFR Part 60-4;
- Non-discrimination requirements pursuant to Section 504 of the Rehabilitation Act of 1973, the Age Discrimination Act of 1975, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972;
- Build America, Buy America Act (BABA) pursuant to P.L. 117-58 and 2 CFR Part 184;
- American Iron and Steel ("AIS") pursuant to P.L. 113-76, Consolidated Appropriates Act, 2014; WRRDA Section 608 of the Federal Water Pollution Control Act, as revised;
- Davis Bacon Related Acts ("DB") consisting of the following: The Davis Bacon Act; Copeland Act (40 U.S.C. § 3145); Reorganization Plan No. 14; Department of Labor 29 CFR Parts 1, 3, and 5; Contract Work Hours and Safety Standards Act;
- Requirements regarding suspension and debarment pursuant to 2 CFR Part 180, 2 CFR Part 1532, 29 CFR § 5.12, and Executive Order 11246; and,
- Restrictions on Lobbying pursuant to 40 CFR Part 34.

EFC or its authorized representatives, and other governmental entities as applicable, reserve the right to conduct occasional site visits to verify compliance with SRF program requirements and review recipients monitoring of requirements.

This document is not intended to be inclusive of all applicable legal requirements and there may be other legal requirements that need to be included in a particular Contract or Subcontract that are not set forth here. Accordingly, EFC recommends that Recipients, Contractors, Subcontractors, and any other involved entities consult their legal counsel for advice on compliance with all applicable laws, including but not limited to local laws. This document is not intended to be legal advice.

Refer to the EFC website at www.efc.ny.gov for the latest version of the Mandatory State Revolving Fund Equivalency Terms and Conditions (Equivalency T&Cs) to ensure that the most recent contract language is being used.

GUIDANCE MATERIALS

COMMONLY USED TERMS

The following commonly used terms are defined herein as follows:

Broker means a firm that does not itself perform, manage or supervise the work of its contract or subcontract in a manner consistent with the normal business practices for contractors or subcontractors in its line of business.

Construction means the process by which a contractor or subcontractor builds, alters, repairs, remodels, improves or demolishes infrastructure.

Contract means an agreement between a Recipient and a Contractor.

Contractor means all bidders, prime contractors, non-construction service providers, and consultants as hereinafter defined, unless specifically referred to otherwise.

Equivalency means projects in the amount equal to the funds “directly made available” by an Environmental Protection Agency (EPA) Capitalization Grant and funding for those projects is considered federal funds, or federal financial assistance. The Equivalency designation is indicated in the Intended Use Plan.

Manufactured products means articles, materials, or supplies that have been processed into a specific form and shape or combined with other articles, materials, or supplies to create a product with different properties than the individual articles, materials, or supplies. If an item is classified under Build America, Buy America as an iron or steel product, a construction material, or a section 70917(c) material under 2 CFR § 184.4(e), then it is not a manufactured product.

Manufacturer means a firm that operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment required under the Contract and of the general character described by the specifications.

MBO is designated and employed by the Recipient as a Minority Business or Compliance Officer responsible for MWBE/DBE/SDVOB/EEO reporting and compliance.

Non-Construction Provider means any individual or business enterprise that provides one or more of the following: legal, engineering, financial advisory, technical, or other professional services, supplies, commodities, equipment, materials, or travel.

Recipient means the party, other than EFC, to a grant agreement or a project finance agreement with EFC through which funds for the payment of amounts due thereunder are being paid in whole or in part. Responsible through Project Finance Agreement (PFA) to comply with EFC requirements.

State means the State of New York.

State Recipient means Environmental Facilities Corporation

Subcontract means an agreement between a Contractor and a Subcontractor.

Subcontractor means any individual or business enterprise that has an agreement, purchase order, or any other contractual arrangement with a Contractor.

Supplier means a firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles or equipment of the general character described by the specifications and required under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business.

Treatment Works is defined in Clean Water Act (CWA) Section 212. This does not include nonpoint source projects as defined in CWA Section 319 and estuary management program projects as defined in CWA Section 320.

APPLICABILITY OF PROGRAM REQUIREMENTS

This table contains a breakdown of the applicable program requirements based on contract type and its value. For further details pertaining to each requirement, refer to the section identified in the heading.

Type of Contract	A/E Procurement Section 1	**DBE** Section **2**	EEO[1] Section **2**	Title VII Section **2**	BABA & AIS Section 3	Davis Bacon Section 4	FAAR[2] Section **2**	Suspension & Debarment Section 5	Restrictions on Lobbying Section **6**	Prohibition on Telecommunications Section 7
Construction: Treatment Works & Drinking Water Projects										
All		X	X	X	X			X		X
If greater than:										
$2,000		X	X	X	X	X		X		X
$10,000		X	X	X	X	X	X	X		X
$100,000		X	X	X	X	X	X	X	X	X
Construction: Non-Treatment Works										
All		X	X	X				X		X
If greater than:										
$10,000		X	X	X			X	X		X
$100,000		X	X	X			X	X	X	X
Non-Construction Provider										
All	X[3]	X	X		X					X
If greater than:										
$25,000		X	X		X					X
$100,000		X	X		X				X	X

[1] For purposes of this table, "EEO" includes the following: EEO requirements under 40 CFR Part 33, Title VI, Section 504, Age Discrimination Act, and Section 13.

[2] For purposes of this table, "FAAR" means the Federal Affirmative Action Regulations.

3 Architectural and Engineering Services for federal CWSRF grants and financing and federal DWSRF grants only

SECTION 1 GUIDANCE FOR FEDERAL ARCHITECTURAL AND ENGINEERING PROCUREMENT REQUIREMENTS

I. Federal A/E Requirements

A. Types of Services
The types of services covered are contracts for program management, construction management, feasibility studies, preliminary engineering, design, engineering, surveying, mapping, or A/E services as defined in 40 U.S.C. 1102(2)(A-C) below:

(A) professional services of an architectural or engineering nature, as defined by state law, if applicable, that are required to be performed or approved by a person licensed, registered, or certified to provide the services described in this paragraph;
(B) professional services of an architectural or engineering nature performed by contract that are associated with research, planning, development, design, construction, alteration, or repair of real property; and
(C) other professional services of an architectural or engineering nature, or incidental services, which members of the architectural and engineering professions (and individuals in their employ) may logically or justifiably perform, including studies, investigations, surveying and mapping, tests, evaluations, consultations, comprehensive planning, program management, conceptual designs, plans and specifications, value engineering, construction phase services, soils engineering, drawing reviews, preparation of operating and maintenance manuals, and other related services.

B. Applicability
A/E services procured after October 1, 2022, must be procured pursuant to this guidance for such A/E services to be eligible for any Clean Water State Revolving Fund (CWSRF) or Drinking Water State Revolving Fund (DWSRF) grant or CWSRF financing.

A/E services procured and entered into an agreement prior to October 1, 2022 that were not procured pursuant to this guidance (including any amendments thereto) will not be eligible for any new CWSRF or DWSRF grant or CWSRF financing after October 1, 2023.

C. Qualification Based Procurement
The requirements for qualification-based procurement are as follows:
1. Public announcement of the solicitation (e.g., a Request for Qualifications);
2. Evaluation and ranking of the submitted qualifications statements based on established, publicly available criteria (e.g., identified in the solicitation). Evaluation criteria should be based on demonstrated competence and qualification for the type of professional services required (e.g., past performance, specialized experience, and technical competence in the type of work required);
3. Discussion with at least three firms to consider anticipated concepts and compare alternative methods for furnishing services;
4. Selection of at least three firms considered to be the most highly qualified to provide the required services; and
5. Contract negotiation with the most highly qualified firm to determine compensation that is fair and reasonable based on a clear understanding of the project scope, complexity, professional nature, and the estimated value of the services to be rendered. In the event that a contract cannot be negotiated with the most highly qualified firm, negotiation continues in order of qualification.

D. Compliance
Municipalities will be required to complete an EFC Certification for Architectural/Engineering Services Procurement for Federally Funded Projects. The Certification must be signed by an

authorized representative of the municipality. It cannot be signed by a hired contractor or consultant.

The Certification for Architectural/Engineering Services Procurement for Federally Funded Projects and documentation evidencing completion of the procurement steps outlined above is required to be kept on file by the municipality and be made available for inspection upon EFC's request.

E. Amendments

Significant contractual amendments are subject to this requirement. Significant contractual amendments are amendments to existing contracts that have a value greater than $100,000 AND introduce a new scope of work or task.

II. Summary of A/E Procurement Forms

A. Forms to be Submitted

1. **Certification for Architectural/Engineering Services Procurement**
   To be submitted by the Recipient with executed agreement for reimbursement of funds.

SECTION 2 GUIDANCE FOR BUSINESS PARTICIPATION OPPORTUNITIES FOR FEDERAL DISADVANTAGED BUSINESS ENTERPRISES AND EQUAL EMPLOYMENT OPPORTUNITIES FOR WOMEN AND MINORITY GROUP MEMBERS

I. Equal Employment Opportunities (EEO)

A. EEO Poster

Applicable to all construction Contracts

Attachment 1, *EEO Poster*, is the notice provided by the United States Department of Labor. Contractor must identify the employee responsible for EEO compliance in the designated area, as required by 40 CFR § 7.95. A copy of the EEO poster can be found at: https://www.dol.gov/sites/dolgov/files/OFCCP/regs/compliance/posters/pdf/22-088_EEOC_KnowYourRights.pdf

B. EEO Goals

Applicable to construction Contracts greater than $10,000

Pursuant to 41 CFR Part 60-4, the United States Department of Labor has established EEO goals for the employment of minorities and women. Goals for Contractors on federal and designated federal assistance projects for minorities and females are established as a percentage participation rate. These goals are applicable to all of a Contractor's construction work sites (whether or not these sites are also the result of a federal Contract or are federally assisted). The goals are applicable to each nonexempt Contractor's total onsite construction workforce, regardless of whether or not part of that workforce is performing work on a federal, federally assisted or non-federally related project Contract or Subcontract. Contractors should apply to each work site the goal for the geographical area that each particular work site is located in. These goals are available at: https://www.dol.gov/sites/dolgov/files/ofccp/ParticipationGoals.pdf.
For further information, visit: https://www.dol.gov/agencies/ofccp

II. Good Faith Efforts and Fair Share Objectives for DBEs

A. Fair Share Objectives

The Terms & Conditions Section 2(III)(A) provide the applicable Fair Share Objectives for the contract. DBE fair share objectives for a contract will be based on the fair share objectives in place at the time of the execution date of each respective contract, unless otherwise

specified. Please contact the MBO if you have any questions about the applicable DBE fair share objectives for your contract.

B. Good Faith Efforts

The Contractor must make good faith efforts to develop an adequate DBE Utilization Plan and must continue such good faith efforts in order to try to meet or exceed applicable DBE fair share objectives. The Contractor shall maintain documentation of good faith efforts to solicit participation of DBE firms for identified SRF-funded Equivalency projects. If a Contractor is unable to meet contract DBE fair share objectives, documentation of such good faith efforts must accompany the Utilization Plan. See Terms & Conditions Section 2(III)(D). The Contractor should also continue good faith efforts to seek opportunities for DBE participation during the life of the contract even if proposed fair share objectives have been achieved.

Examples of documentation of good faith efforts are set forth below:

- Information on the scope of work related to the contract, such as a copy of the schedule of values from the bid submission, and specific steps taken to reasonably structure the scope of work to break out tasks or equipment needs for the purpose of providing opportunities for subcontracting with, or obtaining supplies or services from, DBEs.
- Printed screenshots of the applicable directory of Certified Disadvantaged Business Enterprises ("DBE directory") for DBEs that provide the services or equipment necessary for the contract. Contact the MBO for assistance in performing a proper search including identifying a sufficient number of solicitations to show that good faith effort was made.
- Copies of timely solicitations and documentation (e.g., faxes and emails) that the Contractor offered relevant plans, specifications, or other related materials to DBE firms to participate in the work, with the responses.
- A log prepared by the Contractor in a sortable spreadsheet documenting the Contractor's solicitation of DBEs for participation as Subcontractors or Suppliers. The log should consist of the list of DBE firms solicited, the type of work they were solicited to perform (or equipment to provide), how the solicitation was made (fax, phone, email), the date of the solicitation, and the outcome.
  See a sample log at https://efc.ny.gov/mwbe-forms
  If no response was received to an initial solicitation, at least one follow-up solicitation should be made in a different format than the first, e.g. email followed by phone call, and entered in additional columns on the log.
- Any bids or quotes received from non-DBE firms that were more competitive than a bid or quote from DBEs, along with the DBE's bid or quote for comparison.
- Copies of any advertisements of sufficient duration to effectively seek participation of certified DBEs timely published in appropriate general circulation, trade and DBE oriented publications, together with listing and dates of publication of such advertisements. A log should be kept of the responses to the ads, similar to the log for DBE firm solicitation and should include the non-DBE firms that responded and the bid prices.
- Documents demonstrating that insufficient DBEs are reasonably available to perform the work.
- The date of pre-bid, pre-award, or other public meetings scheduled by the Recipient, if any, and the contact information of any DBEs who attended and are capable of performing work on the project.
- Any other information or documentation that demonstrates the Contractor conducted good faith efforts to provide opportunities for DBE participation in their work. For instance, Prime Contractors and MBOs should develop a list of DBE firms that have expressed interest in working on SRF-funded projects.

C. DBE Utilization Plan

Applicable to construction Contracts greater than $100,000 and Non-Construction Provider Contracts greater than $25,000

1. The DBE Utilization Plan must be submitted to the MBO after the bid opening, but in no case later then the execution date of the contract.

2. The MBO will evaluate the completed DBE Utilization Plan and the good faith effort documentation. When the MBO finds the Utilization Plan sufficient, it will be forwarded to EFC for review. If the MBO finds the Utilization Plan or good faith effort insufficient, the Contractor should work with the MBO to address deficiencies before the MBO submits to EFC for final review.

3. In coordination with the MBO, EFC will accept a DBE Utilization Plan upon consideration of many factors, including the following:
   a. The DBE Utilization Plan indicates that the proposed fair share objectives for the project will be achieved;
      i. A Contractor, who is a certified DBE, will be credited for up to 100% of their certification but should deduct any subcontracting by non-DBE subcontractors from their own DBE credit; and,
   b. Submittal of adequate documentation to demonstrate good faith efforts and/or support a specialty equipment/services exclusion as described below in Section III(E).

4. EFC reserves the right to request additional information and/or documentation to support the adequacy of the Utilization Plan.

D. Eligibility for DBE Participation Credit

1. To receive DBE participation credit, Contractors or Subcontractors performing work that have been identified in an approved DBE Utilization Plan must be certified DBEs pursuant to 40 CFR Part 33 by an authorized certifying entity such as SBA or a state DOT on behalf of US DOT.

2. Prime Contractors may also include second tier Subcontractors (Subcontractors hired by Subcontractors) on their Utilization Plan.

3. Participation of Brokers and Truckers/Haulers
   a. Contractors cannot count the participation of a DBE who acts as a Broker or passive conduit of funds without performing, managing, or supervising the work of its contract or subcontract in a manner consistent with normal business practices. If 50% or more of the total dollar amount of a DBE's prime Contract or Subcontract is subcontracted to a non–DBE, the DBE prime contractor or subcontractor will be presumed to be a Broker.
   b. Contractors may count the participation of a DBE trucker/hauler only if the trucker/hauler is performing a "commercially useful function," according to the following factors:
      i. The DBE must be responsible for the management and supervision of the entire trucking/hauling operation for which it is responsible on a particular contract, and there cannot be a contrived arrangement for the purpose of meeting DBE objectives.
      ii. The DBE must itself own and operate at least one fully licensed, insured, and operational truck used on the contract.

E. Submission of Good Faith Effort Documentation
Applicable to construction Contracts greater than $100,000 and Non-Construction Provider Contracts greater than $25,000

1. If the Contractor's application of good faith efforts does not result in the utilization of DBE firms to achieve the aforementioned fair share objectives or a specialty equipment/service exclusion is requested, the Contractor may attach appropriate documentation of good faith efforts as noted in Section III(B) above and submit same to the MBO. See also Terms & Conditions Section 2(III)(D).

2. The MBO will review each Utilization Plan that does not meet the fair share objectives based on the good faith effort criteria presented above and the documentation submitted with the Utilization Plan. When the MBO deems the documentation acceptable, the MBO will submit the documentation to EFC for final review.

3. The Contractor may request a specialty equipment/service exclusion from the MBO in cases where:
   a. equipment is made by only one non-DBE manufacturer,
   b. the technical specifications call for equipment that is not available through a DBE Supplier;
   c. the equipment is constructed on site by specially trained non-DBE labor;
   d. the service is not available through a DBE (such as work done by Consolidated Edison);
   e. the service is proprietary in nature (such as use of certain computer software necessary for control systems); or,
   f. the service cannot be subcontracted (such as litigation services).

   If the contract includes specialty equipment or services, and documentation is submitted demonstrating that there are no DBE firms capable of completing this portion of the contract, the specialty amount of the contract may be deducted from the total contract amount to determine the DBE Eligible Amount and the fair share objectives will be applied to the DBE Eligible Amount. This determination is made at the discretion of EFC.

   Example:
   $2,000,000 - $500,000 = $1,500,000
   Total Contract Value - Specialty equipment/service = DBE Eligible Amount
   The DBE fair share objectives are applied to the DBE Eligible Amount.

   A request for a specialty equipment/service deduction can be indicated on the Utilization Plan form and submitted to the MBO. The request must include: a copy of the page from the contract where the equipment or service is described; an email or screenshot of the manufacturer's website showing the manufacturer's representatives (if manufactured item); a DBE search result for the representative; and documentation of the cost of each item. Additional documentation may be requested by the MBO or EFC.

III. Subcontractor's Responsibilities

A. Subcontractors should:
1. Maintain their DBE certifications and notify the Contractor and MBO of any change in their certification status.
2. Notify the Contractor of any DBE Subcontractors they hire so they may be included on the Contractor's Utilization Plan as a second-tier subcontractor.
3. Respond promptly to solicitation requests by completing and submitting bid information in a timely manner.
4. Maintain business records that should include, but not be limited to, contracts/agreements, records of receipts, correspondence, purchase orders, and canceled checks.
5. Ensure that required EFC Terms & Conditions are included in each Subcontract.

6. Notify the MBO and EFC when contract problems arise, such as non-payment for services or when the Subcontractor is not employed as described in the DBE Utilization Plan.

IV. Summary of DBE and EEO Forms

A. Forms to be Submitted Prior to Contract Execution

1. **DBE Utilization Plan**
Applicable to construction Contracts greater than $100,000 and Non-Construction Provider Contracts greater than $25,000

To be submitted by the Contractor to the MBO with the bid documentation, but in no case later than the award date of the contract.

B. Forms to be Submitted During the Term of the Contract

1. **EEO-1 Report**
Applicable to all construction Contracts
To be submitted by the Contractor and Subcontractor, as applicable, annually during the term of the Contract or Subcontract. A sample EEO-1 Report can be found here: https://www.eeoc.gov/sites/default/files/migrated_files/employers/eeo1survey/eeo1-2-2.pdf. When the data collection period is open, an instruction booklet can be obtained from this website: https://eeocdata.org/EEO1/home/index. . See Terms & Conditions Section 2(II).

2. **Good Faith Effort Documentation**
Applicable to construction Contracts greater than $100,000 and Non-Construction Provider Contracts greater than $25,000

If Contractor's good faith efforts do not result in obtaining DBE participation that meets the fair share objectives, Contractor will need to submit good faith effort documentation to the MBO. The DBE Utilization Plan form contains a list of the required documentation.

3. **Quarterly Report**
Applicable to construction Contracts greater than $100,000 and Non-Construction Provider Contracts greater than $25,000

To be submitted by the Contractor to the MBO by the fifteenth business day following the end of each calendar quarter over the term of the Contract. This form is emailed to the MBO by EFC prior to the end of the quarter and will then be passed on to the Contractor. The Contractor must complete the form and email the completed form to the MBO.

V. Protests/Complaints

Contractors or Subcontractors who have any concerns, issues, or complaints regarding the implementation of EFC's DBE & EEO Program or wish to protest should do so in writing to the MBO and EFC. The MBO, in consultation with EFC, will review the circumstances described in the submission, investigate, if warranted, and determine whether action is required. If the Contractor or Subcontractor believes the issue has not been resolved to their satisfaction, they may appeal in writing to EFC for consideration.

VI. Waste, Fraud and Abuse

Subcontractors, Contractors, or Recipients who know of or suspect any instances of waste, fraud, or abuse within the DBE & EEO Program should notify the MBO and EFC immediately.

Additionally, suspected fraud activity should be reported to the USEPA – Office of Inspector General Hotline at (888) 546-8740, or the New York State Office of Inspector General at (800) 367-4448.

A. Waste, Fraud and Abuse Poster
Applicable to all construction Contracts

Attachment 10, *Waste Fraud and Abuse Poster*, is the notice provided by the USEPA – Office of Inspector General. A copy of the poster can be found at: https://www.epa.gov/system/files/documents/2022-08/2022_HOTLINEPOSTER_crc_85x11_aug2022.pdf

SECTION 3 GUIDANCE FOR BUILD AMERICA, BUY AMERICA (BABA) ACT AND AMERICAN IRON AND STEEL ("AIS") REQUIREMENTS

Applicable to all contracts for DWSRF projects or CWSRF Treatment Works projects.

The Build America, Buy America Act was signed into law in 2021 creating a BABA requirement that expands upon and is broader in scope than the AIS requirement. BABA applies to iron, steel, manufactured products and construction materials on all DWSRF and CWSRF Equivalency projects, whereas, the AIS requirement applies to only iron and steel products on projects waived for BABA and Treatment Works projects funded with DWSRF or CWSRF. BABA and AIS will not apply to individual projects at the same time. Accordingly, all DWSRF or CWSRF Equivalency Contracts and Subcontracts are subject to the BABA requirement, unless an EPA waiver applies or can be obtained. If a BABA EPA waiver applies or is obtained, then the AIS requirement applies, unless an AIS EPA waiver is separately obtained.

I. BABA Requirements

If a Recipient uses CWSRF and DWSRF financial assistance to fund all or a part of the construction, alteration, maintenance or repair a public water system or Treatment Works, then all the iron, steel, manufactured products, and construction materials incorporated in the project must be produced in the United States.

Please consult Subsection II below for AIS requirements associated with iron and steel products.

Manufactured products must be 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 must be greater than 55% of the total cost of all components of the manufactured product, unless another standard that meets or exceeds this standard has been established under applicable law or regulation for determining the minimum amount of domestic content of the manufactured product. See 2 CFR § 184.2(a). The costs of components of a manufactured product are determined according to 2 CFR § 184.5. A letter from the manufacturer must be provided certifying compliance with BABA. At a minimum, the letter must (1) be on company letterhead and signed by a company representative; (2) reference the project; (3) contain a list of products used in the final manufactured product; (4) include the City and State where the final manufacturing takes place; (5) reference BABA; and (6) include statement that the product "meets the 55% component test" for manufactured products.

Construction materials must have all manufacturing processes for the construction material occur in the United States. Some examples of construction materials are non-ferrous metals, plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables), glass (including optic glass), fiber optic cable (including drop cable), optical fiber, lumber, engineered wood and drywall. Minor additions of articles, materials, supplies or binding agents to a construction material do not change the categorization of the

construction material. Produced in the United States is defined as followed for the materials listed below.

1. Non-ferrous metals. All manufacturing processes, from initial smelting or melting through final shaping, coating, and assembly, occurred in the United States.
2. Plastic and polymer-based products. All manufacturing processes, from initial combination of constituent plastic or polymer-based inputs, or, where applicable, constituent composite materials, until the item is in its final form, occurred in the United States.
3. Glass. All manufacturing processes, from initial batching and melting of raw materials through annealing, cooling, and cutting, occurred in the United States.
4. Fiber optic cable (including drop cable). All manufacturing processes, from the initial ribboning (if applicable), through buffering, fiber stranding and jacketing, occurred in the United States. All manufacturing processes also include the standards for glass and optical fiber, but not for non-ferrous metals, plastic and polymer-based products, or any others.
5. Optical fiber. All manufacturing processes, from the initial preform fabrication stage through the completion of the draw, occurred in the United States.
6. Lumber. All manufacturing processes, from initial debarking through treatment and planing, occurred in the United States.
7. Drywall. All manufacturing processes, from initial blending of mined or synthetic gypsum plaster and additives through cutting and drying of sandwiched panels, occurred in the United States.
8. Engineered wood. All manufacturing processes from the initial combination of constituent materials until the wood product is in its final form, occurred in the United States.

A. BABA Project Waivers

The EPA may waive the BABA requirement for a project if:

1. applying the requirement would be inconsistent with the public interest;
2. types of iron, steel, manufactured products, or construction materials are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or
3. inclusion of iron, steel, manufactured products, or construction materials produced in the United States will increase the cost of the overall infrastructure project by more than 25 percent.

A request for a waiver must include adequate information for EPA's evaluation of the request, including:

1. Waiver type (nonavailability, unreasonable cost, or public interest)
2. Recipient name and Unique Entity Identifier (UEI)
3. Financial Assistance listing name and number
4. Total cost of expenditures, including Federal and non-Federal funds
5. Infrastructure project description and location
6. List of iron or steel item(s), manufactured products, and construction material(s) proposed to be excepted from Buy America requirements, including name, cost, country(ies) of origin (if known), and relevant PSC and NAICS code for each
7. A certification that the Recipient made a good faith effort to solicit bids for domestic products supported by terms in RFPs, contracts and nonproprietary communications with the prime contractor.
8. A statement of waiver justification, including a description of efforts made by the Recipient in an attempt to avoid the need for a waiver. Such a justification may cite, if applicable, the absence of any Buy America-compliant bids received in response to a solicitation
9. Anticipated impact if no waiver is issued
10. Any relevant comments received through the public comment period

Recipients may request waivers from EPA if the recipient reasonably believes a waiver is justified. Requests for BABA waivers must be submitted through the Recipient to EFC. Upon review, EFC will submit BABA waiver requests to EPA. When EPA receives a request for a waiver, EPA will submit to OMB Made in America Office (MIAO) and publish the request and any accompanying material on the MIAO official public Internet site, allowing public input on the request for a period of not less than 15 calendar days before granting or denying the waiver request.

Additionally, OMB MIAO has the authority to issue waivers that are national in scope. National waivers may be for specific products or in the public's interest.

B. Adjustment Period Waiver
The Adjustment Period Waiver is noteworthy as it waives the BABA requirements for DWSRF and CWSRF projects that initiated project design planning prior to May 14, 2022. Any listed projects subject to the adjustment period waiver will be notified in writing from EFC.

C. De Minimis Waiver
The De Minimis General Applicability Waiver, "De Minimis" permits the use of miscellaneous materials subject to BABA as long as the funds used for the de minimis incidental components cumulatively comprise no more than 5% of the total project cost. Items covered by de minimis are miscellaneous in character and often low-cost and bought in bulk. This waiver is not additive with the existing American Iron and Steel national de minimis waiver.

D. Small Project Waiver
The small project waiver permits a municipality with a project in an assistance agreement with EFC totaling less than $250,000 to be waived from the BABA requirements.

OMB continues to adopt additional waivers and issue further guidance on waivers. Additional information on waivers can be found at EPA's website at: https://www.epa.gov/cwsrf/build-america-buy-america-baba-approved-waivers. All waivers will be posted on the OMB MIAO website at https://www.madeinamerica.gov.

Additional information and guidance about the BABA requirement can be found at EPA's website: https://www.epa.gov/cwsrf/build-america-buy-america-baba#rfi.

II. AIS Requirements

If a Recipient uses CWSRF or DWSRF financial assistance to fund all or a part of the construction, alteration, maintenance or repair a public water system or Treatment Works, the Recipient must use iron and steel products that are produced in the United States for the entire project.

The term "iron and steel products" means the following permanently installed 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, or construction materials. For one of the listed products to be considered subject to the AIS requirement, it must be made of greater than 50% iron and steel, measured by material cost (with the exception of reinforced precast concrete products).

The term "produced in the United States" means that all manufacturing processes of the iron or steel, including application of coatings, take place in the United States, with the exception of metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating. Further, if a domestic iron and steel product is taken out of the US for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron

ore, limestone and iron and steel scrap are not covered by the AIS requirement and the material(s), if any, being applied as a coating are similarly not covered. Non-iron or steel components of an iron and steel product may come from non-US sources. For example, for products such as valves and hydrants, the individual non-iron and steel components do not have to be of domestic origin.

The EPA may waive the AIS requirement for a Treatment Works project if:

1. applying the requirement would be inconsistent with the public interest;
2. iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or
3. inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

A request for a waiver to use foreign iron or steel products must include adequate information for EPA's evaluation of the request, including:

1. A description of the foreign and domestic iron, steel, and/or manufactured goods;
2. Unit of measure;
3. Quantity;
4. Cost;
5. Time of delivery or availability;
6. Location of the project;
7. Name and address of the proposed Supplier; and,
8. A detailed justification for use of foreign iron or steel products, including potential impact to the overall project schedule.

EPA can assist with material availability research prior to a waiver request. Requests for EPA assistance must be submitted through EFC. EFC will request any necessary supporting documentation and submit to EPA for feedback.

Requests for AIS waivers must be submitted to EFC. Upon review, EFC will submit AIS waiver requests to EPA. When EPA receives a request for a waiver, EPA will publish the request and any accompanying material on EPA's official public Internet site, allowing informal public input on the request for at least 15 days before granting or denying the waiver request.

Additionally, EPA has the authority to issue waivers that are national in scope. National waivers may be for specific products or in the public's interest. These waivers can be found at EPA's website at: https://www.epa.gov/cwsrf/american-iron-and-steel-requirement-approved-national-waivers-0

The "De Minimis Waiver" permits the use of iron and steel products when they occur in de minimis incidental components of DWSRF or CWSRF projects, as long as:

1. the funds used for the de minimis incidental components cumulatively comprise no more than 5% of the total cost of the materials used in a project; and,
2. the cost of an individual item does not exceed 1% of the total cost of the materials used in the project.

Items covered by the de minimis waiver are:

1. essential, but incidental to the construction;
2. incorporated into the physical structure of the project; and,
3. often low-cost and bought in bulk.

Examples of "de minimis" items include: washers, screws, nuts, bolts, fasteners, miscellaneous wire, corner bead, ancillary tubing, etc.

Examples of items that are NOT incidental and therefore are not considered “de minimis” include: process fittings, tees, elbows, flanges, brackets, valves, sewer or water pipes for distribution, treatment or storage tanks, large structural support systems, etc.

To use the de minimis waiver, Contractors should prepare a record in spreadsheet form that tracks the cost of all materials incorporated into the project. This spreadsheet can be either project specific or contract specific. If it is contract specific, a material tracking record for each construction contract should be prepared and items that are subject to the AIS de minimis waiver should be highlighted. There should be a clear calculation available to indicate that the cost of the de minimis iron and steel items is 5% or less of the total cost of all materials. An AIS Compliance and De Minimis Worksheet is available for use on EFC’s website under Forms & Guidance: https://efc.ny.gov/american-iron-and-steel-guidance.

Additional information, guidance and Questions and Answers about the State Revolving Fund American Iron and Steel (AIS) requirement can be found at EPA’s website: https://www.epa.gov/cwsrf/state-revolving-fund-american-iron-and-steel-ais-requirement

SECTION 4 GUIDANCE FOR DAVIS BACON (DB) PREVAILING WAGE REQUIREMENTS

The requirements of this section apply to all construction Contracts and Subcontracts greater than $2,000 for either DWSRF projects or CWSRF Treatment Works projects.

I. Davis-Bacon Act

The Davis-Bacon Act requires Contractors and Subcontractors performing construction, alteration and repair work under Contracts in excess of $2,000 funded from SRF monies, to pay their laborers and mechanics not less than the prevailing wage and fringe benefits for the geographic location.

A. Requirements for Recipients.

This guidance describes how Recipients assist EPA in meeting its Davis-Bacon (DB) responsibilities when DB applies to EPA awards of financial assistance under the Water Resources Reform and Development Act of 2014 (WRRDA) with respect to State Recipients and Recipients. Recipients, Service Providers or Contractors with questions about when DB applies, obtaining the correct DB wage determinations, DB provisions, or compliance monitoring should contact the State Recipient. Recipients can also obtain guidance from DOL’s web site at http://www.dol.gov/whd/

1. Applicability of the DB prevailing wage requirements.

Under the Water Resources Reform and Development Act of 2014 (WRRDA), DB prevailing wage requirements apply to the construction, alteration, and repair of Treatment Works carried out in whole or in part with assistance made available by a State water pollution control revolving fund. If a Recipient encounters a unique situation at a site that presents uncertainties regarding DB applicability, the Recipient must discuss the situation with the State Recipient before authorizing work on that site.

2. Obtaining Wage Determinations.

(a) Recipients must obtain the wage determination for the locality in which a covered activity subject to DB will take place prior to issuing requests for bids, proposals, quotes or other methods for soliciting contracts (solicitation) for activities subject to DB. These wage determinations must be incorporated into solicitations and any

subsequent Contracts. Prime Contracts must contain a provision requiring that Subcontractors follow the wage determination incorporated into the prime Contract.

(i) While the solicitation remains open, the Recipient must monitor https://sam.gov/content/wage-determinations weekly to ensure that the wage determination contained in the solicitation remains current. Recipients must amend the solicitation if DOL issues a modification more than 10 days prior to the closing date (i.e. bid opening) for the solicitation. If DOL modifies or supersedes the applicable wage determination less than 10 days prior to the closing date, the Recipient may request a finding from the State Recipient that there is not a reasonable time to notify interested Contractors of the modification of the wage determination. The State Recipient will provide a report of its findings to the Recipient.

(ii) If the Recipient does not award the contract within 90 days of the closure of the solicitation, any modifications or supersessions DOL makes to the wage determination contained in the solicitation shall be effective unless the State Recipient, at the request of the Recipient, obtains an extension of the 90-day period from DOL pursuant to 29 CFR 1.6(c)(3)(iv). The Recipient shall monitor https://sam.gov/content/wage-determinations on a weekly basis if it does not award the Contract within 90 days of closure of the solicitation to ensure that wage determinations contained in the solicitation remain current.

(b) If the Recipient carries out activity subject to DB by issuing a task order, work assignment or similar instrument to an existing Contractor (ordering instrument) rather than by publishing a solicitation, the Recipient must insert the appropriate DOL wage determination from https://sam.gov/content/wage-determinations into the ordering instrument.

(c) Recipients must review all Subcontracts subject to DB entered into by prime Contractors to verify that the prime Contractor has required its Subcontractors to include the applicable wage determinations.

(d) As provided in 29 CFR 1.6(f), DOL may issue a revised wage determination applicable to a Recipient's Contract after the award of a Contract or the issuance of an ordering instrument if DOL determines that the Recipient has failed to incorporate a wage determination or has used a wage determination that clearly does not apply to the Contract or ordering instrument. If this occurs, the Recipient must either terminate the Contract or ordering instrument and issue a revised solicitation or ordering instrument or incorporate DOL's wage determination retroactive to the beginning of the Contract or ordering instrument by change order. The Recipient's Contractor must be compensated for any increases in wages resulting from the use of DOL's revised wage determination.

B. Additional requirements for Recipients that are not governmental entities

Recipients that are not governmental entities must submit their proposed DB wage determinations to the State Recipient for approval prior to including the wage determinations in any solicitation, Contract or issuing task orders, work assignments, or similar instruments to existing Contractors, as well as ordering instruments unless subsequently directed otherwise by the State Recipient award official as identified below.

Recipients must obtain proposed wage determinations for specific localities at https://sam.gov/content/wage-determinations. After the Recipient obtains its proposed wage determination, it must submit the wage determination to the State Recipient award official at: William A. Brizzell, Jr., P.E., Director of Engineering, New York State Environmental Facilities Corporation, at 518-402-7396 or at the following email address:

william.brizzell@efc.ny.gov.

C. Compliance Verification

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

(b) The Recipient must establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by Contractors or Subcontractors and the duration of the Contract or Subcontract. Recipients must increase the frequency of the interviews if the initial interviews or other information indicates that there is a risk that the Contractor or Subcontractor is not complying with DB. Recipients must immediately conduct necessary interviews in response to an alleged violation of the prevailing wage requirements. All interviews must be conducted in confidence.

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

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

(e) Upon the request of EFC, the Recipient must provide EFC with a written certification indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies from Contractors/Subcontractors for the specified week.

(f) Recipients must immediately report potential violations of the DB prevailing wage requirements to the EPA DB contact listed above and to the appropriate DOL Wage and Hour District Office listed at https://www.dol.gov/agencies/whd/contact/complaints.

II. Applicable State and Local Labor Standards

A. Contractors and Subcontractors working under a public works contract subject to DB may also be subject to additional labor standards, including but not limited to prevailing wage requirements, under State and local laws. When preparing the bid for SRF project, the

Contractor, and any Subcontractors, must use the higher of the prevailing federal, state, or applicable local wage rates paid to each trade.

III. Responsibilities of Contractors and Subcontractors

A. After execution of any SRF eligible Contracts, the Contractor and Subcontractor have the following responsibilities:

1. Display the Davis Bacon Wage Poster and applicable federal, state, and local wages in a visible area at the construction site. This poster may be found on the EFC website (Attachment 8)at https://nysefc.app.box.com/s/d6sys8owtgzv4ndqjvqvpwr0htp20l9s.
2. Make your employees available for wage interviews if necessary. Wage interviews must be conducted confidentially and using Labor Standard Interview Form (SF-1445), included in Attachment 9.
3. Use federal payroll form WH-347 and complete the certifications on the back. If another form is being used, inform the Recipient and obtain a determination that the form is equivalent to the federal form. (Refer to the attached required forms)
4. Pay the higher of applicable prevailing federal, state, or local wages, including benefits (fringe & holidays), to each trade and overtime not less than one and one-half times the basic rate of pay for hours in excess of forty hours on Contracts in excess of $100,000. The wage rates apply to Subcontractor trades as well.
5. Maintain proof of apprentice and trainee ratios for both Contractor and Subcontractor and certifications onsite.
6. Pay wages to your employees and your Subcontractors on a weekly basis. Ensure that your Subcontractors are paying their employees weekly.
7. Ensure that the Subcontracts contain the Davis Bacon contract language, the applicable federal, state, or local wage determinations and equal employment opportunity language. This language is provided in the EFC Terms & Conditions. Federal wage determinations are available at https://sam.gov/content/wage-determinations.
8. Provide payroll forms and apprentice and trainee certifications to the Recipient for their records.
9. Report potential waste, fraud and abuse violations to the EPA Davis Bacon Contact and DOL Wages and Hours District Office found on their website. https://sam.gov/.

B. Any violations in payroll reporting or unpaid wages are subject to a daily monetary penalty.

SECTION 5 GUIDANCE FOR REQUIREMENTS REGARDING SUSPENSION AND DEBARMENT

The requirements of this section apply to all Contracts and Subcontracts.

Neither the Contractor nor any of its Subcontractors have contracted with, or will contract with, any debarred or suspended party under the following lists:

- A list of debarred and suspended contractors, pursuant to 2 CFR Parts 180 and 1532, 29 CFR § 5.12, and Executive Order 12549 is available on the US Department of Labor's website at www.sam.gov/SAM.

- A list of contractors and subcontractors deemed ineligible to submit a bid on or be awarded a public contract or subcontract, pursuant to Article 8 of the State Labor Law, is available on the New York State Department of Labor's website at http://labor.ny.gov/workerprotection/publicwork/PDFs/debarred.pdf

- A list of contractors deemed ineligible to submit a bid is maintained by Empire State Development's Division of Minority and Women's Business Development.

SECTION 6 GUIDANCE FOR RESTRICTIONS ON LOBBYING

The requirements of this section apply to all Contracts and Subcontracts greater than $100,000.

With their bid or proposal submittal, each Contractor and any Subcontractor that has a Contract or Subcontract exceeding $100,000 shall provide to the Recipient a completed Certification Regarding Lobbying pursuant to 40 CFR Part 34 ("Lobbying Certification") on Attachment 3 consistent with the prescribed form provided in Appendix A to 40 CFR Part 34. The form provides a certification that the Contractor or Subcontractor will not expend appropriated federal funds to pay any person for influencing or attempting to influence an officer or employee of any agency, Member of Congress, officer or employee of Congress or any employee of any Member of Congress in accordance with the provisions of 40 CFR Part 34, and to maintain such certification for their own records.

SECTION 7 GUIDANCE ON PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT

The requirements of this section apply to all Contracts and Subcontracts.

Effective August 13, 2020, Recipients of SRF funding must comply with regulations at 2 CFR 200.216, *Prohibition on certain telecommunication and video surveillance services or equipment*, implementing section 889 of Public Law 115-232. The regulation prohibits the use of Federal funds to procure (enter into, extend, or renew contracts) or obtain equipment, systems, or services that use "covered telecommunications equipment or services" identified in the regulation as a substantial or essential component of any system, or as critical technology as part of any system. Prohibitions extend to the use of Federal funds by recipients and subrecipients to enter into a contract with an entity that "uses any equipment, system, or service that uses covered telecommunications equipment or services" as a substantial or essential component of any system, or as critical technology as part of any system. Certain equipment, systems, or services, including equipment, systems, or services produced or provided by entities subject to the prohibition are recorded in the System for Award Management exclusion list.

There is no exhaustive list of components and services that fall under the prohibition. Contractors should exercise due diligence and be particularly mindful of procuring and installing project components with internet or cellular connections. Examples of common video and telecommunications equipment include, automatic meter reading (AMR) technology and advanced metering infrastructure (AMI), instrumentation control systems (e.g. process control systems, distributed control systems and programmable logic controls), and security cameras and other electronic security measures. Items included in the prohibition are not eligible SRF costs, and the SRF programs cannot reimburse Recipients for these costs.

SECTION 8 GUIDANCE FOR CONSTRUCTION SIGNS

The requirements of this section apply to all EFC projects. Specific signage is required for projects receiving financing from the federal Bipartisan Infrastructure Law (BIL).

All projects are expected to post a construction sign, the Recipient may determine the party required to provide and install the sign. Sample construction sign specifications can be found at www.efc.ny.gov for standard signage or BIL signage, as applicable.

SECTION 9 SUMMARY OF CONTRACTOR REQUIREMENTS FOR SRF-FUNDED EQUIVALENCY PROJECTS

Forms can be found as attachments to this document or online at www.efc.ny.gov

Forms should be submitted electronically via email or through EFC's dropbox

To be submitted with this bid:	**Guidance Section**
☐ Lobbying Certification	Section 6
☐ BABA Contractor's Certification	Section 3
☐ AIS Contractor's Certification	Section 3

To be submitted prior to or upon Contract award:

☐ Executed Contracts, Subcontracts, agreements, and purchase orders	
☐ Utilization Plan and/or Good Faith Effort Documentation	Section 2

Tasks for construction start:

☐ Ensure that all Subcontracts contain correct Required EFC Terms & Conditions	
☐ Display EEO Poster	Section 2
☐ Display Waste, Fraud and Abuse Poster	Section 2
☐ Ensure Construction Sign is Posted	Section 8
☐ Pay the higher of prevailing federal, state, or local wages including benefits	Section 4
☐ Display Davis Bacon Wage Poster AND Federal Wage Rates	Section 4
☐ Use Federal Payroll Form (WH-347) or equivalent	Section 4
☐ Obtain apprentice and trainee certifications	Section 4
☐ Obtain BABA or AIS Manufacturer's Certs for all applicable products	Section 3

Ongoing documentation & tasks:

☐ Submit EEO-1 Report, online	Section 2
☐ Submit Quarterly Reports to MBO	Section 2
☐ Maintain weekly certified payrolls for all Prime & Subcontractors	Section 4
☐ Maintain proof of payments for DBE Subcontractors	Section 2
☐ Maintain BABA or AIS Manufacturer's Certifications	Section 3

ATTACHMENTS (Required Forms)

Attachment 1 – EEO Poster

Know Your Rights:
Workplace Discrimination is Illegal

The U.S. Equal Employment Opportunity Commission (EEOC) enforces Federal laws that protect you from discrimination in employment. If you believe you've been discriminated against at work or in applying for a job, the EEOC may be able to help.

Who is Protected?

- Employees (current and former), including managers and temporary employees
- Job applicants
- Union members and applicants for membership in a union

What Organizations are Covered?

- Most private employers
- State and local governments (as employers)
- Educational institutions (as employers)
- Unions
- Staffing agencies

What Types of Employment Discrimination are Illegal?

Under the EEOC's laws, an employer may not discriminate against you, regardless of your immigration status, on the bases of:

- Race
- Color
- Religion
- National origin
- Sex (including pregnancy, childbirth, and related medical conditions, sexual orientation, or gender identity)
- Age (40 and older)
- Disability
- Genetic information (including employer requests for, or purchase, use, or disclosure of genetic tests, genetic services, or family medical history)
- Retaliation for filing a charge, reasonably opposing discrimination, or participating in a discrimination lawsuit, investigation, or proceeding
- Interference, coercion, or threats related to exercising rights regarding disability discrimination or pregnancy accommodation

What Employment Practices can be Challenged as Discriminatory?

All aspects of employment, including:

- Discharge, firing, or lay-off
- Harassment (including unwelcome verbal or physical conduct)
- Hiring or promotion
- Assignment
- Pay (unequal wages or compensation)
- Failure to provide reasonable accommodation for a disability; pregnancy, childbirth, or related medical condition; or a sincerely-held religious belief, observance or practice
- Benefits
- Job training
- Classification
- Referral
- Obtaining or disclosing genetic information of employees
- Requesting or disclosing medical information of employees
- Conduct that might reasonably discourage someone from opposing discrimination, filing a charge, or participating in an investigation or proceeding
- Conduct that coerces, intimidates, threatens, or interferes with someone exercising their rights, or someone assisting or encouraging someone else to exercise rights, regarding disability discrimination (including accommodation) or pregnancy accommodation

What can You Do if You Believe Discrimination has Occurred?

Contact the EEOC promptly if you suspect discrimination. Do not delay, because there are strict time limits for filing a charge of discrimination (180 or 300 days, depending on where you live/work). You can reach the EEOC in any of the following ways:

Submit an inquiry through the EEOC's public portal (https://publicportal.eeoc.gov/Portal/Login.aspx)

Visit an EEOC field office (www.eeoc.gov/field-office)

Call 1–800–669–4000 (toll free)
1–800–669–6820 (TTY)
1–844–234–5122 (ASL video phone)

E-Mail info@eeoc.gov

Additional information about the EEOC, including information about filing a charge of discrimination, is available at www.eeoc.gov.

EMPLOYERS HOLDING FEDERAL CONTRACTS OR SUBCONTRACTS

The Department of Labor's Office of Federal Contract Compliance Programs (OFCCP) enforces the nondiscrimination and affirmative action commitments of companies doing business with the Federal Government. If you are applying for a job with, or are an employee of, a company with a Federal contract or subcontract, you are protected under Federal law from discrimination on the following bases:

Race, Color, Religion, Sex, Sexual Orientation, Gender Identity, National Origin

Executive Order 11246, as amended, prohibits employment discrimination by Federal contractors based on race, color, religion, sex, sexual orientation, gender identity, or national origin, and requires affirmative action to ensure equality of opportunity in all aspects of employment.

Asking About, Disclosing, or Discussing Pay

Executive Order 11246, as amended, protects applicants and employees of Federal contractors from discrimination based on inquiring about, disclosing, or discussing their compensation or the compensation of other applicants or employees.

Disability

Section 503 of the Rehabilitation Act of 1973, as amended, protects qualified individuals with disabilities from discrimination in hiring, promotion, discharge, pay, fringe benefits, job training, classification, referral, and other aspects of employment by Federal contractors. Disability discrimination includes not making reasonable accommodation to the known physical or mental limitations of an otherwise qualified individual with a disability who is an applicant or employee, barring undue hardship to the employer. Section 503 also requires that Federal contractors take affirmative action to employ and advance in employment qualified individuals with disabilities at all levels of employment, including the executive level.

Protected Veteran Status

The Vietnam Era Veterans' Readjustment Assistance Act of 1974, as amended, 38 U.S.C. 4212, prohibits employment discrimination against, and requires affirmative action to recruit, employ, and advance in employment, disabled veterans, recently separated veterans (i.e., within three years of discharge or release from active duty), active duty wartime or campaign badge veterans, or Armed Forces service medal veterans.

Retaliation

Retaliation is prohibited against a person who files a complaint of discrimination, participates in an OFCCP proceeding, or otherwise opposes discrimination by Federal contractors under these Federal laws.

Any person who believes a contractor has violated its nondiscrimination or affirmative action obligations under OFCCP's authorities should contact immediately:

The Office of Federal Contract Compliance Programs (OFCCP)
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, D.C. 20210
1–800–397–6251 (toll-free)

If you are deaf, hard of hearing, or have a speech disability, please dial 7–1–1 to access telecommunications relay services. OFCCP may also be contacted by submitting a question online to OFCCP's Help Desk (https://ofccphelpdesk.dol.gov/s/), or by calling an OFCCP regional or district office, listed in most telephone directories under U.S. Government, Department of Labor and on OFCCP's "Contact Us" webpage (https://www.dol.gov/agencies/ofccp/contact).

PROGRAMS OR ACTIVITIES RECEIVING FEDERAL FINANCIAL ASSISTANCE

Race, Color, National Origin, Sex

In addition to the protections of Title VII of the Civil Rights Act of 1964, as amended, Title VI of the Civil Rights Act of 1964, as amended, prohibits discrimination on the basis of race, color or national origin in programs or activities receiving Federal financial assistance. Employment discrimination is covered by Title VI if the primary objective of the financial assistance is provision of employment, or where employment discrimination causes or may cause discrimination in providing services under such programs. Title IX of the Education Amendments of 1972 prohibits employment discrimination on the basis of sex in educational programs or activities which receive Federal financial assistance.

Individuals with Disabilities

Section 504 of the Rehabilitation Act of 1973, as amended, prohibits employment discrimination on the basis of disability in any program or activity which receives Federal financial assistance. Discrimination is prohibited in all aspects of employment against persons with disabilities who, with or without reasonable accommodation, can perform the essential functions of the job.

If you believe you have been discriminated against in a program of any institution which receives Federal financial assistance, you should immediately contact the Federal agency providing such assistance.

(Revised 6/27/2023)

Attachment 2 – EFC DBE Utilization Plan

NYS Environmental Facilities Corporation
Disadvantaged Business Enterprise (DBE) Utilization Plan

Instructions for Contractors & Service Providers:

Contractors and Service Providers must complete Sections 2 and 3. **Submit the completed, signed (electronic signature box checked and dated) form to the Recipient's Minority Business Officer (MBO) no later than the date of contract execution.** Incomplete forms will be found deficient. If more than 10 subcontractors are used, additional pages for Section 3 can be obtained from EFC.

If the prime contract is being performed by the parties to a Joint Venture, Teaming Agreement, or Mentor-Protégé Agreement that includes a certified DBE, please contact EFC for assistance.

DBEs on this form may include disadvantaged firms certified by the New York State Unified Certification Program (NYSUCP), and disadvantaged firms certified by the Small Business Administration. In addition, the participation of DBEs will be credited according to the following requirements:

- Contractors cannot count the participation of a DBE who acts as a broker or passive conduit of funds without performing, managing, or supervising the work of its contract or subcontract in a manner consistent with normal business practices. If 50% or more of the total dollar amount of a DBE's prime contract or subcontract is subcontracted to a non–DBE, the DBE prime contractor or subcontractor will be presumed to be a broker.
- Contractors may count the participation of a DBE trucker/hauler only if the trucker/hauler is performing a "commercially useful function," according to the following factors:
    - The DBE must be responsible for the management and supervision of the entire trucking/hauling operation for which it is responsible on a particular contract, and there cannot be a contrived arrangement for the purpose of meeting DBE objectives.
    - The DBE must itself own and operate at least one fully licensed, insured, and operational truck used on the contract.

See the Mandatory Equivalency Terms and Conditions or consult your designated MBO for further guidance.

Instructions for Minority Business Officers (MBO):

The MBO must complete Section 1. Email the completed, signed (electronic signature box checked and dated) form to your EFC Program Compliance Specialist.

The subject heading of the email to the EFC Program Compliance Specialist should follow the format "UP, Project Number, Contractor." EFC will review the Utilization Plan and email the MBO an acceptance or denial.

If the Utilization Plan will not meet or exceed the DBE fair share objective, then the good faith effort documentation noted in Section 4 must be submitted with this form.

NYS Environmental Facilities Corporation
Disadvantaged Business Enterprise (DBE) Utilization Plan

SECTION 1: MUNICIPAL INFORMATION			
Recipient/Municipality:		**County:**	
Project No.:	**Contract ID:**	**Registration No. (NYC only):**	
Minority Business Officer:	**Email:**	**Phone #:**	
Address of MBO:			
Electronic Signature of MBO: ☐ I certify that the information submitted herein is true, accurate and complete to the best of my knowledge and belief.			**Date:**

SECTION 2: PRIME CONTRACTOR / SERVICE PROVIDER INFORMATION				
Firm Name:			**Contract Type:** ☐ Construction ☐ Other Services	
Is the Prime Firm certified as a DBE? ☐ Yes ☐ No If yes, please include Prime information in Section 3.				
Address:		**Phone #:**	**Fed. Employer ID #:**	
Description of Work:		**Email:**		
Award Date:	**Start Date:**	**Completion Date:**	**DBE Fair Share Objective**	**PROPOSED DBE Participation**
Total Contract Amount: $ **DBE Eligible Contract Amount: $** (DBE Fair Share Objectives are applied to this amount and includes all change orders, amendments, & specialty waivers)			**Total: 20**% $	**Total:** % $
If fair share objectives are not met, documentation must be attached: ☐ No Participation ☐ Short of the DBE Fair Share Objective				
☐ **Specialty Equipment/Services:** must be of SIGNIFICANT cost – attach list of cost and type of equipment and good faith effort documentation				

NYS Environmental Facilities Corporation
Disadvantaged Business Enterprise (DBE) Utilization Plan

SECTION 3: DBE SUBCONTRACTOR INFORMATION			
This Submittal is:	☐ The First/Original Utilization Plan ☐ Revised Utilization Plan #:		
DBE Subcontractor Information		**Contract Amount**	**For EFC Use:**
Business Name:	**Fed. Employer ID#:**		
Address:	**Phone #:**		
Scope of Work:	**Email:**		
Certifying Entity: ☐ DOT in State of _______; or ☐ SBA ☐ Other (indicate entity): _________________	**Start Date:** **Completion Date:**		
Business Name:	**Fed. Employer ID#:**		
Address:	**Phone #:**		
Scope of Work:	**Email:**		
Certifying Entity: ☐ DOT in State of _______; or ☐ SBA ☐ Other (indicate entity): _________________	**Start Date:** **Completion Date:**		
Business Name:	**Fed. Employer ID#:**		
Address:	**Phone #:**		
Scope of Work:	**Email:**		
Certifying Entity: ☐ DOT in State of _______; or ☐ SBA ☐ Other (indicate entity): _________________	**Start Date:** **Completion Date:**		
Business Name:	**Fed. Employer ID#:**		
Address:	**Phone #:**		
Scope of Work:	**Email:**		
Certifying Entity: ☐ DOT in State of _______; or ☐ SBA ☐ Other (indicate entity): _________________	**Start Date:** **Completion Date:**		
Business Name:	**Fed. Employer ID#:**		
Address:	**Phone #:**		
Scope of Work:	**Email:**		
Certifying Entity: ☐ DOT in State of _______; or ☐ SBA ☐ Other (indicate entity): _________________	**Start Date:** **Completion Date:**		

NYS Environmental Facilities Corporation
Disadvantaged Business Enterprise (DBE) Utilization Plan

SECTION 3: DBE SUBCONTRACTOR INFORMATION continued			
Business Name:	**Fed. Employer ID#:**		
Address:	**Phone #:**		
Scope of Work:	**Email:**		
Certifying Entity: ☐ DOT in State of _______; or ☐ SBA ☐ Other (indicate entity): _________________	**Start Date:** **Completion Date:**		
Business Name:	**Fed. Employer ID#:**		
Address:	**Phone #:**		
Scope of Work:	**Email:**		
Certifying Entity: ☐ DOT in State of _______; or ☐ SBA ☐ Other (indicate entity): _________________	**Start Date:** **Completion Date:**		
Business Name:	**Fed. Employer ID#:**		
Address:	**Phone #:**		
Scope of Work:	**Email:**		
Certifying Entity: ☐ DOT in State of _______; or ☐ SBA ☐ Other (indicate entity): _________________	**Start Date:** **Completion Date:**		
Business Name:	**Fed. Employer ID#:**		
Address:	**Phone #:**		
Scope of Work:	**Email:**		
Certifying Entity: ☐ DOT in State of _______; or ☐ SBA ☐ Other (indicate entity): _________________	**Start Date:** **Completion Date:**		
Business Name:	**Fed. Employer ID#:**		
Address:	**Phone #:**		
Scope of Work:	**Email:**		
Certifying Entity: ☐ DOT in State of _______; or ☐ SBA ☐ Other (indicate entity): _________________	**Start Date:** **Completion Date:**		

NYS Environmental Facilities Corporation
Disadvantaged Business Enterprise (DBE) Utilization Plan

SECTION 4: GOOD FAITH EFFORT DOCUMENTATION
Utilization Plans that do not meet the Fair Share Objective must be accompanied by the documentation requested in numbers 1 – 7, as listed below. Specialty Equipment Exclusion requests must be accompanied by the documentation requested in number 8 – 12, as listed below. Specialty Services Exclusion requests must be accompanied by the documentation requested in number 13, as listed below. Please contact the MBO and/or EFC for assistance or to request sample documentation.

Provide the following:

1. A letter of explanation detailing the scope of work, DBE search results, and results of good faith efforts that were made.

2. A scope of work that shows what subcontracting opportunities are in the contract. This could be an engineering proposal, schedule of values, or other similar documents.

3. Screenshots of search results (using commodity codes) from DBE Directories of all certified DBEs that were solicited for purposes of complying with your DBE fair share objective. Each search should be saved as an individual file.

4. A log of solicitation results, consisting of the list of DBE firms solicited for the contract and the outcome of the solicitations. The log should be broken out into separate areas for each task that is solicited (e.g., trucking, materials, electricians). The log should show that each firm was contacted twice by two different methods (e.g., email and phone); who was spoken to; what was said; and the final outcome of the solicitation.

5. List of the general circulation, trade association, and DBE oriented publications and dates of publication soliciting for certified DBE participation as a subcontractor/supplier and copies of such solicitations.

6. Description of the negotiations between the contractor and certified DBEs for the purposes of complying with the DBE goals of this contract.

7. Any other information deemed relevant to the request.

EFC and the MBO reserve the right to request additional information and/or documentation.

Documentation for Requests for Specialty Equipment Exclusions:

8. A letter of explanation containing information about the equipment, why the equipment is specialty and why no DBE firms could be utilized to provide the equipment.

9. Copies of the appropriate pages of the technical specification related to the equipment showing the choices for manufacturers or other information that limits the choice of vendor.

10. Letter, email, or screenshot of website from the manufacturer listing their distributors in NYS and the locations.

11. Screenshots of DBE Directory searches for the manufacturer and distributor showing that they are not found in the Directory.

12. An invoice or executed purchase order showing the value of the equipment.

NYS Environmental Facilities Corporation
Disadvantaged Business Enterprise (DBE) Utilization Plan

Documentation for Requests for Specialty Service Exclusions:

13. A letter of explanation containing information about the scope of work and why no DBE firms could be subcontracted to provide that service.

SIGNATURE	
Electronic Signature of Contractor: ☐ I certify that the information submitted herein is true, accurate and complete to the best of my knowledge and that all DBE subcontractors will participate in subcontracts in accordance with the requirements of 40 CFR Part 33. **Name** (Please Type)**:**	**Date:**

Attachment 3 – Lobbying Certification

New York State Environmental Facilities Corporation
CERTIFICATION REGARDING LOBBYING
FOR
CONTRACTS, GRANTS, LOANS, AND
COOPERATIVE AGREEMENTS
40 CFR Part 34

SRF Project No.:
Recipient:
Project Description:

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

Signature:
Name:
Title:
Company Name:
Date:
Contract ID:

Attachment 4 – BABA Contractor's Certification

BABA CONTRACTOR CERTIFICATION

FOR EQUIVALENCY CONSTRUCTION CONTRACTS PAID FOR WITH FUNDS THROUGH

THE NYS CLEAN WATER STATE REVOLVING FUND, OVERFLOW AND STORMWATER GRANTS
OR

THE NYS DRINKING WATER STATE REVOLVING FUND VIA THE

NYS ENVIRONMENTAL FACILITIES CORPORATION

Project Title: _____

Contractor's Name: _____

Contract ID: _____

SRF Project No.: _____

SRF Recipient Name: _____

I certify that all iron and steel, manufactured products and construction materials permanently incorporated into the project under this construction contract will be and/or have been produced in the United States, in accordance with the requirements of the United States Environmental Protection Agency and Pub. L. No. 117-58 and any regulations promulgated thereunder. I will develop and maintain the necessary documentation to demonstrate that the applicable products permanently incorporated into the project were produced in the United States and make such documentation available to The New York State Environmental Facilities Corporation or their authorized representatives, upon request.

Signature: _____

Name (print): _____

Title: _____

Date: _____

Attachment 5 – AIS Contractor's Certification

AIS CONTRACTOR CERTIFICATION

FOR CONSTRUCTION CONTRACTS FUNDED THROUGH

THE NYS CLEAN WATER STATE REVOLVING FUND, OVERFLOW AND STORMWATER GRANTS
OR

THE NYS DRINKING WATER STATE REVOLVING FUND VIA THE

NYS ENVIRONMENTAL FACILITIES CORPORATION

Project Title: _____

Contractor's Name: _____

Contract ID: _____

SRF Project No.: _____

SRF Recipient Name: _____

I certify that the iron and steel products permanently incorporated into the public water system or wastewater treatment works project under this construction contract will be and/or have been produced in the United States, in accordance with the requirements of the United States Environmental Protection Agency and 33 U.S.C. § 1388, 42 U.S.C. § 300j-12(a)(4) and any regulations promulgated thereunder. I will develop and maintain necessary documentation to demonstrate that the iron and steel products permanently incorporated into the project were produced in the United States, and make such documentation available to The New York State Environmental Facilities Corporation or their authorized representatives, upon request.

Signature: _____

Name (print): _____

Title: _____

Date: _____

Attachment 6 – AIS Sample Manufacturer's Certification

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

   Date

   Company Name

   Company Address

   City, State Zip

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

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

   Item, Products and/or Materials:

   1. Xxxx

   2. Xxxx

   3. Xxxx

   Such process took place at the following location: _____

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

   [Signed by company representative]

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

   Date

   Company Name

   Company Address

   City, State Zip

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

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

   Item, Products and/or Materials:

   1. Xxxx

   2. Xxxx

   3. Xxxx

   Such process took place at the following location: _____

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

   [Signed by company representative]

Attachment 7 – Federal Payroll Form (WH-347)

U.S. Department of Labor
Wage and Hour Division

PAYROLL

For contractor's optional use; see instructions at dol.gov/agencies/whd/forms/wh347

Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number.

WAGE AND HOUR DIVISION
Revised December 2008

OMB No. 1235-0008
Expires 09/30/2026

NAME OF CONTRACTOR ☐ OR SUBCONTRACTOR ☐	ADDRESS

PAYROLL NO.	FOR WEEK ENDING	PROJECT AND LOCATION	PROJECT OR CONTRACT NO.

(1) NAME AND INDIVIDUAL IDENTIFYING NUMBER (e.g., LAST FOUR DIGITS OF SOCIAL SECURITY NUMBER) OF WORKER	(2) NO. OF WITHHOLDING EXEMPTIONS	(3) WORK CLASSIFICATION	OT. OR ST.	(4) DAY AND DATE / HOURS WORKED EACH DAY							(5) TOTAL HOURS	(6) RATE OF PAY	(7) GROSS AMOUNT EARNED	(8) DEDUCTIONS: FICA	WITH-HOLDING TAX			OTHER	TOTAL DEDUCTIONS	(9) NET WAGES PAID FOR WEEK
			O										$0.00						$0.00	$0.00
			S																	
			O										$0.00						$0.00	$0.00
			S																	
			O										$0.00						$0.00	$0.00
			S																	
			O										$0.00						$0.00	$0.00
			S																	
			O										$0.00						$0.00	$0.00
			S																	
			O										$0.00						$0.00	$0.00
			S																	
			O										$0.00						$0.00	$0.00
			S																	
			O										$0.00						$0.00	$0.00
			S																	

While completion of Form WH-347 is optional, it is mandatory for covered contractors and subcontractors performing work on Federally financed or assisted construction contracts to respond to the information collection contained in 29 C.F.R. §§ 3.3, 5.5(a). The Copeland Act (40 U.S.C. § 3145) contractors and subcontractors performing work on Federally financed or assisted construction contracts to "furnish weekly a statement with respect to the wages paid each employee during the preceding week." U.S. Department of Labor (DOL) regulations at 29 C.F.R. § 5.5(a)(3)(ii) require contractors to submit weekly a copy of all payrolls to the Federal agency contracting for or financing the construction project, accompanied by a signed "Statement of Compliance" indicating that the payrolls are correct and complete and that each laborer or mechanic has been paid not less than the proper Davis-Bacon prevailing wage rate for the work performed. DOL and federal contracting agencies receiving this information review the information to determine that employees have received legally required wages and fringe benefits.

Public Burden Statement

We estimate that is will take an average of 55 minutes to complete this collection, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. If you have any comments regarding these estimates or any other aspect of this collection, including suggestions for reducing this burden, send them to the Administrator, Wage and Hour Division, U.S. Department of Labor, Room S3502, 200 Constitution Avenue, N.W. Washington, D.C. 20210

(over)

Date _____

I, _____ _____
(Name of Signatory Party) (Title)

do hereby state:

(1) That I pay or supervise the payment of the persons employed by

_____ on the
(Contractor or Subcontractor)

_____; that during the payroll period commencing on the
(Building or Work)

_____ day of _____, _____, and ending the _____ day of _____, _____,

all persons employed on said project have been paid the full weekly wages earned, that no rebates have been or will be made either directly or indirectly to or on behalf of said

_____ from the full
(Contractor or Subcontractor)

weekly wages earned by any person and that no deductions have been made either directly or indirectly from the full wages earned by any person, other than permissible deductions as defined in Regulations, Part 3 (29 C.F.R. Subtitle A), issued by the Secretary of Labor under the Copeland Act, as amended (48 Stat. 948, 63 Stat. 108, 72 Stat. 967; 76 Stat. 357; 40 U.S.C. § 3145), and described below:

_____

_____

_____

_____

(2) That any payrolls otherwise under this contract required to be submitted for the above period are correct and complete; that the wage rates for laborers or mechanics contained therein are not less than the applicable wage rates contained in any wage determination incorporated into the contract; that the classifications set forth therein for each laborer or mechanic conform with the work he performed.

(3) That any apprentices employed in the above period are duly registered in a bona fide apprenticeship program registered with a State apprenticeship agency recognized by the Bureau of Apprenticeship and Training, United States Department of Labor, or if no such recognized agency exists in a State, are registered with the Bureau of Apprenticeship and Training, United States Department of Labor.

(4) That:

(a) WHERE FRINGE BENEFITS ARE PAID TO APPROVED PLANS, FUNDS, OR PROGRAMS

☐ – in addition to the basic hourly wage rates paid to each laborer or mechanic listed in the above referenced payroll, payments of fringe benefits as listed in the contract have been or will be made to appropriate programs for the benefit of such employees, except as noted in section 4(c) below.

(b) WHERE FRINGE BENEFITS ARE PAID IN CASH

☐ – Each laborer or mechanic listed in the above referenced payroll has been paid, as indicated on the payroll, an amount not less than the sum of the applicable basic hourly wage rate plus the amount of the required fringe benefits as listed in the contract, except as noted in section 4(c) below.

(c) EXCEPTIONS

EXCEPTION (CRAFT)	EXPLANATION

REMARKS:

NAME AND TITLE	SIGNATURE

THE WILLFUL FALSIFICATION OF ANY OF THE ABOVE STATEMENTS MAY SUBJECT THE CONTRACTOR OR SUBCONTRACTOR TO CIVIL OR CRIMINAL PROSECUTION. SEE SECTION 1001 OF TITLE 18 AND SECTION 3729 OF TITLE 31 OF THE UNITED STATES CODE.

Attachment 8 – Davis Bacon Wage Poster

EMPLOYEE RIGHTS

UNDER THE DAVIS-BACON ACT

FOR LABORERS AND MECHANICS EMPLOYED ON FEDERAL OR FEDERALLY ASSISTED CONSTRUCTION PROJECTS

PREVAILING WAGES

You must be paid not less than the wage rate listed in the Davis-Bacon Wage Decision posted with this Notice for the work you perform.

OVERTIME

You must be paid not less than one and one-half times your basic rate of pay for all hours worked over 40 in a work week. There are few exceptions.

ENFORCEMENT

Contract payments can be withheld to ensure workers receive wages and overtime pay due, and liquidated damages may apply if overtime pay requirements are not met. Davis-Bacon contract clauses allow contract termination and debarment of contractors from future federal contracts for up to three years. A contractor who falsifies certified payroll records or induces wage kickbacks may be subject to civil or criminal prosecution, fines and/or imprisonment.

APPRENTICES

Apprentice rates apply only to apprentices properly registered under approved Federal or State apprenticeship programs.

PROPER PAY

If you do not receive proper pay, or require further information on the applicable wages, contact the Contracting Officer listed below:

or contact the U.S. Department of Labor's Wage and Hour Division.

WAGE AND HOUR DIVISION
UNITED STATES DEPARTMENT OF LABOR

1-866-487-9243
TTY: 1-877-889-5627
www.dol.gov/whd

WH1321 REV 10/17

Attachment 9 – Wage Interview Form (SF-1445)

LABOR STANDARDS INTERVIEW

CONTRACT NUMBER	EMPLOYEE INFORMATION		
	LAST NAME	FIRST NAME	MI
NAME OF PRIME CONTRACTOR			
	STREET ADDRESS		
NAME OF EMPLOYER			
	CITY	STATE	ZIP CODE
SUPERVISOR'S NAME			
LAST NAME / FIRST NAME / MI	WORK CLASSIFICATION	WAGE RATE	

ACTION	CHECK BELOW YES	NO
Do you work over 8 hours per day?		
Do you work over 40 hours per week?		
Are you paid at least time and a half for overtime hours?		
Are you receiving any cash payments for fringe benefits required by the posted wage determination decision?		

WHAT DEDUCTIONS OTHER THAN TAXES AND SOCIAL SECURITY ARE MADE FROM YOUR PAY?

	TOOLS YOU USE	
HOW MANY HOURS DID YOU WORK ON YOUR LAST WORK DAY BEFORE THIS INTERVIEW?		
DATE OF LAST WORK DAY BEFORE INTERVIEW *(YYMMDD)*		
DATE YOU BEGAN WORK ON THIS PROJECT *(YYMMDD)*		

THE ABOVE IS CORRECT TO THE BEST OF MY KNOWLEDGE

EMPLOYEE'S SIGNATURE	DATE *(YYMMDD)*

INTERVIEWER	SIGNATURE	TYPED OR PRINTED NAME	DATE *(YYMMDD)*

INTERVIEWER'S COMMENTS

WORK EMPLOYEE WAS DOING WHEN INTERVIEWED	ACTION *(If explanation is needed, use comments section)*	YES	NO
	IS EMPLOYEE PROPERLY CLASSIFIED AND PAID?		
	ARE WAGE RATES AND POSTERS DISPLAYED?		

FOR USE BY PAYROLL CHECKER

IS ABOVE INFORMATION IN AGREEMENT WITH PAYROLL DATA?

☐ YES ☐ NO

COMMENTS

CHECKER

LAST NAME	FIRST NAME	MI	JOB TITLE

SIGNATURE	DATE *(YYMMDD)*

Attachment 10 – Waste, Fraud and Abuse Poster

OFFICE OF INSPECTOR GENERAL
U.S ENVIRONMENTAL PROTECTION AGENCY

To file a complaint, go to: epaoig.gov/epa-oig-hotline-information

Visit epaoig.gov for anonymity guidelines and whistleblower information.

Section 01 58 00 Specification for New York State Environmental Facilities Corporation Financing Signage

PART 1 GENERAL

1.1 SUMMARY

A. This specification covers the fabrication and installation of a construction sign for facilities receiving funding from the New York State Environmental Facilities Corporation (EFC) through the Clean Water State Revolving Fund (CWSRF), Drinking Water State Revolving Fund (DWSRF), Bipartisan Infrastructure Law (BIL), New York State Water Infrastructure Improvement (WIIA) or Intermunicipal Grants (IMG) programs, Green Innovation Grant Program (GIGP), or Overflow and Stormwater Grants (OSG).

1.2 RELATED SECTIONS

A. None

1.3 SUBMITTALS

A. Shop Drawings: In compliance with direction from the Owner, the Contractor shall prepare and submit a site plan and mock-up of temporary project signs.

PART 2 PRODUCTS

2.1 GENERAL

A. The sign shall be fabricated and erected within 21 days following the notice to proceed on the first contract at the facility and shall be maintained by site Contractors, as directed by the Owner, until final construction completion for all funded projects at the facility.

B. For facilities with funding from multiple sources, the logos outlined below must be included on a single project sign including the text “Funded by”, as approved by the funding agencies.

C. There should be one project sign. If the project has multiple locations, one project sign centrally located as directed by the Owner is acceptable.

D. The attached EFC Project Sign Schematic aligning with funding anticipated for this project shall be used when no other sign exists.

2.2 MATERIALS AND FABRICATION

A. Sign Panel: The sign panel shall be constructed of 3/4" minimum thickness marine plywood rabbeted into a 2"x4" lumber frame or other such materials capable of withstanding typical weather conditions common to the project area. Use of recycled or recovered materials is encouraged.

B. Fasteners: All fasteners used in the fabrication of the sign shall be rust-proof.

C. Sign Supports: The sign shall be adequately supported and braced to remain in the proper positioning and alignment, including resistance to wind loads and toppling of the sign.

E. Coating: All paint or exterior coverings used shall be exterior grade coating suitable for use on wood or the material of construction. The sign face background and sign back shall be white and consist of a minimum two coats of paint.

F. Lettering and Emblem: The sign shall include the following logos in an aspect ratio consistent with other lettering on the sign but not less than a height of 2.0".

1. The EFC logo available at https://efc.ny.gov/efc-logo-pdf

2. For DWSRF, DW WIIA, or DW IMG projects: The New York State Department of Health (DOH) logo available at https://efc.ny.gov/efc-doh-logo

3. For CWSRF, OSG, and DWSRF projects: The EPA logo available at https://efc.ny.gov/epa-logo, consistent with the EPA Logo & Seal Specifications for Signage Produced by EPA Assistance Agreement Recipients as outlined in https://www.epa.gov/sites/default/files/2015-01/documents/epa_logo_seal_specifications_for_infrastructure_grants.pdf

4. For CWSRF projects incorporate the following language:

This project is jointly funded by the New York State Clean Water State Revolving Fund and the U.S. Environmental

Protection Agency. The CWSRF is administered by the New York State Environmental Facilities Corporation

5. For DWSRF projects incorporate the following language:

This project is jointly funded by the New York State Drinking Water State Revolving Fund and the U.S. Environmental Protection Agency. The DWSRF is administered by the New York State Environmental Facilities Corporation with its partner the New York State Department of Health

PART 3 EXECUTION

3.1 INSTALLATION

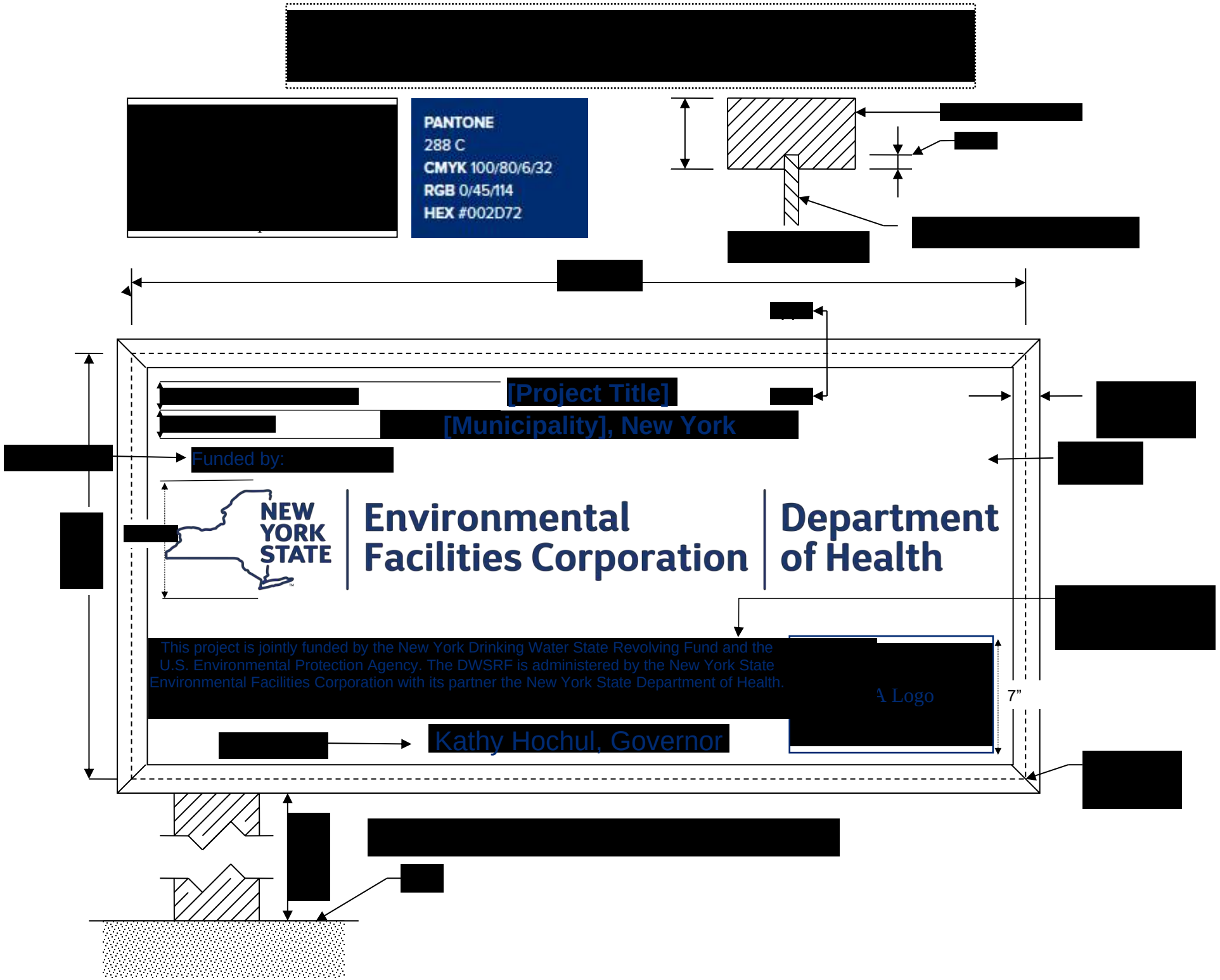
A. The project sign shall be erected in the location and alignment, as directed by the Engineer or the Owner, with the bottom of the sign panel a minimum of five feet above existing grade.

3.2 MAINTENANCE

A. The Contractor shall provide all materials required to maintain the sign in good condition throughout the duration of the work.

B. Upon notification of the Owner, the Contractor shall remove the sign from the construction site.

End of Section


PANTONE
288 C
CMYK 100/80/6/32
RGB 0/45/114
HEX #002D72
[Project Title]
[Municipality], New York
Funded by:
NEW YORK STATE
Environmental Facilities Corporation
Department of Health
This project is jointly funded by the New York Drinking Water State Revolving Fund and the U.S. Environmental Protection Agency. The DWSRF is administered by the New York State Environmental Facilities Corporation with its partner the New York State Department of Health.
A Logo
7”
Kathy Hochul, Governor

SECTION 007345 – NEW YORK STATE WAGE RATE SCHEDULE

See attached Wage Rate Schedule.

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Kathy Hochul, Governor

Roberta Reardon, Commissioner

City of Rome, NY

Megan McCoskey
Megan McCoskey
CDM Smith
3 Lear Jet Lane, Suite 100N
Latham NY 12110

Schedule Year	2024 through 2025
Date Requested	01/23/2025
PRC#	2025000921

Location	Kessinger Dam
Project ID#	
Project Type	Concrete rehabilitation of the spillway, non-overflow sections, gatehouse and flip bucket. Replacement of manual strainers with auto strainers at the screens, new mixers, and a floating ice boom.

PREVAILING WAGE SCHEDULE FOR ARTICLE 8 PUBLIC WORK PROJECT

Attached is the current schedule(s) of the prevailing wage rates and prevailing hourly supplements for the project referenced above. A unique Prevailing Rate Case Number (PRC#) has been assigned to the schedule(s) for your project.

The schedule is effective from July 2024 through June 2025. All updates, corrections, posted on the 1st business day of each month, and future copies of the annual determination are available on the Department's website www.labor.ny.gov. Updated PDF copies of your schedule can be accessed by entering your assigned PRC# at the proper location on the website.

It is the responsibility of the contracting agency or its agent to annex and make part, the attached schedule, to the specifications for this project, when it is advertised for bids and /or to forward said schedules to the successful bidder(s), immediately upon receipt, in order to insure the proper payment of wages.

Please refer to the "General Provisions of Laws Covering Workers on Public Work Contracts" provided with this schedule, for the specific details relating to other responsibilities of the Department of Jurisdiction.

Upon completion or cancellation of this project, enter the required information and mail **OR** fax this form to the office shown at the bottom of this notice, **OR** fill out the electronic version via the NYSDOL website.

NOTICE OF COMPLETION / CANCELLATION OF PROJECT

Date Completed: _____ Date Cancelled: _____

Name & Title of Representative: _____

Phone: (518) 457-5589 Fax: (518) 485-1870
W. Averell Harriman State Office Campus, Bldg. 12, Room 130, Albany, NY 12240

General Provisions of Laws Covering Workers on Article 8 Public Work Contracts

Introduction

The Labor Law requires public work contractors and subcontractors to pay laborers, workers, or mechanics employed in the performance of a public work contract not less than the prevailing rate of wage and supplements (fringe benefits) in the locality where the work is performed.

Responsibilities of the Department of Jurisdiction

A Department of Jurisdiction (Contracting Agency) includes a state department, agency, board or commission: a county, city, town or village; a school district, board of education or board of cooperative educational services; a sewer, water, fire, improvement and other district corporation; a public benefit corporation; and a public authority awarding a public work contract.

The Department of Jurisdiction (Contracting Agency) awarding a public work contract MUST obtain a Prevailing Rate Schedule listing the hourly rates of wages and supplements due the workers to be employed on a public work project. This schedule may be obtained by completing and forwarding a "Request for wage and Supplement Information" form (PW 39) to the Bureau of Public Work. The Prevailing Rate Schedule MUST be included in the specifications for the contract to be awarded and is deemed part of the public work contract.

Upon the awarding of the contract, the law requires that the Department of Jurisdiction (Contracting Agency) furnish the following information to the Bureau: the name and address of the contractor, the date the contract was let and the approximate dollar value of the contract. To facilitate compliance with this provision of the Labor Law, a copy of the Department's "Notice of Contract Award" form (PW 16) is provided with the original Prevailing Rate Schedule.

The Department of Jurisdiction (Contracting Agency) is required to notify the Bureau of the completion or cancellation of any public work project. The Department's PW 200 form is provided for that purpose.

Both the PW 16 and PW 200 forms are available for completion online.

Hours

No laborer, worker, or mechanic in the employ of a contractor or subcontractor engaged in the performance of any public work project shall be permitted to work more than eight hours in any day or more than five days in any week, except in cases of extraordinary emergency. The contractor and the Department of Jurisdiction (Contracting Agency) may apply to the Bureau of Public Work for a dispensation permitting workers to work additional hours or days per week on a particular public work project.

Wages and Supplements

The wages and supplements to be paid and/or provided to laborers, workers, and mechanics employed on a public work project shall be not less than those listed in the current Prevailing Rate Schedule for the locality where the work is performed. If a prime contractor on a public work project has not been provided with a Prevailing Rate Schedule, the contractor must notify the Department of Jurisdiction (Contracting Agency) who in turn must request an original Prevailing Rate Schedule form the Bureau of Public Work. Requests may be submitted by: mail to NYSDOL, Bureau of Public Work, State Office Bldg. Campus, Bldg. 12, Rm. 130, Albany, NY 12226; Fax to Bureau of Public Work (518) 485-1870; or electronically at the NYSDOL website www.labor.ny.gov.

Upon receiving the original schedule, the Department of Jurisdiction (Contracting Agency) is REQUIRED to provide complete copies to all prime contractors who in turn MUST, by law, provide copies of all applicable county schedules to each subcontractor and obtain from each subcontractor, an affidavit certifying such schedules were received. If the original schedule expired, the contractor may obtain a copy of the new annual determination from the NYSDOL website www.labor.ny.gov.

The Commissioner of Labor makes an annual determination of the prevailing rates. This determination is in effect from July 1st through June 30th of the following year. The annual determination is available on the NYSDOL website www.labor.ny.gov.

Payrolls and Payroll Records

Every contractor and subcontractor MUST keep original payrolls or transcripts subscribed and affirmed as true under penalty of perjury. As per Article 6 of the Labor law, contractors and subcontractors are required to establish, maintain, and preserve for not less than six (6) years, contemperaneous, true, and accurate payroll records. At a minimum, payrolls must show the following information for each person employed on a public work project: Name, Address, Last 4 Digits of Social Security Number, Classification(s) in which the worker was employed, Hourly wage rate(s) paid, Supplements paid or provided, and Daily and weekly number of hours worked in each classification.

The filing of payrolls to the Department of Jurisdiction is a condition of payment.Every contractor and subcontractor shall submit to the Department of Jurisdiction (Contracting Agency), within thirty (30) days after issuance of its first payroll and every thirty (30) days thereafter, a transcript of the original payrolls, subscribed and affirmed as true under penalty of perjury. The Department of Jurisdiction (Contracting Agency) shall collect, review for facial validity, and maintain such payrolls.

In addition, the Commissioner of Labor may require contractors to furnish, with ten (10) days of a request, payroll records sworn to as their validity and accuracy for public work and private work. Payroll records include, but are not limited to time cards, work description sheets, proof that supplements were provided, cancelled payroll checks and payrolls. Failure to provide the requested information within the allotted ten (10) days will result in the withholding of up to 25% of the contract, not to exceed $100,000.00. If the contractor or subcontractor does not maintain a place of business in New York State and the amount of the contract exceeds $25,000.00, payroll records and certifications must be kept on the project worksite.

The prime contractor is responsible for any underpayments of prevailing wages or supplements by any subcontractor.

All contractors or their subcontractors shall provide to their subcontractors a copy of the Prevailing Rate Schedule specified in the public work contract as well as any subsequently issued schedules. A failure to provide these schedules by a contractor or subcontractor is a violation of Article 8, Section 220-a of the Labor Law.

All subcontractors engaged by a public work project contractor or its subcontractor, upon receipt of the original schedule and any subsequently issued schedules, shall provide to such contractor a verified statement attesting that the subcontractor has received the Prevailing Rate Schedule and will pay or provide the applicable rates of wages and supplements specified therein. (See NYS Labor Laws, Article 8 . Section 220-a).

Determination of Prevailing Wage and Supplement Rate Updates Applicable to All Counties

The wages and supplements contained in the annual determination become effective July 1st whether or not the new determination has been received by a given contractor. Care should be taken to review the rates for obvious errors. Any corrections should be brought to the Department's attention immediately. It is the responsibility of the public work contractor to use the proper rates. If there is a question on the proper classification to be used, please call the district office located nearest the project. Any errors in the annual determination will be corrected and posted to the NYSDOL website on the first business day of each month. Contractors are responsible for paying these updated rates as well, retroactive to July 1st.

When you review the schedule for a particular occupation, your attention should be directed to the dates above the column of rates. These are the dates for which a given set of rates is effective. To the extent possible, the Department posts rates in its possession that cover periods of time beyond the July 1st to June 30th time frame covered by a particular annual determination. Rates that extend beyond that instant time period are informational ONLY and may be updated in future annual determinations that actually cover the then appropriate July 1st to June 30th time period.

Withholding of Payments

When a complaint is filed with the Commissioner of Labor alleging the failure of a contractor or subcontractor to pay or provide the prevailing wages or supplements, or when the Commissioner of Labor believes that unpaid wages or supplements may be due, payments on the public work contract shall be withheld from the prime contractor in a sufficient amount to satisfy the alleged unpaid wages and supplements, including interest and civil penalty, pending a final determination.

When the Bureau of Public Work finds that a contractor or subcontractor on a public work project failed to pay or provide the requisite prevailing wages or supplements, the Bureau is authorized by Sections 220-b and 235.2 of the Labor Law to so notify the financial officer of the Department of Jurisdiction (Contracting Agency) that awarded the public work contract. Such officer MUST then withhold or cause to be withheld from any payment due the prime contractor on account of such contract the amount indicated by the Bureau as sufficient to satisfy the unpaid wages and supplements, including interest and any civil penalty that may be assessed by the Commissioner of Labor. The withholding continues until there is a final determination of the underpayment by the Commissioner of Labor or by the court in the event a legal proceeding is instituted for review of the determination of the Commissioner of Labor.

The Department of Jurisdiction (Contracting Agency) shall comply with this order of the Commissioner of Labor or of the court with respect to the release of the funds so withheld.

Summary of Notice Posting Requirements

The current Prevailing Rate Schedule must be posted in a prominent and accessible place on the site of the public work project. The prevailing wage schedule must be encased in, or constructed of, materials capable of withstanding adverse weather conditions and be titled "PREVAILING RATE OF WAGES" in letters no smaller than two (2) inches by two (2) inches.

The "Public Work Project" notice must be posted at the beginning of the performance of every public work contract, on each job site.

Every employer providing workers. compensation insurance and disability benefits must post notices of such coverage in the format prescribed by the Workers. Compensation Board in a conspicuous place on the jobsite.

Every employer subject to the NYS Human Rights Law must conspicuously post at its offices, places of employment, or employment training centers, notices furnished by the State Division of Human Rights.

Employers liable for contributions under the Unemployment Insurance Law must conspicuously post on the jobsite notices furnished by the NYS Department of Labor.

Apprentices

Employees cannot be paid apprentice rates unless they are individually registered in a program registered with the NYS Commissioner of Labor. The allowable ratio of apprentices to journeyworkers in any craft classification can be no greater than the statewide building trade ratios promulgated by the Department of Labor and included with the Prevailing Rate Schedule. An employee listed on a payroll as an apprentice who is not registered as above or is performing work outside the classification of work for which the apprentice is indentured, must be paid the prevailing journeyworker's wage rate for the classification of work the employee is actually performing.

NYSDOL Labor Law, Article 8, Section 220-3, require that only apprentices individually registered with the NYS Department of Labor may be paid apprenticeship rates on a public work project. No other Federal or State Agency of office registers apprentices in New York State.

Persons wishing to verify the apprentice registration of any person must do so in writing by mail, to the NYSDOL Office of Employability Development / Apprenticeship Training, State Office Bldg. Campus, Bldg. 12, Albany, NY 12226 or by Fax to NYSDOL Apprenticeship Training (518) 457-7154. All requests for verification must include the name and social security number of the person for whom the information is requested.

The only conclusive proof of individual apprentice registration is written verification from the NYSDOL Apprenticeship Training Albany Central office. Neither Federal nor State Apprenticeship Training offices outside of Albany can provide conclusive registration information.

It should be noted that the existence of a registered apprenticeship program is not conclusive proof that any person is registered in that program. Furthermore, the existence or possession of wallet cards, identification cards, or copies of state forms is not conclusive proof of the registration of any person as an apprentice.

Interest and Penalties

In the event that an underpayment of wages and/or supplements is found:

- Interest shall be assessed at the rate then in effect as prescribed by the Superintendent of Banks pursuant to section 14-a of the Banking Law, per annum from the date of underpayment to the date restitution is made.
- A Civil Penalty may also be assessed, not to exceed 25% of the total of wages, supplements, and interest due.

Debarment

Any contractor or subcontractor and/or its successor shall be ineligible to submit a bid on or be awarded any public work contract or subcontract with any state, municipal corporation or public body for a period of five (5) years when:

- Two (2) willful determinations have been rendered against that contractor or subcontractor and/or its successor within any consecutive six (6) year period.
- There is any willful determination that involves the falsification of payroll records or the kickback of wages or supplements.

Criminal Sanctions

Willful violations of the Prevailing Wage Law (Article 8 of the Labor Law) may be a felony punishable by fine or imprisonment of up to 15 years, or both.

Discrimination

No employee or applicant for employment may be discriminated against on account of age, race, creed, color, national origin, sex, disability or marital status.

No contractor, subcontractor nor any person acting on its behalf, shall by reason of race, creed, color, disability, sex or national origin discriminate against any citizen of the State of New York who is qualified and available to perform the work to which the employment relates (NYS Labor Law, Article 8, Section 220-e(a)).

No contractor, subcontractor, nor any person acting on its behalf, shall in any manner, discriminate against or intimidate any employee on account of race, creed, color, disability, sex, or national origin (NYS Labor Law, Article 8, Section 220-e(b)).

The Human Rights Law also prohibits discrimination in employment because of age, marital status, or religion.

There may be deducted from the amount payable to the contractor under the contract a penalty of $50.00 for each calendar day during which such person was discriminated against or intimidated in violation of the provision of the contract (NYS Labor Law, Article 8, Section 220-e(c)).

The contract may be cancelled or terminated by the State or municipality. All monies due or to become due thereunder may be forfeited for a second or any subsequent violation of the terms or conditions of the anti-discrimination sections of the contract (NYS Labor Law, Article 8, Section 220-e(d)).

Every employer subject to the New York State Human Rights Law must conspicuously post at its offices, places of employment, or employment training centers notices furnished by the State Division of Human Rights.

Workers' Compensation

In accordance with Section 142 of the State Finance Law, the contractor shall maintain coverage during the life of the contract for the benefit of such employees as required by the provisions of the New York State Workers' Compensation Law.

A contractor who is awarded a public work contract must provide proof of workers' compensation coverage prior to being allowed to begin work.

The insurance policy must be issued by a company authorized to provide workers' compensation coverage in New York State. Proof of coverage must be on form C-105.2 (Certificate of Workers' Compensation Insurance) and must name this agency as a certificate holder.

If New York State coverage is added to an existing out-of-state policy, it can only be added to a policy from a company authorized to write workers' compensation coverage in this state. The coverage must be listed under item 3A of the information page.

The contractor must maintain proof that subcontractors doing work covered under this contract secured and maintained a workers' compensation policy for all employees working in New York State.

Every employer providing worker's compensation insurance and disability benefits must post notices of such coverage in the format prescribed by the Workers' Compensation Board in a conspicuous place on the jobsite.

Unemployment Insurance

Employers liable for contributions under the Unemployment Insurance Law must conspicuously post on the jobsite notices furnished by the New York State Department of Labor.

Kathy Hochul, Governor

Roberta Reardon, Commissioner

City of Rome, NY

Megan McCoskey
Megan McCoskey
CDM Smith
3 Lear Jet Lane, Suite 100N
Latham NY 12110

Schedule Year 2024 through 2025
Date Requested 01/23/2025
PRC# 2025000921

Location Kessinger Dam
Project ID#
Project Type Concrete rehabilitation of the spillway, non-overflow sections, gatehouse and flip bucket. Replacement of manual strainers with auto strainers at the screens, new mixers, and a floating ice boom.

Notice of Contract Award

New York State Labor Law, Article 8, Section 220.3a requires that certain information regarding the awarding of public work contracts, be furnished to the Commissioner of Labor. One "Notice of Contract Award" (PW 16, which may be photocopied), **MUST** be completed for **EACH** prime contractor on the above referenced project.

Upon notifying the successful bidder(s) of this contract, enter the required information and mail **OR** fax this form to the office shown at the bottom of this notice, **OR** fill out the electronic version via the NYSDOL website.

Contractor Information
All information must be supplied

Federal Employer Identification Number: _____

Name: _____

Address: _____

_____

City: _____ State: _____ Zip: _____

Amount of Contract: $_____

Approximate Starting Date: ____/____/____

Approximate Completion Date: ____/____/____

Contract Type:
[ ] (01) General Construction
[ ] (02) Heating/Ventilation
[ ] (03) Electrical
[ ] (04) Plumbing
[ ] (05) Other : _____

Phone: (518) 457-5589 Fax: (518) 485-1870
W. Averell Harriman State Office Campus, Bldg. 12, Room 130, Albany, NY 12226

Social Security Numbers on Certified Payrolls:

The Department of Labor is cognizant of the concerns of the potential for misuse or inadvertent disclosure of social security numbers. Identity theft is a growing problem and we are sympathetic to contractors' concern regarding inclusion of this information on payrolls if another identifier will suffice.

For these reasons, the substitution of the use of the last four digits of the social security number on certified payrolls submitted to contracting agencies on public work projects is now acceptable to the Department of Labor. This change does not affect the Department's ability to request and receive the entire social security number from employers during its public work/ prevailing wage investigations.

Construction Industry Fair Play Act: Required Posting for Labor Law Article 25-B § 861-d

Construction industry employers must post the "Construction Industry Fair Play Act" notice in a prominent and accessible place on the job site. Failure to post the notice can result in penalties of up to $1,500 for a first offense and up to $5,000 for a second offense. The posting is included as part of this wage schedule. Additional copies may be obtained from the NYS DOL website, https://dol.ny.gov/public-work-and-prevailing-wage
If you have any questions concerning the Fair Play Act, please call the State Labor Department toll-free at 1-866-435-1499 or email us at: dol.misclassified@labor.ny.gov .

Worker Notification: (Labor Law §220, paragraph a of subdivision 3-a)

Effective June 23, 2020

This provision is an addition to the existing wage rate law, Labor Law §220, paragraph a of subdivision 3-a. It requires contractors and subcontractors to provide written notice to all laborers, workers or mechanics of the *prevailing wage and supplement rate* for their particular job classification *on each pay stub**. It also requires contractors and subcontractors to *post a notice* at the beginning of the performance of every public work contract *on each job site* that includes the telephone number and address for the Department of Labor and a statement informing laborers, workers or mechanics of their right to contact the Department of Labor if he/she is not receiving the proper prevailing rate of wages and/or supplements for his/her job classification. The required notification will be provided with each wage schedule, may be downloaded from our website *www.labor.ny.gov* or be made available upon request by contacting the Bureau of Public Work at 518-457-5589. *In the event the required information will not fit on the pay stub, an accompanying sheet or attachment of the information will suffice.

(12.20)

To all State Departments, Agency Heads and Public Benefit Corporations
IMPORTANT NOTICE REGARDING PUBLIC WORK ENFORCEMENT FUND

Budget Policy & Reporting Manual

B-610

Public Work Enforcement Fund

effective date December 7, 2005

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1. Purpose and Scope:

This Item describes the Public Work Enforcement Fund (the Fund, PWEF) and its relevance to State agencies and public benefit corporations engaged in construction or reconstruction contracts, maintenance and repair, and announces the recently-enacted increase to the percentage of the dollar value of such contracts that must be deposited into the Fund. This item also describes the roles of the following entities with respect to the Fund:

- New York State Department of Labor (DOL),
- The Office of the State of Comptroller (OSC), and
- State agencies and public benefit corporations.

2. Background and Statutory References:

DOL uses the Fund to enforce the State's Labor Law as it relates to contracts for construction or reconstruction, maintenance and repair, as defined in subdivision two of Section 220 of the Labor Law. State agencies and public benefit corporations participating in such contracts are required to make payments to the Fund.

Chapter 511 of the Laws of 1995 (as amended by Chapter 513 of the Laws of 1997, Chapter 655 of the Laws of 1999, Chapter 376 of the Laws of 2003 and Chapter 407 of the Laws of 2005) established the Fund.

3. Procedures and Agency Responsibilities:

The Fund is supported by transfers and deposits based on the value of contracts for construction and reconstruction, maintenance and repair, as defined in subdivision two of Section 220 of the Labor Law, into which all State agencies and public benefit corporations enter.

Chapter 407 of the Laws of 2005 increased the amount required to be provided to this fund to .10 of one-percent of the total cost of each such contract, to be calculated at the time agencies or public benefit corporations enter into a new contract or if a contract is amended. The provisions of this bill became effective August 2, 2005.

To all State Departments, Agency Heads and Public Benefit Corporations
IMPORTANT NOTICE REGARDING PUBLIC WORK ENFORCEMENT FUND

OSC will report to DOL on all construction-related ("D") contracts approved during the month, including contract amendments, and then DOL will bill agencies the appropriate assessment monthly. An agency may then make a determination if any of the billed contracts are exempt and so note on the bill submitted back to DOL. For any instance where an agency is unsure if a contract is or is not exempt, they can call the Bureau of Public Work at the number noted below for a determination. Payment by check or journal voucher is due to DOL within thirty days from the date of the billing. DOL will verify the amounts and forward them to OSC for processing.

For those contracts which are not approved or administered by the Comptroller, monthly reports and payments for deposit into the Public Work Enforcement Fund must be provided to the Administrative Finance Bureau at the DOL within 30 days of the end of each month or on a payment schedule mutually agreed upon with DOL.

Reports should contain the following information:

- Name and billing address of State agency or public benefit corporation;
- State agency or public benefit corporation contact and phone number;
- Name and address of contractor receiving the award;
- Contract number and effective dates;
- Contract amount and PWEF assessment charge (if contract amount has been amended, reflect increase or decrease to original contract and the adjustment in the PWEF charge); and
- Brief description of the work to be performed under each contract.

Checks and Journal Vouchers, payable to the "New York State Department of Labor" should be sent to:

Department of Labor
Administrative Finance Bureau-PWEF Unit
Building 12, Room 464
State Office Campus
Albany, NY 12226

Any questions regarding billing should be directed to NYSDOL's Administrative Finance Bureau-PWEF Unit at (518) 457-3624 and any questions regarding Public Work Contracts should be directed to the Bureau of Public Work at (518) 457-5589.

NEW YORK STATE OF OPPORTUNITY. Department of Labor

Required Notice under Article 25-B of the Labor Law

Attention All Employees, Contractors and Subcontractors: You are Covered by the Construction Industry Fair Play Act

The law says that you are an employee unless:

- You are free from direction and control in performing your job, **and**
- You perform work that is not part of the usual work done by the business that hired you, **and**
- You have an independently established business.

Your employer cannot consider you to be an independent contractor unless all three of these facts apply to your work.

It is against the law for an employer to misclassify employees as independent contractors or pay employees off the books.

Employee Rights: If you are an employee, you are entitled to state and federal worker protections. These include:

- Unemployment Insurance benefits, if you are unemployed through no fault of your own, able to work, and otherwise qualified,
- Workers' compensation benefits for on-the-job injuries,
- Payment for wages earned, minimum wage, and overtime (under certain conditions),
- Prevailing wages on public work projects,
- The provisions of the National Labor Relations Act, and
- A safe work environment.

It is a violation of this law for employers to retaliate against anyone who asserts their rights under the law. Retaliation subjects an employer to civil penalties, a private lawsuit or both.

Independent Contractors: If you are an independent contractor**, you must pay all taxes and Unemployment Insurance contributions required by New York State and Federal Law.**

Penalties for paying workers off the books or improperly treating employees as independent contractors:

- **Civil Penalty** — First offense: Up to $2,500 per employee

  Subsequent offense(s): Up to $5,000 per employee

- **Criminal Penalty** — First offense: Misdemeanor - up to 30 days in jail, up to a $25,000 fine and debarment from performing public work for up to one year.

  Subsequent offense(s): Misdemeanor - up to 60 days in jail or up to a $50,000 fine and debarment from performing public work for up to 5 years.

If you have questions about your employment status or believe that your employer may have violated your rights and you want to file a complaint, call the Department of Labor at (866) 435-1499 or send an email to dol.misclassified@labor.ny.gov. All complaints of fraud and violations are taken seriously. You can remain anonymous.

Employer Name:

IA 999 (09/16)

WE ARE YOUR DOL

NEW YORK STATE Department of Labor

New York State Department of Labor
Bureau of Public Work

Attention Employees

THIS IS A:

PUBLIC WORK PROJECT

If you are employed on this project as a **worker, laborer, or mechanic** you are entitled to receive the **prevailing wage and supplements rate** for the classification at which you are working.

Your pay stub and wage notice received upon hire must clearly state your wage rate and supplement rate.

Chapter 629 of the Labor Laws of 2007:

These wages are set by law and must be posted at the work site. They can also be found at: https://dol.ny.gov/bureau-public-work

If you feel that you have not received proper wages or benefits, please call our nearest office.*

Albany	(518) 457-2744	Patchogue	(631) 687-4882
Binghamton	(607) 721-8005	Rochester	(585) 258-4505
Buffalo	(716) 847-7159	Syracuse	(315) 428-4056
Garden City	(516) 228-3915	Utica	(315) 793-2314
New York City	(212) 932-2419	White Plains	(914) 997-9507
Newburgh	(845) 568-5287		

* For New York City government agency construction projects, please contact the Office of the NYC Comptroller at (212) 669-4443, or www.comptroller.nyc.gov – click on Bureau of Labor Law.

Contractor Name: _____

Project Location: _____

Requirements for OSHA 10 Compliance

Article 8 §220-h requires that when the advertised specifications, for every contract for public work, is $250,000.00 or more the contract must contain a provision requiring that every worker employed in the performance of a public work contract shall be certified as having completed an OSHA 10 safety training course. The clear intent of this provision is to require that all employees of public work contractors, required to be paid prevailing rates, receive such training "prior to the performing any work on the project."

The Bureau will enforce the statute as follows:

All contractors and sub contractors must attach a copy of proof of completion of the OSHA 10 course to the first certified payroll submitted to the contracting agency and on each succeeding payroll where any new or additional employee is first listed.

Proof of completion may include but is not limited to:

- Copies of bona fide course completion card (*Note: Completion cards do not have an expiration date.)*
- Training roster, attendance record of other documentation from the certified trainer pending the issuance of the card.
- Other valid proof

**A certification by the employer attesting that all employees have completed such a course is not sufficient proof that the course has been completed.

Any questions regarding this statute may be directed to the New York State Department of Labor, Bureau of Public Work at 518-457-5589.

WICKS

Public work projects are subject to the Wicks Law requiring separate specifications and bidding for the plumbing, heating and electrical work, when the total project's threshold is $3 million in Bronx, Kings, New York, Queens and, Richmond counties; $1.5 million in Nassau, Suffolk and Westchester counties; and $500,000 in all other counties.

For projects below the monetary threshold, bidders must submit a sealed list naming each subcontractor for the plumbing, HVAC and electrical and the amount to be paid to each. The list may not be changed unless the public owner finds a legitimate construction need, including a change in specifications or costs or the use of a Project Labor Agreement (PLA), and must be open to public inspection.

Allows the state and local agencies and authorities to waive the Wicks Law and use a PLA if it will provide the best work at the lowest possible price. If a PLA is used, all contractors shall participate in apprentice training programs in the trades of work it employs that have been approved by the Department of Labor (DOL) for not less than three years. They shall also have at least one graduate in the last three years and use affirmative efforts to retain minority apprentices. PLA's would be exempt from Wicks, but deemed to be public work subject to prevailing wage enforcement.

The Commissioner of Labor shall have the power to enforce separate specification requirement s on projects, and may issue stop-bid orders against public owners for non-compliance.

Other new monetary thresholds, and similar sealed bidding for non-Wicks projects, would apply to certain public authorities including municipal housing authorities, NYC Construction Fund, Yonkers Educational Construction Fund, NYC Municipal Water Finance Authority, Buffalo Municipal Water Finance Authority, Westchester County Health Care Association, Nassau County Health Care Corp., Clifton-Fine Health Care Corp., Erie County Medical Center Corp., NYC Solid Waste Management Facilities, and the Dormitory Authority.

Contractors must pay subcontractors within a 7 days period.

(07.19)

Introduction to the Prevailing Rate Schedule

Information About Prevailing Rate Schedule

This information is provided to assist you in the interpretation of particular requirements for each classification of worker contained in the attached Schedule of Prevailing Rates.

Classification

It is the duty of the Commissioner of Labor to make the proper classification of workers taking into account whether the work is heavy and highway, building, sewer and water, tunnel work, or residential, and to make a determination of wages and supplements to be paid or provided. It is the responsibility of the public work contractor to use the proper rate. If there is a question on the proper classification to be used, please call the district office located nearest the project. District office locations and phone numbers are listed below.

Prevailing Wage Schedules are issued separately for "General Construction Projects" and "Residential Construction Projects" on a county-by-county basis.

General Construction Rates apply to projects such as: Buildings, Heavy & Highway, and Tunnel and Water & Sewer rates.

Residential Construction Rates generally apply to construction, reconstruction, repair, alteration, or demolition of one family, two family, row housing, or rental type units intended for residential use.

Some rates listed in the Residential Construction Rate Schedule have a very limited applicability listed along with the rate. Rates for occupations or locations not shown on the residential schedule must be obtained from the General Construction Rate Schedule. Please contact the local Bureau of Public Work office before using Residential Rate Schedules, to ensure that the project meets the required criteria.

Payrolls and Payroll Records

Contractors and subcontractors are required to establish, maintain, and preserve for not less that six (6) years, contemporaneous, true, and accurate payroll records.

Every contractor and subcontractor shall submit to the Department of Jurisdiction (Contracting Agency), within thirty (30) days after issuance of its first payroll and every thirty (30) days thereafter, a transcript of the original payrolls, subscribed and affirmed as true under penalty of perjury.

Paid Holidays

Paid Holidays are days for which an eligible employee receives a regular day's pay, but is not required to perform work. If an employee works on a day listed as a paid holiday, this remuneration is in addition to payment of the required prevailing rate for the work actually performed.

Overtime

At a minimum, all work performed on a public work project in excess of eight hours in any one day or more than five days in any workweek is overtime. However, the specific overtime requirements for each trade or occupation on a public work project may differ. Specific overtime requirements for each trade or occupation are contained in the prevailing rate schedules.

Overtime holiday pay is the premium pay that is required for work performed on specified holidays. It is only required where the employee actually performs work on such holidays.

The applicable holidays are listed under HOLIDAYS: OVERTIME. The required rate of pay for these covered holidays can be found in the OVERTIME PAY section listings for each classification.

Supplemental Benefits

Particular attention should be given to the supplemental benefit requirements. Although in most cases the payment or provision of supplements is straight time for all hours worked, some classifications require the payment or provision of supplements, or a portion of the supplements, to be paid or provided at a premium rate for premium hours worked. Supplements may also be required to be paid or provided on paid holidays, regardless of whether the day is worked. The Overtime Codes and Notes listed on the particular wage classification will indicate these conditions as required.

Effective Dates

When you review the schedule for a particular occupation, your attention should be directed to the dates above the column of rates. These are the dates for which a given set of rates is effective. The rate listed is valid until the next effective rate change or until the new annual determination which takes effect on July 1 of each year. All contractors and subcontractors are required to pay the current prevailing rates of wages and supplements. If you have any questions please contact the Bureau of Public Work or visit the New York State Department of Labor website (www.labor.ny.gov) for current wage rate information.

Apprentice Training Ratios

The following are the allowable ratios of registered Apprentices to Journey-workers.

For example, the ratio 1:1,1:3 indicates the allowable initial ratio is one Apprentice to one Journeyworker. The Journeyworker must be in place on the project before an Apprentice is allowed. Then three additional Journeyworkers are needed before a second Apprentice is allowed. The last ratio repeats indefinitely. Therefore, three more Journeyworkers must be present before a third Apprentice can be hired, and so on.

Please call Apprentice Training Central Office at (518) 457-6820 if you have any questions.

Title (Trade)	Ratio
Boilermaker (Construction)	1:1,1:4
Boilermaker (Shop)	1:1,1:3
Carpenter (Bldg.,H&H, Pile Driver/Dockbuilder)	1:1,1:4
Carpenter (Residential)	1:1,1:3
Electrical (Outside) Lineman	1:1,1:2
Electrician (Inside)	1:1,1:3
Elevator/Escalator Construction & Modernizer	1:1,1:2
Glazier	1:1,1:3
Insulation & Asbestos Worker	1:1,1:3
Iron Worker	1:1,1:4
Laborer	1:1,1:3
Mason	1:1,1:4
Millwright	1:1,1:4
Op Engineer	1:1,1:5
Painter	1:1,1:3
Plumber & Steamfitter	1:1,1:3
Roofer	1:1,1:2
Sheet Metal Worker	1:1,1:3
Sprinkler Fitter	1:1,1:2

If you have any questions concerning the attached schedule or would like additional information, please contact the nearest BUREAU of PUBLIC WORK District Office or write to:

New York State Department of Labor
Bureau of Public Work
State Office Campus, Bldg. 12
Albany, NY 12226

District Office Locations:	Telephone #	FAX #
Bureau of Public Work - Albany	518-457-2744	518-485-0240
Bureau of Public Work - Binghamton	607-721-8005	607-721-8004
Bureau of Public Work - Buffalo	716-847-7159	716-847-7650
Bureau of Public Work - Garden City	516-228-3915	516-794-3518
Bureau of Public Work - Newburgh	845-568-5287	845-568-5332
Bureau of Public Work - New York City	212-932-2419	212-775-3579
Bureau of Public Work - Patchogue	631-687-4882	631-687-4902
Bureau of Public Work - Rochester	585-258-4505	585-258-4708
Bureau of Public Work - Syracuse	315-428-4056	315-428-4671
Bureau of Public Work - Utica	315-793-2314	315-793-2514
Bureau of Public Work - White Plains	914-997-9507	914-997-9523
Bureau of Public Work - Central Office	518-457-5589	518-485-1870

Oneida County General Construction

Boilermaker — 01/01/2025

JOB DESCRIPTION Boilermaker **DISTRICT** 7

ENTIRE COUNTIES
Cayuga, Clinton, Cortland, Franklin, Jefferson, Lewis, Madison, Oneida, Onondaga, Oswego, Seneca, St. Lawrence, Tompkins

WAGES

Per hour:	07/01/2024
Boilermaker	$ 37.98

SUPPLEMENTAL BENEFITS

Per hour:	
Journeyworker	$ 26.62* + 1.48

*This portion of the benefits subject to the same premium rate as shown for overtime wages.

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 15, 25) on HOLIDAY PAGE
NOTE: When a holiday falls on Sunday, the day observed by the State or Nation shall be observed. When Christmas Day and New Year's fall on Saturday, Friday will be observed as the holiday.

REGISTERED APPRENTICES
WAGES per hour: Six (6) month terms at the following percentage of Journeyworker's wage.

1st	2nd	3rd	4th	5th	6th	7th	8th
65%	65%	70%	75%	80%	85%	90%	95%

SUPPLEMENTAL BENEFITS per hour:

$ 19.78* + 1.48	$ 19.78* + 1.48	$ 20.76* + 1.48	$ 21.73* + 1.48	$ 22.71* + 1.48	$ 23.69* + 1.48	$24.67* + 1.48	$ 25.64* + 1.48

*This portion of the benefits subject to the same premium rate as shown for overtime wages.

7-175

Carpenter - Building — 01/01/2025

JOB DESCRIPTION Carpenter - Building **DISTRICT** 6

ENTIRE COUNTIES
Cayuga, Herkimer, Madison, Oneida, Seneca, Yates

WAGES

Per hour:	07/01/2024	07/01/2025 Additional
Carpenter	$ 30.85	$ 1.30*
Floor Coverer	30.85	1.30*
Carpet Layer	30.85	1.30*
Drywall	30.85	1.30*
Diver - Wet Day	61.25	0.00
Diver - Dry Day	31.85	1.30*
Dive Tender	31.85	1.30*

*To be allocated at a later date.

NOTE ADDITIONAL AMOUNTS PAID FOR THE FOLLOWING WORK LISTED BELOW (per hour worked):
- Pile Drivers/Dock Builders shall receive $0.25 per hour over the Journeyworker's rate of pay when performing piledriving/dock building work.
- Certified Welders shall receive $1.00 per hour over the Journeyworker's rate of pay when the employee is required to be certified and performs DOT or ABS specified welding work.
- When an employee performs work within a contaminated area on a State and/or Federally designated hazardous waste site, and where relevant State and/or Federal regulations require employees to be furnished and use or wear required forms of personal protection, then the employee shall receive his regular hourly rate plus $1.50 per hour.
- Depth pay for Divers based upon deepest depth on the day of the dive (per diem payment):

0' to 80' no additional fee
81' to 100' additional $0.50 per foot
101' to 150' additional $0.75 per foot
151' and deeper additional $1.25 per foot

- Penetration pay for Divers based upon deepest penetration on the day of the dive (per diem payment):
0' to 50' no additional fee
51' to 100' additional $0.75 per foot
101' and deeper additional $1.00 per foot
- Diver rates applies to all hours worked on dive day.

SHIFT WORK

On Agency/Owner mandated shift work, the following rates will be applicable:
1st Shift - Regular Rate
2nd Shift - Premium of 7% of base wage per hour
3rd Shift - Premium of 14% of base wage per hour
Shift work shall be defined as implementing at least two (2) shifts in a twenty-four (24) consecutive hour period. Shift work must be for a minimum of three (3) consecutive days.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker	$ 21.69

OVERTIME PAY

See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
NOTE: Any holiday which occurs on Sunday shall be observed the following Monday. If Christmas falls on a Saturday, it shall be observed on the prior Friday.

REGISTERED APPRENTICES

Wages per hour (1300 hour terms at the following percentage of Journeyworker's base wage):

1st	2nd	3rd	4th
65%	70%	75%	80%

Supplemental Benefits per hour:

$ 12.60	$ 12.61	$ 15.21	$ 15.21

NOTE ADDITIONAL AMOUNTS PAID TO APPRENTICES FOR THE FOLLOWING WORK LISTED BELOW (per hour worked):
- Pile Driving/Dock Builder apprentices shall receive an additional $0.25 per hour worked when performing piledriving/dock building work.
- Certified Welders shall receive $1.00 per hour over the apprentices rate of pay when the apprentice is required to be certified and performs DOT or ABS specified welding work.
- When an apprentice performs work within a contaminated area on a State and/or Federally designated hazardous waste site, and where relevant State and/or Federal regulations require the apprentice to be furnished and use or wear required forms of personal protection, then the apprentice shall receive his regular hourly rate plus $1.50 per hour.

6-277B-Cay

Carpenter - Building / Heavy&Highway — 01/01/2025

JOB DESCRIPTION Carpenter - Building / Heavy&Highway **DISTRICT** 2

ENTIRE COUNTIES

Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orleans, Oswego, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Wyoming, Yates

PARTIAL COUNTIES

Orange: The area lying on Northern side of Orange County demarcated by a line drawn from the Bear Mountain Bridge continuing west to the Bear Mountain Circle, continue North on 9W to the town of Cornwall where County Road 107 (also known as Quaker Rd) crosses under 9W, then east on County Road 107 to Route 32, then north on Route 32 to Orrs Mills Rd, then west on Orrs Mills Rd to Route 94, continue west and south on Route 94 to the Town of Chester, to the intersection of Kings Highway, continue south on Kings Highway to Bellvale Rd, west on Bellvale Rd to Bellvale Lakes Rd, then south on Bellvale Lakes Rd to Kain Rd, southeast on Kain Rd to Route 17A, then north and southeast along Route 17A to Route 210, then follow Route 210 to NJ Border.

WAGES

Wages per hour:	07/01/2024
Carpenter - ONLY for Artificial Turf/Synthetic Sport Surface	$ 36.48

Note - Does not include the operation of equipment. Please see Operating Engineers rates.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 26.55

OVERTIME PAY
See (B, E, Q, X) on OVERTIME PAGE

HOLIDAY
Paid: See (5) on HOLIDAY PAGE
Overtime: See (5, 6, 16) on HOLIDAY PAGE
Notes:
When a holiday falls upon a Saturday, it shall be observed on the preceding Friday. Whan a holiday falls upon a Sunday, it shall be observed on the following Monday.
An employee taking an unexcused day off the regularly scheduled day before or after a paid Holiday shall not receive Holiday pay.

REGISTERED APPRENTICES
Wages per hour (1300 hour terms at the following percentage of Journeyworker's wage):

1st	2nd	3rd	4th
65%	70%	75%	80%

Supplemental Benefits per hour:

$18.58	$19.14	$21.24	$21.79

2-42AtSS

Carpenter - Heavy&Highway 01/01/2025

JOB DESCRIPTION Carpenter - Heavy&Highway **DISTRICT** 2

ENTIRE COUNTIES
Chenango, Herkimer, Madison, Oneida, Otsego

WAGES

Per hour	07/01/2024
Carpenter	$ 42.28
Piledriver	42.28
Diver-Wet Day	67.28
Diver-Dry Day	43.28
Diver-Tender	43.28

NOTE ADDITIONAL AMOUNTS PAID FOR THE FOLLOWING WORK LISTED BELOW (per hour worked):
- State or Federal designated hazardous site, requiring protective gear shall be an additional $2.50 per hour.
- Certified welders when required to perform welding work will receive an additional $2.50 per hour.

ADDITIONAL NOTES PERTAINING TO DIVERS/TENDERS:
- Divers and Tenders shall receive one and one half (1 1/2) times their regular diver and tender rate of pay for Effluent and Slurry diving.
- Divers and tenders being paid at the specified rate for Effluent and Slurry diving shall have all overtime rates based on the specified rate plus the appropriate overtime rates (one and one half or two times the specified rate for Slurry and Effluent divers and tenders).
- The pilot of an ADS or submersible will receive one and one-half (1 1/2) times the Diver-Wet Day Rate for time submerged.
- All crew members aboard a submersible shall receive the Diver-Wet Day rate.
- Depth pay for Divers based upon deepest depth on the day of the dive (per diem payment):
  0' to 50' no additional fee
  51'to 100' additional $.50 per foot
  101'to 150' additional $0.75 per foot
  151'and deeper additional $1.25 per foot
- Penetration pay for Divers based upon deepest penetration on the day of the dive (per diem payment):
  0' to 50' no additional fee
  51' to 100' additional $.75 per foot
  101' and deeper additional $1.00 per foot
- Diver rates applies to all hours worked on dive day.

SHIFT WORK
When project owner mandates a single irregular work shift, the Journeyworkers and Apprentices will receive an additional $3.00 per hour. A single irregular work shift can start any time from 5:00 p.m. to 1:00 a.m.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 26.55

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
- In the event a Holiday falls on a Saturday, the Friday before will be observed as a Holiday. If a Holiday falls on a Sunday, then Monday will be observed as a Holiday.
- The employee must work their scheduled workday before and their scheduled workday after the holiday to receive holiday pay.

REGISTERED APPRENTICES
CAPRENTER APPRENTICES
Wages per hour (1040 hour terms at the following percentage of journeyworker's base wage):

1st	2nd	3rd	4th	5th
65%	70%	75%	80%	85%

Supplemental Benefits per hour:

$ 18.58	$ 19.14	$ 21.19	$ 21.74	$ 22.29

PILEDRIVER/DOCKBUILDER APPRENTICES
Wages per hour (1300 hour terms at the following percentage of journeyworker's base wage):

1st	2nd	3rd	4th
65%	70%	75%	80%

Supplemental Benefits per hour:

$ 18.58	$ 19.14	$ 21.19	$ 21.74

NOTE ADDITIONAL AMOUNTS PAID PER HOUR WORKED TO APPRENTICES FOR SPECIFIC TYPES OF WORK PERFORMED:
- State or Federal designated hazardous site, requiring protective gear shall be an additional $2.50 per hour.
- Certified welders when required to perform welding work will receive an additional $2.50 per hour.

2-277HH-CHMOO

Electrician — 01/01/2025

JOB DESCRIPTION Electrician **DISTRICT** 6

ENTIRE COUNTIES
Cortland, Herkimer, Madison, Oneida, Oswego

PARTIAL COUNTIES
Cayuga: Townships of Ira, Locke, Sempronius, Sterling, Summerhill and Victory.
Chenango: Only the Townships of Columbus, New Berlin and Sherburne.
Onondaga: Entire County except Townships of Elbridge and Skaneateles.
Otsego: Only the Townships of Plainfield, Richfield, Springfield, Cherry Valley, Roseboom, Middlefield, Otsego, Exeter, Edmeston, Burlington, Pittsfield and New Lisbon.
Tompkins: Only the Township of Groton.
Wayne: Only the Townships of Huron, Wolcott, Rose and Butler.

WAGES

Per hour:	07/01/2024	06/01/2025 Additional	06/01/2026 Additional
Electrician	$ 47.00	$ 5.00*	$ 5.25*
Teledata	47.00		
Cable Splicer	51.70		

* To be allocated at a later date.

NOTE: Additional premiums for the following work listed (Amounts subject to premiums):
- Additional $2.50 per hour for work performed over 35 feet above the ground, floor, or roof levels or where work is required in tunnels, shafts, or under compressed air 35 feet below the ground level.
- Additional $3.00 per hour for working over 50 feet above or below ground, floor, or roof level. This includes work on ladders, "toothpicks", scaffolds, boatswain chairs, towers, smokestacks or other open structures, or mechanical lifts used over 60 feet.

Occupied Conditions: When necessary to perform alteration and/or renovation work and owner mandates (due to occupied conditions) prevent the work from being performed during "normal" working hours (defined as between 6:00 a.m. and 4:30 p.m. Monday through Friday), alternate hours may be worked, provided: 1) The hours are established for a minimum of five (5) days duration or the length of the job, whichever is shorter; and 2) An entire work scope within a job-site area is performed utilizing the varied hours. If these conditions are satisfied, all hours worked Monday through Friday of a shift that starts before or ends after the "normal" hours, shall be paid at the appropriate rate plus fifteen percent (15%). However, the following restrictions shall apply:

1) "Alternate" hours shall consist of a minimum of eight (8) consecutive hours per day.
2) Hours worked in excess of eight (8) hours per day, Monday through Friday, shall be paid at a rate of one and one-half times the applicable rate (day-shift + 15%).
3) Hours worked on Saturday shall be paid at time and one-half the applicable rate.
4) Hours worked on Sundays and Holidays shall be paid at double the straight time rate.

5) Work of a new construction nature may not be worked under these conditions.

SHIFT WORK
THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED MULTIPLE SHIFTS OF EIGHT (8) HOURS FOR AT LEAST FIVE (5) DAYS DURATION WHICH MAY HAVE BEEN WORKED. WHEN TWO (2) SHIFTS OR THREE (3) SHIFTS ARE WORKED:

1ST SHIFT	8:00AM - 4:30PM:	Regular wage rate
2ND SHIFT	4:30 PM - 1:00 AM:	Regular wage rate plus 15%
3RD SHIFT	12:30 AM - 9:00 AM:	Regular wage rate plus 25%

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 31.92 plus 3% of hourly wage paid*

*NOTE: The 3% is based on the hourly wage paid, straight time or premium rate.

OVERTIME PAY
See (B, *E, Q) on OVERTIME PAGE
* NOTE: On Saturday the first 8 hours worked shall be paid at a rate of one and one-half times the applicable rate. All additional hours are payable at double the straight time rate.
WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked. Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 15, 26) on HOLIDAY PAGE
NOTE: If any of the above holidays fall on Saturday, Friday shall be observed as the holiday. If any of the above holidays fall on Sunday, Monday shall be observed as the holiday.

REGISTERED APPRENTICES
WAGES per hour: Hourly terms at the following percentage of Journeyworker's wage.

1st period 40% (0-1000 hrs.)	$ 18.80
2nd period 45% (1001-2000)	21.15
3rd period 50% (2001-3500)	23.50
4th period 60% (3501-5000)	28.20
5th period 70% (5001-6500)	32.90
6th Period 80% (6501-8000)	37.60

SUPPLEMENTAL BENEFITS per hour:

1st period	$ 14.34*
2nd period	14.34*
3rd period	28.92*
4th period	29.52*
5th period	30.12*
6th period	30.72*

* PLUS 3% OF HOURLY WAGE PAID, STRAIGHT TIME RATE OR PREMIUM RATE.

6-43

Elevator Constructor — 01/01/2025

JOB DESCRIPTION Elevator Constructor **DISTRICT** 6

ENTIRE COUNTIES
Broome, Cayuga, Chenango, Cortland, Franklin, Jefferson, Lewis, Onondaga, Oswego, St. Lawrence, Tioga, Tompkins

PARTIAL COUNTIES
Delaware: Only the towns of: Tompkins, Walton, Masonville, Sidney, Franklin and Deposit.
Madison: Only the towns of: Cazenovia, DeRuyter, Eaton, Fenner, Georgetown, Lebanon, Lenox, Nelson and Sullivan.
Oneida: Only the towns of: Camden, Florence and Vienna.

WAGES

Per hour:	07/01/2024	01/01/2025	01/01/2026
Elevator Constructor	$ 56.01	$ 58.455	$ 61.003
Helper	39.21	40.92	42.70

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker	$ 37.885*	$ 38.435*	$ 38.985*

*NOTE - add 6% of regular hourly rate for all hours worked. Add 8% of regular hourly rate if more than 5 years of service.

OVERTIME PAY
See (D, O) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6, 15, 16) on HOLIDAY PAGE
Overtime: See (5, 6, 15, 16) on HOLIDAY PAGE
NOTE: When a holiday falls on a Saturday, it shall be observed on Friday. When a holiday falls on Sunday, it shall be observed on Monday.

REGISTERED APPRENTICES
WAGES per hour: 1 year terms at the following percentage of the Elevator Constructor wage.

0-6 months	6-12 months	2nd year	3rd year	4th year
50%	55%	65%	70%	80%

SUPPLEMENTAL BENEFITS per hour:

0-6 months: 6% of the hourly apprentice rate paid, no additional supplemental benefits.

All other terms: Same as Journeyworker

6-62.1

Elevator Constructor — 01/01/2025

JOB DESCRIPTION Elevator Constructor **DISTRICT** 1

ENTIRE COUNTIES
Albany, Clinton, Essex, Fulton, Hamilton, Herkimer, Montgomery, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Warren, Washington

PARTIAL COUNTIES
Madison: Madison Only the towns of: Brookfield, Hamilton, Lincoln, Madison, Smithfield, Stockbridge and the City of Oneida
Oneida: Entire county except the towns of: Camden, Florence, and Vienna.

WAGES
Per hour

	07/01/2024	01/01/2025
Mechanic	$ 55.32	$ 57.73
Helper	70% of Mechanic Wage Rate	70% of Mechanic Wage Rate

SUPPLEMENTAL BENEFITS
Per hour

	07/01/2024	01/01/2025
Journeyworker/Helper	$ 37.885*	$ 38.435*

(*)Plus 6% of hourly rate, if less than 5 years of service. Plus 8% of hourly rate, if more than 5 years of service.

OVERTIME PAY
See (D, O) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6, 15, 16) on HOLIDAY PAGE
Overtime: See (5, 6, 15, 16) on HOLIDAY PAGE
Note: When a paid holiday falls on Saturday, it shall be observed on Friday. When a paid holiday falls on Sunday, it shall be observed on Monday.

REGISTERED APPRENTICES
Wages per hour:

0-6 mo*	6-12 mo	2nd yr	3rd yr	4th yr
50%	55 %	65 %	70 %	80 %

(*)Plus 6% of the hourly rate, no additional supplemental benefits.

Supplemental Benefits - per hour worked:

Same as Journeyperson/Helper

1-35

Glazier — 01/01/2025

JOB DESCRIPTION Glazier **DISTRICT** 5

ENTIRE COUNTIES
Cayuga, Cortland, Herkimer, Madison, Oneida, Onondaga, Oswego

WAGES

Per Hour:	07/01/2024
Glazier	$ 28.00

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman	$ 26.69

OVERTIME PAY
See (B,E,E2*,Q) on OVERTIME PAGE.
*Note - Or circumstances beyond the control of the employer.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES
1000 hour terms:

Appr. 1st term	$18.00
Appr. 2nd term	19.00
Appr. 3rd term	20.00
Appr. 4th term	21.00
Appr. 5th term	22.00
Appr. 6th term	23.00
Appr. 7th term	24.00
Appr. 8th term	25.00

Supplemental Benefits per hour:

Appr. 1st term	$ 12.87
Appr. 2nd term	12.87
Appr. 3rd term	18.87
Appr. 4th term	18.87
Appr. 5th term	19.87
Appr. 6th term	19.87
Appr. 7th term	20.87
Appr. 8th term	20.87

5-677.Z-2

Insulator - Heat & Frost — 01/01/2025

JOB DESCRIPTION Insulator - Heat & Frost **DISTRICT** 7

ENTIRE COUNTIES
Broome, Cayuga, Chemung, Chenango, Cortland, Herkimer, Jefferson, Lewis, Madison, Oneida, Onondaga, Oswego, Otsego, Schuyler, Seneca, St. Lawrence, Tioga, Tompkins

WAGES

Per hour:	07/01/2024
Asbestos Installer	$ 41.50
Insulation Installer (On mechanical systems only)	41.50

SHIFT WORK
The following rates will apply on all contracting agency-mandated shifts worked:

1st Shift	$ 41.50
2nd Shift	47.72

3rd Shift	49.80

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 25.09

OVERTIME PAY
See (*B1, **K, P) on OVERTIME PAGE
*NOTE: First 10 hours on Saturday.
**NOTE: Holidays that fall on Sunday are subject to double time.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (2*,4,6,28) on HOLIDAY PAGE
*Triple time for Labor Day if worked.

REGISTERED APPRENTICES
WAGES per hour: One (1) year terms at the following percentage of Journeyworker's wage.

1st	2nd	3rd	4th
60%	70%	80%	90%
$ 24.90	$ 29.05	$ 33.20	$ 37.35

SUPPLEMENTAL BENEFITS per hour:

$ 22.59	$ 22.59	$ 25.09	$ 25.09

7-30-Syracuse

Ironworker — 01/01/2025

JOB DESCRIPTION Ironworker **DISTRICT** 7

ENTIRE COUNTIES
Franklin, Herkimer, Lewis, Oneida, St. Lawrence

PARTIAL COUNTIES
Chenango: Only the Townships of Columbus, New Berlin, North Norwich, Plymouth, Sherburne and Smyrna.
Fulton: Only the Townships of Caroga, Ephratah, Oppenheim, and Stratford.
Hamilton: Only the Townships of Arietta, Indian Lake, Inlet, Lake Pleasant, Long Lake and Morehouse.
Jefferson: Only the Townships of Antwerp, Champion, Philadelphia and Wilna.
Madison: Only the Townships of Brookfield, Eaton, Hamilton, Lebanon, Madison, Oneida and Stockbridge.
Montgomery: Only the Townships of Canajoharie, Minden, Palatine and St. Johnsville.
Otsego: Only the Townships of Burlington, Cherry Valley, Decatur, Edmeston, Exeter, Hartwick, Middlefield, New Lisbon, Otsego, Pittsfield, Plainfield, Richfield, Roseboom, Springfield and Westford, and the Village of Cooperstown.

WAGES

Per hour:	07/01/2024	07/01/2025 Additional	07/01/2026 Additional
Structural/Reinforcing	$ 33.50	$ 2.63*	$ 2.74*
Mach. Mover/Ornamental	33.50	2.63*	2.74*
Stone Derrickman	33.50	2.63*	2.74*
Chain Link Fence	33.50	2.63*	2.74*
Sheeter Ironworker	33.50	2.63*	2.74*
Pre-Engineered Building	33.50	2.63*	2.74*
Window Erector	33.50	2.63*	2.74*
Precast Erector	33.50	2.63*	2.74*
Welder	33.50	2.63*	2.74*

*To be allocated at a later date.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 32.28

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
NOTE: Any holiday which occurs on Sunday shall be observed the following Monday. Any holiday which occurs on Saturday shall be observed the previous Friday.

REGISTERED APPRENTICES
WAGES per hour: 1500 hour terms at the following wage.

1-1500hrs	$ 21.50
1501-3000hrs	23.50
3001-4500hrs	25.50
4501-6000hrs	27.50

SUPPLEMENTAL BENEFITS per hour:

1-1500hrs	$ 13.69
1501-3000hrs	22.06
3001-4500hrs	23.26
4501-6000hrs	24.45

7-440

Laborer - Building 01/01/2025

JOB DESCRIPTION Laborer - Building **DISTRICT** 1

ENTIRE COUNTIES
Hamilton, Herkimer, Madison, Oneida

PARTIAL COUNTIES
Fulton: Only the Townships of Stratford, Oppenheim, Caroga and Ephratah
Montgomery: Only the Townships of Minden, St. Johnsville, Canajoharie, Palatine and Root

WAGES
GROUP #1: Basic
GROUP #2: Pipe Layer, Mortar Mixer, Walk behind Mortar Buggie and Power Lift
GROUP #3: Wagon Drill(Where separate air compressor unit supplies power.)
GROUP #4: Blaster, Formsetter, Riding Mortar Buggy
GROUP #5: Hazardous Waste Removal
GROUP #6: Asbestos and Lead Removal

WAGES per hour:	07/01/2024
Building Laborer:	
Group # 1	$ 32.64
Group # 2	32.79
Group # 3	33.04
Group # 4	33.14
Group # 5	34.14
Group # 6	34.14

SUPPLEMENTAL BENEFITS
Per hour:

	07/01/2024
All groups	$ 27.30

OVERTIME PAY
See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wages per hour
1000 Hour terms at the following percentage of Journeyperson's basic hourly wage.

1st	2nd	3rd	4th
65 %	70 %	80 %	80 %

Supplemental Benefits per hour worked

	07/01/2024
Apprentices	$ 27.30

1-190z2B

Laborer - Heavy&Highway 01/01/2025

JOB DESCRIPTION Laborer - Heavy&Highway **DISTRICT** 1

ENTIRE COUNTIES
Hamilton, Herkimer, Madison, Oneida

PARTIAL COUNTIES
Fulton: Only Townships of Stratford, Oppenheim, Caroga and Ephratah
Montgomery: Only Townships of Minden, St. Johnsville, Canajoharie, Palatine and Root.

WAGES
GROUP # A: Basic, Drill Helper, Flagman, Outboard and Hand Boats.

GROUP # B: Bull Float, Chain Saw, Concrete Aggregate Bin, Concrete Bootmen, Gin Buggy, Hand or Machine Vibrator, Jack Hammer, Mason Tender, Mortar Mixer, Pavement Breaker, Handlers of all SteelMash, Small Generators for Laborers Tools, Installation of Bridge Drainage Pipe, Pipe Layers, Vibrator Type Rollers, Tamper, Drill Doctor, Tail or Screw Operator on Asphalt Paver, Water Pump Operators(1-1/2" and Single Diaphragm), Nozzle (Asphalt, Gunite, Seeding, and Sand Blasting), Laborers on Chain Link Fence Erection, Rock Splitter and Power Unit, Pusher Type Concrete Saw and all other Gas, Electric, Oil and Air Tool Operators, Wrecking Laborer.

GROUP # C: Rock or Drilling Machine Operators (only where a separate air compressor unit supplies power), Acetylene Torch Operators, Asphalt Raker and Powderman.

GROUP # D: Blasters, Form Setters (prefab curb radius), Stone or Granite Curb Setters.

GROUP # E: Employees performing hazardous waste removal, lead abatement and removal, or asbestos abatement and removal on a State and/or Federally designated waste site & where relevant State or Federal regulations require employees to use or wear forms of personal protection.

Per hour:	07/01/2024
Heavy/Highway Laborer:	
GROUP # A	$ 40.65
GROUP # B	40.85
GROUP # C	41.05
GROUP # D	41.25
GROUP # E	43.15

SHIFT WORK
All employees who work a single irregular workday that starts from 5:00 pm to 1:00 am on a governmental mandated night shift shall be paid an additional $5.00 per hour.

SUPPLEMENTAL BENEFITS
Per hour: $ 28.69

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
Note: If the holiday falls on Sunday, it will be celebrated on Monday. If the Monday Holiday is worked it will be paid at double time plus the Holiday pay. If the Holiday falls on a Saturday employer can choose to celebrate Saturday or give Friday off with pay. If the Saturday Holiday is worked it will be paid at double time plus the Holiday pay

REGISTERED APPRENTICES
Wages per hour

1000 hour terms at the following percentage of Journeyman's wage

1st	2nd	3rd	4th
65%	70%	80%	80%

SUPPLEMENTAL BENEFITS per hour worked

Apprentices $ 28.69

1-190z2H/H

Laborer - Tunnel 01/01/2025

JOB DESCRIPTION Laborer - Tunnel **DISTRICT** 1

ENTIRE COUNTIES
Albany, Fulton, Hamilton, Herkimer, Madison, Montgomery, Oneida, Rensselaer, Saratoga, Schenectady, Schoharie, Washington

WAGES
Class 1: All support laborers/sandhogs working above the shaft or tunnel

Class 2: All laborers/sandhogs working in the shaft or tunnel

Class 4: Safety Miners

Class 5: Site work related to Shaft/Tunnel

Per Hour	07/01/2024
Class 1	$ 47.20
Class 2	49.20
Class 4	51.45
Class 5	43.45

Toxic and hazardous waste, lead abatement and asbestos abatement work will be paid an additional $ 3.00 an hour.

SUPPLEMENTAL BENEFITS
Per hour

Journeyworker	$ 29.15

OVERTIME PAY
See (B, E, Q, V) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6, 15, 25) on HOLIDAY PAGE
Overtime: See (5, 6, 15, 16, 25) on HOLIDAY PAGE
Note: When a holiday falls on Sunday, the following Monday shall be considered a holiday and all work performed on either day shall be at the double time rate. When a holiday falls on Saturday, the preceding Friday shall be considered a holiday and all work performed on either day shall be at the double time rate.

REGISTERED APPRENTICES
FOR APPRENTICE RATES, refer to the appropriate Laborer Heavy & Highway wage rate contained in the wage schedule for the County and Location where the work is to be performed.

1-190/157T

Lineman Electrician — 01/01/2025

JOB DESCRIPTION Lineman Electrician **DISTRICT** 6

ENTIRE COUNTIES
Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Rensselaer, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Wyoming, Yates

WAGES
A Lineman/Technician shall perform all overhead aerial work. A Lineman/Technician on the ground will install all electrical panels, connect all grounds, install and connect all electrical conductors, assembly of all electrical materials, conduit, pipe, or raceway; placing of fish wire; pulling of cables, wires or fiber optic cable through such raceways; splicing of conductors; dismantling of such structures, lines or equipment.

Crane Operators: Operation of any type of crane on line projects.
Crawler Backhoe: Operation of tracked excavator/crawler backhoe with 1/2 yard bucket or larger on line projects.
Digging Machine Operator: All other digging equipment and augering on line projects.

A Groundman/Truck Driver shall: Build and set concrete forms, handle steel mesh, set footer cages, transport concrete in a wheelbarrow, hand or machine concrete vibrator, finish concrete footers, mix mortar, grout pole bases, cover and maintain footers while curing in cold weather, operate jack hammer, operate hand pavement breaker, tamper, concrete and other motorized saws, as a drill helper, operate and maintain generators, water pumps, chainsaws, sand blasting, operate mulching and seeding machine, air tools, electric tools, gas tools, load and unload materials, hand shovel and/or broom, prepare and pour mastic and other fillers, assist digger operator/equipment operator in ground excavation and restoration, landscape work and painting. Only when assisting a lineman technician, a groundman/truck driver may assist in installing conduit, pipe, cables and equipment.

NOTE: Includes Teledata Work within ten (10) feet of High Voltage Transmission Lines. Also includes digging of holes for poles, anchors, footer, and foundations for electrical equipment.

Below rates applicable on all overhead and underground distribution and maintenance work, and all overhead and underground transmission line work and the installation of fiber optic cable where no other construction trades are or have been involved. Includes access matting for line work.

Per hour:	07/01/2024
Group A:	
Lineman, Technician	$ 58.90
Crane, Crawler Backhoe	58.90

Welder, Cable Splicer	58.90
Group B:	
Digging Mach. Operator	53.01
Tractor Trailer Driver	50.07
Groundman, Truck Driver	47.12
Equipment Mechanic	47.12
Flagman	35.34

Additional $1.00 per hour for entire crew when a helicopter is used.

Below rates applicable on all electrical sub-stations, switching structures, fiber optic cable and all other work not defined as "Utility outside electrical work." Includes access matting for line work.

Group A:	
Lineman, Technician	$ 58.90
Crane, Crawler Backhoe	58.90
Cable Splicer	64.79
Certified Welder, Pipe Type Cable	61.85
Group B:	
Digging Mach. Operator	53.01
Tractor Trailer Driver	50.07
Groundman, Truck Driver	47.12
Equipment Mechanic	47.12
Flagman	35.34

Additional $1.00 per hour for entire crew when a helicopter is used.

Below rates applicable on all switching structures, maintenance projects, railroad catenary install/maintenance third rail installation, bonding of rails and pipe type cable and installation of fiber optic cable. Includes access matting for line work.

Group A:	
Lineman, Tech, Welder	$ 60.22
Crane, Crawler Backhoe	60.22
Cable Splicer	66.24
Certified Welder, Pipe Type Cable	63.23
Group B:	
Digging Mach. Operator	54.20
Tractor Trailer Driver	51.19
Groundman, Truck Driver	48.18
Equipment Mechanic	48.18
Flagman	36.13

Additional $1.00 per hour for entire crew when a helicopter is used.

Below rates applicable on all overhead and underground transmission line work & fiber optic cable where other construction trades are or have been involved. This applies to transmission line work only, not other construction. Includes access matting for line work.

Group A:	
Lineman, Tech, Welder	$ 61.41
Crane, Crawler Backhoe	61.41
Group B:	
Digging Mach. Operator	55.27
Tractor Trailer Driver	52.20
Groundman, Truck Driver	49.13
Equipment Mechanic	49.13
Flagman	36.85

Additional $1.00 per hour for entire crew when a helicopter is used.

SHIFT WORK

THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED MULTIPLE SHIFTS OF AT LEAST FIVE (5) DAYS DURATION WORKED BETWEEN THE HOURS LISTED BELOW:

1ST SHIFT	8:00 AM to 4:30 PM REGULAR RATE
2ND SHIFT	4:30 PM to 1:00 AM REGULAR RATE PLUS 17.3 %
3RD SHIFT	12:30 AM to 9:00 AM REGULAR RATE PLUS 31.4 %

SUPPLEMENTAL BENEFITS

Per hour:

	07/01/2024
Group A	$ 30.90 *plus 7% of the hourly wage paid
Group B	$ 26.90 *plus 7% of the hourly wage paid

*The 7% is based on the hourly wage paid, straight time or premium time.

OVERTIME PAY

See (B, E, Q, X) on OVERTIME PAGE. NOTE: Double time for all emergency work designated by the Dept. of Jurisdiction.
WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked. Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY

Paid	See (5, 6, 8, 13, 25) on HOLIDAY PAGE plus Governor of NYS Election Day.
Overtime	See (5, 6, 8, 13, 25) on HOLIDAY PAGE plus Governor of NYS Election Day.

NOTE: All paid holidays falling on Saturday shall be observed on the preceding Friday. All paid holidays falling on Sunday shall be observed on the following Monday. Supplements for holidays paid at straight time.

REGISTERED APPRENTICES

WAGES per hour: 1000 hour terms at the following percentage of the applicable Journeyworker's Lineman wage.

1st	2nd	3rd	4th	5th	6th	7th
60%	65%	70%	75%	80%	85%	90%

SUPPLEMENTAL BENEFITS per hour:

07/01/2024
$ 26.90 *plus 7% of the hourly wage paid

*The 7% is based on the hourly wage paid, straight time or premium time.

6-1249a

Lineman Electrician - Teledata — 01/01/2025

JOB DESCRIPTION Lineman Electrician - Teledata **DISTRICT** 6

ENTIRE COUNTIES

Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Rensselaer, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

WAGES

Per hour:

For outside work, stopping at first point of attachment (demarcation).

	07/01/2024	01/01/2025
Cable Splicer	$ 39.24	$ 40.81
Installer, Repairman	$ 37.24	$ 38.73
Teledata Lineman	$ 37.24	$ 38.73
Tech., Equip. Operator	$ 37.24	$ 38.73
Groundman	$ 19.74	$ 20.53

NOTE: EXCLUDES Teledata work within ten (10) feet of High Voltage (600 volts and over) transmission lines. For this work please see LINEMAN.

SHIFT WORK

THE FOLLOWING RATES APPLY WHEN THE CONTRACTING AGENCY MANDATES MULTIPLE SHIFTS OF AT LEAST FIVE (5) DAYS DURATION ARE WORKED. WHEN TWO (2) OR THREE (3) SHIFTS ARE WORKED THE FOLLOWING RATES APPLY:

1ST SHIFT	REGULAR RATE
2ND SHIFT	REGULAR RATE PLUS 10%
3RD SHIFT	REGULAR RATE PLUS 15%

SUPPLEMENTAL BENEFITS

Per hour:	07/01/2024	01/01/2025
Journeyworker	$ 5.70 *plus 3% of the hour wage paid	$ 5.70 *plus 3% of the hour wage paid

*The 3% is based on the hourly wage paid, straight time rate or premium rate.

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked. Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 16) on HOLIDAY PAGE

6-1249LT - Teledata

Lineman Electrician - Traffic Signal, Lighting — 01/01/2025

JOB DESCRIPTION Lineman Electrician - Traffic Signal, Lighting **DISTRICT** 6

ENTIRE COUNTIES

Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Cortland, Delaware, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orleans, Oswego, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Warren, Washington, Wayne, Wyoming, Yates

WAGES

Lineman/Technician shall perform all overhead aerial work. A Lineman/Technician on the ground will install all electrical panels, connect all grounds, install and connect all electrical conductors which includes, but is not limited to road loop wires; conduit and plastic or other type pipes that carry conductors, flex cables and connectors, and to oversee the encasement or burial of such conduits or pipes.

Crane Operators: Operation of any type of crane on Traffic Signal/Lighting projects.
Crawler Backhoe: Operation of tracked excavator/crawler backhoe with 1/2 yard bucket or larger on Traffic Signal/Lighting projects.
Digging Machine Operator: All other digging equipment and augering on Traffic Signal/Lighting projects.

A Groundman/Truck Driver shall: Build and set concrete forms, handle steel mesh, set footer cages, transport concrete in a wheelbarrow, hand or machine concrete vibrator, finish concrete footers, mix mortar, grout pole bases, cover and maintain footers while curing in cold weather, operate jack hammer, operate hand pavement breaker, tamper, concrete and other motorized saws, as a drill helper, operate and maintain generators, water pumps, chainsaws, sand blasting, operate mulching and seeding machine, air tools, electric tools, gas tools, load and unload materials, hand shovel and/or broom, prepare and pour mastic and other fillers, assist digger operator/equipment operator in ground excavation and restoration, landscape work and painting. Only when assisting a lineman technician, a groundman/truck driver may assist in installing conduit, pipe, cables and equipment.

A flagger's duties shall consist of traffic control only.

Per hour:	07/01/2024
Group A:	
Lineman, Technician	$ 50.54
Crane, Crawler Backhoe	50.54
Certified Welder	53.07
Group B:	
Digging Machine	45.49
Tractor Trailer Driver	42.96
Groundman, Truck Driver	40.43
Equipment Mechanic	40.43

Flagman 30.32

Above rates are applicable for installation, testing, operation, maintenance and repair on all Traffic Control (Signal) and Illumination (Lighting) projects, Traffic Monitoring Systems, and Road Weather Information Systems. Includes digging of holes for poles, anchors, footer foundations for electrical equipment; assembly of all electrical materials or raceway; placing of fish wire; pulling of cables, wires or fiber optic cable through such raceways; splicing of conductors; dismantling of such structures, lines or equipment.

SHIFT WORK

THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED MULTIPLE SHIFTS OF AT LEAST FIVE (5) DAYS DURATION WORKED BETWEEN THE HOURS LISTED BELOW:

1ST SHIFT	8:00 AM TO 4:30 PM	REGULAR RATE
2ND SHIFT	4:30 PM TO 1:00 AM	REGULAR RATE PLUS 17.3%
3RD SHIFT	12:30 AM TO 9:00 AM	REGULAR RATE PLUS 31.4%

SUPPLEMENTAL BENEFITS

Per hour worked:

	07/01/2024
Group A	$ 30.90 *plus 7% of the hourly wage paid
Group B	$ 26.90 *plus 7% of the hourly wage paid

*The 7% is based on the hourly wage paid, straight time or premium time.

OVERTIME PAY

See (B, E, Q, X) on OVERTIME PAGE. NOTE: Double time for all emergency work designated by the Dept. of Jurisdiction.
WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked. Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY

Paid: See (5, 6, 8, 13, 25) on HOLIDAY PAGE plus Governor of NYS Election Day.
Overtime: See (5, 6, 8, 13, 25) on HOLIDAY PAGE plus Governor of NYS Election Day.

NOTE: All paid holidays falling on Saturday shall be observed on the preceding Friday. All paid holidays falling on Sunday shall be observed on the following Monday. Supplements for holidays paid at straight time.

REGISTERED APPRENTICES

WAGES per hour: 1000 hour terms at the following percentage of the applicable Journeyworker's Lineman wage.

1st	2nd	3rd	4th	5th	6th	7th
60%	65%	70%	75%	80%	85%	90%

SUPPLEMENTAL BENEFITS per hour:

07/01/2024
$ 26.90 *plus 7% of the hourly wage paid

*The 7% is based on the hourly wage paid, straight time or premium time.

6-1249a-LT

Lineman Electrician - Tree Trimmer — 01/01/2025

JOB DESCRIPTION Lineman Electrician - Tree Trimmer **DISTRICT** 6

ENTIRE COUNTIES

Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Rensselaer, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Wyoming, Yates

WAGES

Applies to line clearance, tree work and right-of-way preparation on all new or existing energized overhead or underground electrical, telephone and CATV lines. This also includes stump removal near underground energized electrical lines including telephone and CATV lines.

Per hour:	07/01/2024
Tree Trimmer	$ 31.44
Equipment Operator	27.80
Equipment Mechanic	27.80
Truck Driver	23.15
Groundman	19.07
Flag person	15.00*

*NOTE-Rate effective on 01/01/2025 - $15.50 due to minimum wage increase.

SUPPLEMENTAL BENEFITS
Per hour:

	07/01/2024
Journeyworker	$ 10.48 *plus 4.5% of the hourly wage paid

* The 4.5% is based on the hourly wage paid, straight time rate or premium rate.

OVERTIME PAY
See (B, E, Q, X) on OVERTIME PAGE
WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked. Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY
Paid: See (5, 6, 8, 15) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 15, 16, 25) on HOLIDAY PAGE
NOTE: All paid holidays falling on a Saturday shall be observed on the preceding Friday. All paid holidays falling on a Sunday shall be observed on the following Monday.

6-1249TT

Mason - Building — 01/01/2025

JOB DESCRIPTION Mason - Building **DISTRICT** 12

ENTIRE COUNTIES
Herkimer, Jefferson, Lewis, Oneida, St. Lawrence

PARTIAL COUNTIES
Madison: Entire County except the Townships of Sullivan & Cazenovia

WAGES
Per hour 07/01/2024

Tile/Marble/Terrazzo

Setter	$ 35.85
Finisher	28.52

SUPPLEMENTAL BENEFITS
Per hour worked

Journeyman Setters	$ 20.01
Journeyman Finishers	19.30

OVERTIME PAY
See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wages per hour

Hour terms at the following percentage of journeyman's wage

Setter:

1st term 500 hours	60%
2nd term 1000 hours	70%
3rd term 1000 hours	80%
4th term 1000 hours	85%
5th term 1000 hours	90%
6th term 1500 hours	95%

Finsher;

1st term 500 HOURS	70%
2ND term 1000 HOURS	80%
3RD term 1000 HOURS	90%
4TH term 1200 HOURS	95%

Supplemental Benefits per hour worked

Setter:

1st & 2nd Term	$ 12.41
3rd & 4th Term	16.21
5th Term	18.11
6th Term	20.01

Finishers:

1st & 2nd Term	$ 11.76
All others	15.53

12-2TS.2

Mason - Building — 01/01/2025

JOB DESCRIPTION Mason - Building **DISTRICT** 12

ENTIRE COUNTIES
Herkimer, Oneida

PARTIAL COUNTIES
Lewis: The townships of Lewis, Leyden, Osceola, Turin and West Turin
Madison: Entire County except the Townships of Sullivan and Cazenovia

WAGES
Per hour 07/01/2024

Bricklayer/Blocker	$ 39.24
Cement Mason(Bldg)	39.24
Plasterer/Fireproofing*	39.24
Stone Mason	39.24
Concrete Cutter	39.24
Pointer/Caulker/Cleaner	39.24

Additional $.25 per hr. for work in restricted radiation area of atomic plant.
Additional $5.00 per day more for employees working on a two-point suspension scaffold (Pointer, Caulker, and Cleaner are excluded).

(*)Fireproofer on Structural only.

SUPPLEMENTAL BENEFITS
Per hour worked

Journeyman	$ 21.63

OVERTIME PAY
See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wages per hour

750 hour terms at the following percentage of Journey's wage

1st	2nd	3rd	4th	5th	6th	7th	8th
60%	60%	65%	70%	75%	80%	85%	90%

Supplemental Benefits per hour worked:

All Terms $21.63

12-2b.2

Mason - Heavy&Highway 01/01/2025

JOB DESCRIPTION Mason - Heavy&Highway **DISTRICT** 12

ENTIRE COUNTIES
Albany, Cayuga, Clinton, Columbia, Essex, Franklin, Fulton, Greene, Hamilton, Herkimer, Jefferson, Lewis, Madison, Montgomery, Oneida, Oswego, Rensselaer, Saratoga, Schenectady, Schoharie, St. Lawrence, Warren, Washington

PARTIAL COUNTIES
Onondaga: For Heavy & Highway Cement Mason or Plaster Work in Onondaga County, refer to Mason-Heavy&Highway tag 12-2h/h on.

WAGES
Per hour

	07/01/2024
Mason & Bricklayer	$ 42.26

Additional $1.00 per hour for work on any swing scaffold or staging suspended by means of ropes or cables.

SUPPLEMENTAL BENEFITS
Per hour worked

Journeyman $ 22.43

OVERTIME PAY
See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
.

REGISTERED APPRENTICES
Wages per hour

750 HR TERMS at the following percent of Journeyman's wage

1st	2nd	3rd	4th	5th	6th	7th	8th
60%	60%	65%	70%	75%	80%	85%	90%

Supplemental Benefits per hour worked

0 to 500 Hours	$ 13.68
All Other	22.43

12-2hh.1

Millwright 01/01/2025

JOB DESCRIPTION Millwright **DISTRICT** 6

ENTIRE COUNTIES
Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orleans, Oswego, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Wyoming, Yates

WAGES
THE FOLLOWING RATE APPLIES TO ANY GAS/STEAM TURBINE AND OR RELATED COMPONENT WORK, INCLUDING NEW INSTALLATIONS OR MAINTENANCE AND ANY/ALL WORK PERFORMED WITHIN THE PROPERTY LIMITS OF A NUCLEAR FACILITY.

Per hour:	07/01/2024	07/01/2025 Additional
Millwright - Power Generation	$ 45.00	$2.50*

* To be allocated at a later date.

NOTE: ADDITIONAL PREMIUMS PAID FOR THE FOLLOWING WORK LISTED BELOW (amount subject to any overtime premiums):
- Certified Welders shall receive an additional $1.75 per hour provided they are directed to perform Certified Welding.

- If a work site has been declared a hazardous site by the Owner and the use of protective gear (including, as a minimum, air purifying canister-type chemical respirators) is required, then that employee shall receive an additional $1.50 per hour.
- An employee performing the work of a machinist shall receive an additional $2.00 per hour. For the purposes of this premium to apply, a "machinist" is a person who uses a lathe, Bridgeport, milling machine or similar type of tool to make or modify parts.
- When performing work underground at 500 feet and below, the employee shall receive an additional $1.00 per hour.

SUPPLEMENTAL BENEFITS
Per hour paid:

Journeyworker	$ 27.95*

*NOTE: Subject to OT premium

OVERTIME PAY
See (B, E, E2, Q, V) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
NOTE: Any holiday that falls on Sunday shall be observed the following Monday. Any holiday that falls on Saturday shall be observed the preceding Friday.

REGISTERED APPRENTICES
WAGES per hour: One year terms at the following percentage of Journeyworker's wage:

Appr. 1st year	65 %*
Appr. 2nd year	75 %*
Appr. 3rd year	80 %*
Appr. 4th year	90 %*

*NOTE: Additional premium for the following work listed below:

Certified Welder	$ 1.75
Hazardous Waste Work	1.50
Machinist	2.00
Underground (500' and below)	1.00

SUPPLEMENTAL BENEFITS per hour:

Appr. 1st year	$ 11.89
Appr. 2nd year	23.14
Appr. 3rd year	24.74
Appr. 4th year	26.35

6-1163Power

Millwright — 01/01/2025

JOB DESCRIPTION Millwright **DISTRICT** 2

ENTIRE COUNTIES
Clinton, Essex, Franklin, Hamilton, Jefferson, Lewis, Oneida, Onondaga, Oswego, St. Lawrence, Warren, Washington

WAGES

Per hour:	07/01/2024	07/01/2025 Additional
Building	$ 36.32	$ 3.00*
Heavy & Highway	39.82	3.00*

*To be allocated at a later date

NOTE ADDITIONAL PREMIUMS PAID FOR THE FOLLOWING WORK LISTED BELOW (amount subject to any overtime premiums):
- Certified Welders shall receive $1.75 per hour in addition to the current Millwrights rate provided he/she is directed to perform certified welding.
- For Building work if a work site has been declared a hazardous site by the Owner and the use of protective gear (including, as a minimum, air purifying canister-type chemical respirators) are required, then that employee shall receive a $1.50 premium per hour for Building work.
- For Heavy & Highway work if the work is performed at a State or Federally designated hazardous waste site where employees are required to wear protective gear, the employees performing the work shall receive an additional $2.00 per hour over the millwright heavy and highway wage rate for all hours worked on the day protective gear was worn.
- An employee performing the work of a machinist shall receive $2.00 per hour in addition to the current Millwrights rate. For the purposes of this premium to apply, a "machinist" is a person who uses a lathe, Bridgeport, milling machine or similar type of tool to make or modify parts.
- When performing work underground at 500 feet and below, the employee shall receive an additional $1.00.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 26.59

OVERTIME PAY
See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
Note: Any holiday that falls on Sunday shall be observed the following Monday. Any holiday that falls on Saturday shall be observed the preceding Friday.

REGISTERED APPRENTICES
Wages per hour:

(1)year terms at the following percentage of Journeyworker's rate.

1st	2nd	3rd	4th
65%	75%	80%	90%

Supplemental Benefits per hour:

Apprentices:

1st term	$ 11.89
2nd term	22.19
3rd term	23.65
4th term	25.13

2-1163.2

Operating Engineer - Building — 01/01/2025

JOB DESCRIPTION Operating Engineer - Building **DISTRICT** 6

ENTIRE COUNTIES
Cayuga, Cortland, Jefferson, Lewis, Madison, Oneida, Onondaga, Oswego, Seneca, St. Lawrence, Tompkins

WAGES
NOTE:
---If a prime contract is let for site work only, meaning no buildings are involved in their site contract, the Heavy/Highway rates would be applicable. When a prime contract is let for site work and building excavation is part of that contract, the Building rates would be applicable for the Operators classification.
---In the event that equipment listed below is operated by robotic control, the classification covering the operation will be the same as if manually operated.
---If a second employee is required by the employer for operation of any covered machine, they shall be an Engineer Class C.

CLASS A1*: All Cranes (A1 Includes Boom Trucks over 5 tons, Cableway, Cherry Picker, Derrick, Dragline, Dredge, Overhead Crane, Pile Driver, Tower Crane**, Truck Crane, Whirlies).

CLASS A: Air Plako, Asphalt & Blacktop Roller, Automated Concrete Spreader (CMI or equivalent), Automated Fine Grade Machine (CMI), Backhoe, Barrel Shredder, Belt Placer, Blacktop Spreader (such as Barber-Greene & Blaw Knox), Blacktop Plant (automated), Blast or Rotary Drill (Truck or Cat mounted), Boom Trucks 5 ton and under, Burning Plant Operator, Caisson Auger, Central Mix Plant (automated), Concrete Pump, Crusher (Rock), De-watering Press, Diesel Power Unit, Dirt Filter Press with Operation Equipment, Dredge, Dual Drum Paver, Elevating Grader (self-propelled or towed), Elevator Hoist - Two Cage, Excavator - all purpose hydraulically operated, Fork Lift (Loed/Lull and other rough terrain type), Front End Loader (4 c.y. and over), Gradall, Grader (Power), Head Tower (Saurman or equal), Hoist (2 or 3 Drum), Hydroblaster (Laser Pump), Light Plants - Compressors and Generators, Locomotive, Maintenance Engineer, Maintenance Welder, Mine Hoist, Mucking Machine or Mole, Quarry Master or Equivalent, Refrigeration Equipment (for soil stabilization), Scraper, Sea Mule, Shovel, Side Boom, Slip Form Paver, Straddle Buggy (Ross Carrier, Lumber Carrier), Tractor Drawn Belt Type Loader (Euclid Loader), Trenching Machine (digging capacity of over 4ft. depth), Truck or Trailer Mounted Log Chipper (self-feeder), Tug Operator (Manned, rented equipment excluded), Tunnel Shovel, Vibro or Sonic Hammer Controls (when not mounted in proximity to Rig Operator), Work Boat Operator including LCM's.

CLASS B: "A" Frame Truck, Back Dumps, Blacktop Plant (non-automatic), Boring Machine, Bulldozer, Cage-Hoist, Central Mix Plant (non-automated), Compressor, Pump, Generator or Welding machine (when used in battery of not more than five (5)), Concrete Paver (single drum over 16'), Core boring machine, Drill Rigs - tractor mounted, Elevator - as material hoist, Farm Tractor (with or without accessories), Fork Lift (over 10 ton with or without attachments), Front End Loader (under 4 c.y.), Grout Pump, Gunite Machine, High Pressure Boiler (15 lbs. & over), Hoist (one drum), Hydraulic Breaking Hammer (Drop Hammer), Kolman Plant Loader (screening gravel), Maintenance Grease Man, Mixer for stabilized base - self-propelled (Seaman Mixer), Monorail Machine, Parapet Concrete or Pavement Grinder, Parts Man, Post Driver (truck or tractor mounted), Post Hole Digger (truck or tractor mounted), Power Sweeper (Wayne or similar), Pump-Crete or Squeeze-Crete, Road Widener (front end of Grader or self-propelled), Roller, Self-contained hydraulic bench drill, Shell Winder (motorized), Skid steer (Bobcat type loader), Snorkel (overhead arms), Snowblower control man, Tractor (with or without accessories), Trenching Machine (digging capacity of 4 ft. or less), Tugger Hoist, Vacuum Machine (self-propelled or mounted), Vibro Tamp, Well Drill / Well Point System (Submersible pumps when used in lieu of Well Point System), Winch (Motor driven), Winch Cat, Winch Truck.

CLASS C: Compressor (up to 500 cfm), Concrete Paver or Mixer (under 16'), Concrete Pavement Spreaders & Finishers (not automated), Conveyor (over 12 ft), Electric Submersible Pump (4" and over), Fine Grade Machine (not automated), Fireman, Fork Lift ("with or without" attachments, 10 ton and under), Form Tamper, Generator (2,500 watts and over), Hydraulic Pump, Mechanical Heaters (More than two (2) Mechanical Heaters or any Mechanical Heater or Heaters whose combined output exceeds 640,000 BTU per hour (manufacturer's rating) plus one self-contained heating unit - i.e. Sundog or Air Heat type - New Holland Hay Dryer type excluded), Mulching Machine, Oiler, Power Driven Welding Machine (300 amp and over, other than all electric. One Welding Machine under 300 amp will not require an engineer unless in a battery), Power Heaterman (hay dryer), Pumps (water and trash), Revinus Widener (road widener), Single Light Plant, Steam Cleaner or Jenny.

Per hour: Building	07/01/2024	07/01/2025
Class A1*	$ 47.62	$ 49.61
Class A	46.12	48.11
Class B	44.00	45.99
Class C	39.78	41.77

Additional $2.50 per hour if work requires Personal Protective Equipment for hazardous waste site activities with a level C or over rating.

(*) TONNAGE PREMIUMS:
All cranes up to 64 ton capacity - A1 rate
All cranes 65 ton to 110 ton capacity - A1 rate plus $ 1.50
All cranes 111 ton to 199 ton capacity - A1 rate plus $ 2.00
All cranes 200 ton to 399 ton capacity - A1 rate plus $ 3.00
All cranes 400 ton to 599 ton capacity - A1 rate plus $ 4.00
All cranes 600 ton to 799 ton capacity - A1 rate plus $ 5.00
All cranes 800 ton to 999 ton capacity - A1 rate plus $ 6.00
All cranes 1000 ton capacity and over - A1 rate plus $ 7.00

(**) Tower Cranes - A1 rate plus $2.50 (no tonnage premiums apply)

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 31.02	$ 32.12

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
NOTE: If the holiday falls on Sunday, it will be celebrated on Monday.

REGISTERED APPRENTICES
WAGES per hour: One thousand hour terms at the following percentage of Journeyworker's CLASS A wage:

1st year	60%
2nd year	65%
3rd year	70%
4th year	80%

Additional $2.50 per hour if work requires Personal Protective Equipment for hazardous waste site activities with a level C or over rating.

SUPPLEMENTAL BENEFITS per hour:

	07/01/2024	07/01/2025

All Terms:	$ 30.95	$ 32.05	

6-158-545b.s

Operating Engineer - Heavy&Highway 01/01/2025

JOB DESCRIPTION Operating Engineer - Heavy&Highway **DISTRICT** 6

ENTIRE COUNTIES
Cayuga, Cortland, Jefferson, Lewis, Madison, Oneida, Onondaga, Oswego, Seneca, St. Lawrence, Tompkins

WAGES
NOTE:
---In the event that equipment listed below is operated by robotic control, the classification covering the operation will be the same as if manually operated.
---If a second employee is required by the employer for operation of any covered machine, they shall be an Engineer Class C.

CLASS A1*: All Cranes that require a NYS Crane License (Boom Truck, Cherry Picker, Derrick, Dragline, Overhead Crane (Gantry or Straddle Type), Pile Driver, Tower Cranes (including self erecting)**, Truck Crane).

CLASS A: Asphalt Curb Machine (self-propelled, slipform); Asphalt Paver; Automated Concrete Spreader (CMI type); Automatic Fine Grader; Backhoe (except tractor mounted, rubber tired); Backhoe Excavator, Full Swing (CAT 212 or similar type); Back Filling Machine; Belt Placer (CMI type); Blacktop Plant (automated);Blacktop Roller; Bull Dozer being operated with active GPS; Cableway; Caisson Auger; Central Mix Concrete Plant (automated); Concrete Curb Machine (self-propelled, slipform); Concrete Pump; Cranes - listed in A1 that do not require a NYS Crane License; Directional Boring/Drilling Machine; Dredge; Dual Drum Paver; Excavator (all purpose-hydraulic, Gradall or similar); Front End Loader (4 cu. yd. & over); Head Tower (Sauerman or equal); Hoist (two or three drum); Holland Loader; Maintenance Engineer; Mine Hoist; Mucking Machine or Mole; Pavement Breaker (SP Wertgen; PB-4 and similar type); Profiler/Milling Machine (over 105 h.p.); Power Grader; Quad 9; Quarry Master (or equivalent); Rotating Telehandler; Scraper (including challenger type); Shovel; Side Boom; Slip Form Paver; Tractor Drawn Belt-Type Loader; Truck or Trailer Mounted Chipper (self-feeder); Tug Operator (manned rented equipment excluded); Tunnel Shovel.

CLASS B: Backhoe (tractor mounted, rubber tired); Bituminous Recycler Machine; Bituminous Spreader and Mixer; Blacktop Plant (non-automated); Blast or Rotary Drill (truck or tractor mounted); Boring Machine; Bridge Deck Finishing Machine; Brokk; Cage Hoist; Central Mix Plant (non-automated) and All Concrete Batching Plants; Concrete Paver (over 16'); Crawler Drill (self-contained); Crusher; Diesel Power Unit; Drill Rigs (truck or tractor mounted); Front End Loader (under 4 cu. yd.); Greaseman - Lubrication Engineer; HiPressure Boiler (15 lbs & over); Hoist (one drum); Hydro-Axe; Kolman Plant Loader & similar type loaders; Locomotive; Material Handling Knuckle Boom; Mini Excavators (under 18,000 lbs.); Mixer (for stabilized base, self-propelled); Monorail Machine; Profiler/Milling Machine (105 h.p. and under); Plant Engineer; Prentice Loader; Pug Mill; Pump Crete; Ready Mix Concrete Plant; Refrigeration Equipment (for soil stabilization); Road Widener; Roller (all above subgrade, See Class A for Blacktop Roller); Sea Mule; Self-contained ride-on Rock Drill (excluding Air-Track type drill); Skidder; Tractor with Dozer and/or Pusher; Trencher; Tugger Hoist; Vacuum Machine (mounted or towed); Vermeer Saws (ride-on, any size or type); Welder; Winch and Winch Cat; Work Boat Operator including L.C.M.'s.

CLASS C: "A" Frame Winch Hoist (On Truck); Aggregate Plant; Articulated Heavy Hauler; Asphalt or Concrete Grooving Machine (ride-on); Ballast Regulator (ride-on); Bituminous Heater (self-propelled); Boat (powered); Boiler (used in conjunction with production); Cement & Bin Operator; Compressors***; Concrete Pavement Spreader and Finisher; Concrete Paver or Mixer (16' & under); Concrete Saw (self-propelled); Conveyor; Deck Hand; Directional Boring/Drilling Machine Locator; Drill (Core); Drill (Well); Dust Collectors***; Electric Pump When Used in Conjunction with Well Point System; Farm Tractor with accessories; Fine Grade Machine; Fireman; Fork Lift; Form Tamper; Generators***; Grout Pump; Gunite Machine; Hammers (hydraulic self-propelled); Heaters***; Hydra-Spiker (ride-on); Hydraulic Pump (jacking system); Hydro-Blaster (water); Light Plants***; Mulching Machine; Oiler; Parapet Concrete or Pavement Grinder; Post Hole Digger (excluding hand-held); Post Driver; Power Broom (towed); Power Heaterman; Power Sweeper; Pumps***; Revinius Widener; Roller (subgrade & fill); Scarifier (ride-on); Shell Winder; Skid Steer Loader (Bobcat or similar, including all attachments); Span Saw (ride-on); Steam Cleaner; Tamper (ride-on); Tie Extractor (ride-on); Tie Handlers (ride-on); Tie Inserters (ride-on); Tie Spacers (ride-on); Tire Repair; Track Liner (ride-on); Tractor; Tractor (with towed accessories); Vacuum Machine (self-propelled); Vibratory Compactor; Vibro Tamp; Welding Machines***; Well Point.

***CLASS C NOTE: Considered Hands-Off (unmanned). Includes only operation and maintenance of the equipment.

Per hour: H/H	07/01/2024	07/01/2025
CLASS A1*	$ 56.51	$ 58.85
CLASS A	53.51	55.85
CLASS B	52.63	54.97
CLASS C	49.35	51.69

(*) TONNAGE PREMIUMS:
All cranes up to 64 ton capacity - A1 rate
All cranes 65 ton to 110 ton capacity - A1 rate plus $ 1.50
All cranes 111 ton to 199 ton capacity- A1 rate plus $ 2.00
All cranes 200 ton to 399 ton capacity - A1 rate plus $ 3.00

All cranes 400 ton to 599 ton capacity - A1 rate plus $ 4.00
All cranes 600 ton to 799 ton capacity - A1 rate plus $ 5.00
All cranes 800 ton to 999 ton capacity - A1 rate plus $ 6.00
All cranes 1000 ton capacity and over - A1 rate plus $ 7.00

(**) Tower Cranes - A1 rate plus $3.00 (no tonnage premiums apply)

- Cranes in Luffer Configuration - A1 rate plus $ 5.00
- Cranes with external ballast (Tray or Wagon) - A1 rate plus $ 5.00

Additional $2.50 per hour for hazardous waste removal work on a State and/or Federally designated waste site which requires employees to wear Level C or above forms of personal protection.

SHIFT WORK
SINGLE IRREGULAR WORK SHIFT: Additional $2.50 per hour for all employees who work a single irregular work shift starting from 5:00 PM to 1:00 AM that is mandated by the Contracting Agency.

SUPPLEMENTAL BENEFITS

Per hour:	07/01/2024	07/01/2025
Journeyworker	$ 32.45	$ 33.55

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
NOTE: If a holiday falls on Sunday, it will be celebrated on Monday. If an employee works on this Monday, they shall be compensated at double time plus the holiday pay (triple time). If a holiday falls on a Saturday, employees who work a Saturday Holiday shall be paid double time plus the holiday pay.

REGISTERED APPRENTICES
WAGES per hour: One thousand hour terms at the following percentage of Journeyworker's CLASS B wage.

1st term	60%
2nd term	70%
3rd term	80%
4th Term	90%

Additional $2.50 per hour for hazardous waste removal work on a State and/or Federally designated waste site which requires employees to wear Level C or above forms of personal protection.

SUPPLEMENTAL BENEFITS per hour: Same as Journeyworker

6-158-545h

Operating Engineer - Survey Crew — 01/01/2025

JOB DESCRIPTION Operating Engineer - Survey Crew **DISTRICT** 12

ENTIRE COUNTIES
Albany, Allegany, Broome, Cayuga, Chemung, Chenango, Clinton, Columbia, Cortland, Essex, Franklin, Fulton, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Oneida, Onondaga, Ontario, Oswego, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Tioga, Tompkins, Warren, Washington, Wayne, Yates

PARTIAL COUNTIES
Dutchess: The northern portion of the county from the northern boundary line of the City of Poughkeepsie, north.
Genesee: Only the portion of the county that lies east of a line down the center of Route 98 to include all area that lies within the City of Batavia.

WAGES
These rates apply to Building, Tunnel and Heavy Highway.

Per hour:
SURVEY CLASSIFICATIONS:

Party Chief - One who directs a survey party.
Instrument Person - One who operates the surveying instruments.
Rod Person - One who holds the rods and assists the Instrument Person.

	07/01/2024
Party Chief	$ 50,65
Instrument Person	46.54

Rod Person 34.55
Additional $3.00/hr. for Tunnel Work
Additional $2.50/hr. for Hazardous Work Site

SUPPLEMENTAL BENEFITS
Per hour worked:

Journeyman $ 29.75

OVERTIME PAY
See (B, E, P, *X) on OVERTIME PAGE
*Note: $25.10/Hr. Only for "ALL" premium hours paid when worked.

HOLIDAY
Paid: See (5, 6) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES
WAGES: 1000 hour terms based on the Percentage of Rod Persons Wage:

	07/01/2024
0-1000	60%
1001-2000	70%
2001-3000	80%

SUPPLEMENTAL BENEFIT per hour worked:

0-1000	$ 21.53 / PHP $18.45
1001-2000	24.55 / " 20.45
2001-3000	27.58/ " 22.93

NOTE: PHP is premium hours paid when worked.

12-158-545 D.H.H.

Operating Engineer - Survey Crew - Consulting Engineer 01/01/2025

JOB DESCRIPTION Operating Engineer - Survey Crew - Consulting Engineer **DISTRICT** 12

ENTIRE COUNTIES
Albany, Allegany, Broome, Cayuga, Chemung, Chenango, Clinton, Columbia, Cortland, Essex, Franklin, Fulton, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Oneida, Onondaga, Ontario, Oswego, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Tioga, Tompkins, Warren, Washington, Wayne, Yates

PARTIAL COUNTIES
Dutchess: The northern portion of the county from the northern boundary line of the City of Poughkeepsie, north.
Genesee: Only the portion of the county that lies east of a line down the center of Route 98 to include all area that lies within the City of Batavia.

WAGES
These rates apply to feasibility and preliminary design surveying, line and grade surveying for inspection or supervision of construction when performed under a Consulting Engineer Agreement.

Per hour:
SURVEY CLASSIFICATIONS:

Party Chief - One who directs a survey party.
Instrument Person - One who operates the surveying instruments.
Rod Person - One who holds the rods and assists the Instrument Person.

	07/01/2024
Party Chief	$ 50.65
Instrument Person	46.54
Rod Person	34.55

Additional $3.00/hr. for Tunnel Work.
Additional $2.50/hr. for EPA or DEC certified toxic or hazardous waste work.

SUPPLEMENTAL BENEFITS
Per hour worked:

Journeyman $ 29.75

OVERTIME PAY
See (B, E, Q, *X) on OVERTIME PAGE

*Note: $25.10/Hr. Only for "ALL" premium hours paid when worked.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES
WAGES: 1000 hour terms based on percentage of Rod Persons Wage:

	07/01/2024
0-1000	60%
1001-2000	70%
2001-3000	80%

SUPPLEMENTAL BENEFIT per hour worked:

0-1000	$ 21.53 / PHP $18.45
1001-2000	$ 24.55 / " 20.45
2001-3000	$ 26.98 / " 22.93

NOTE: PHP is premium hours paid when worked.

12-158-545 DCE

Operating Engineer - Tunnel — 01/01/2025

JOB DESCRIPTION Operating Engineer - Tunnel **DISTRICT** 7

ENTIRE COUNTIES
Albany, Allegany, Broome, Cayuga, Chemung, Chenango, Clinton, Columbia, Cortland, Essex, Franklin, Fulton, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Oneida, Onondaga, Ontario, Oswego, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Tioga, Tompkins, Warren, Washington, Wayne, Yates

PARTIAL COUNTIES
Dutchess: Northern part of Dutchess, to the northern boundary line of the City of Poughkeepie, then due east to Route 115 to Bedell Road, then east along Bedell Road to VanWagner Road, then north along VanWagner Road to Bower Road, then east along Bower Road to Rte. 44 east to Rte. 343, then along Rte. 343 east to the northern boundary of the Town of Dover Plains and east along the northern boundary of the Town of Dover Plains, to the borderline of the State of Connecticut.
Genesee: Only that portion of the county that lies east of a line drawn down the center of Route 98 and the entirety of the City of Batavia.

WAGES
CLASS A: Automatic Concrete Spreader (CMI Type); Automatic Fine Grader; Backhoe (except tractor mounted, rubber tired); Belt Placer (CMI Type); Blacktop Plant (automated); Cableway; Caisson Auger; Central Mix Concrete Plant (automated); Concrete Curb Machine (self-propelled slipform); Concrete Pump (8" or over); Dredge; Dual Drum Paver; Excavator; Front End Loader (4 cu. yd & over); Gradall; Head Tower (Sauerman or Equal); Hoist (shaft); Hoist (two or three Drum); Log Chipper/Loader (self-feeder); Maintenance Engineer (shaft and tunnel); any Mechanical Shaft Drill; Mine Hoist; Mining Machine(Mole and similar types); Mucking Machine or Mole; Overhead Crane (Gantry or Straddle Type); Pile Driver; Power Grader; Remote Controlled Mole or Tunnel Machine; Scraper; Shovel; Side Boom; Slip Form Paver (If a second man is needed, they shall be an Oiler); Tripper/Maintenance Engineer (shaft & tunnel); Tractor Drawn Belt-Type Loader; Tug Operator (manned rented equipment excluded); Tunnel Shovel.

CLASS B: Automated Central Mix Concrete Plant; Backhoe (topside); Backhoe (track mounted, rubber tired); Backhoe (topside); Bituminous Spreader and Mixer, Blacktop Plant (non-automated); Blast or Rotary Drill (truck or tractor mounted); Boring Machine; Cage Hoist; Central Mix Plant(non-automated); all Concrete Batching Plants; Compressors (4 or less exceeding 2,000 c.f.m. combined capacity); Concrete Pump; Crusher; Diesel Power Unit; Drill Rigs (tractor mounted); Front End Loader (under 4 cu. yd.); Grayco Epoxy Machine; Hoist (One Drum); Hoist (2 or 3 drum topside); Knuckle Boom material handler; Kolman Plant Loader & similar type Loaders (if employer requires another person to clean the screen or to maintain the equipment, they shall be an Oiler); L.C.M. Work Boat Operator; Locomotive; Maintenance Engineer (topside); Maintenance Grease Man; Mixer (for stabilized base-self-propelled); Monorail Machine; Plant Engineer; Personnel Hoist; Pump Crete; Ready Mix Concrete Plant; Refrigeration Equipment (for soil stabilization); Road Widener; Roller (all above sub-grade); Sea Mule; Shotcrete Machine; Shovel (topside); Tractor with Dozer and/or Pusher; Trencher; Tugger Hoist; Tunnel Locomotive; Vacuum Machine (mounted or towed); Welder; Winch; Winch Cat.

CLASS C: A Frame Truck; All Terrain Telescoping Material Handler; Ballast Regulator (ride-on); Compressors (4 not to exceed 2,000 c.f.m. combined capacity; or 3 or less with more than 1200 c.f.m. but not to exceed 2,000 c.f.m.); Compressors ((any size, but subject to other provisions for compressors), Dust Collectors, Generators, Pumps, Welding Machines, Light Plants (4 or any type combination)); Concrete Pavement Spreaders and Finishers; Conveyor; Drill (core); Drill (well); Electric Pump used in conjunction with Well Point System; Farm Tractor with Accessories; Fine Grade Machine; Fork Lift; Grout Pump (over 5 cu. ft.); Gunite Machine; Hammers (hydraulic-self-propelled); Hydra-Spiker (ride-on); Hydra-Blaster (water); Hydro-Blaster; Motorized Form Carrier; Post Hole Digger and Post Driver; Power Sweeper; Roller grade & fill); Scarifer (ride-on); Span-Saw (ride-on); Submersible Electric Pump (when used in lieu of well points); Tamper (ride-on); Tie-Extractor (ride-on), Tie Handler (ride-on), Tie Inserter (ride-on), Tie Spacer (ride-on); Track Liner (ride-on); Tractor with towed accessories; Vibratory Compactor; Vibro Tamp, Well Point.

CLASS D: Aggregate Plant; Cement & Bin Operator; Compressors (3 or less not to exceed 1,200 c.f.m. combined capacity); Compressors ((any size, but subject to other provisions for compressors), Dust Collectors, Generators, Pumps, Welding Machines, Light Plants (3 or less or any type or combination)); Concrete Saw (self-propelled); Form Tamper; Greaseman; Hydraulic Pump (jacking system); Junior Engineer; Light Plants; Mulching Machine; Oiler; Parapet Concrete or Pavement Grinder; Power Broom (towed); Power Heaterman (when used for production); Revinius Widener; Shell Winder; Steam Cleaner; Tractor.

Per hour:	07/01/2024	07/01/2025
CLASS A	$ 55.91	$ 58.44
CLASS B	54.69	57.22
CLASS C	51.90	54.43
CLASS D	48.89	51.42

Additional $5.00 per hour for Hazardous Waste Work on a state or federally designated hazardous waste site where the Operating Engineer is in direct contact with hazardous material and when personal protective equipment is required for respiratory, skin and eye protection.

CRANES:
Crane 1: All cranes, including self-erecting.
Crane 2: All Lattice Boom Cranes and all cranes with a manufacturer's rating of fifty (50) ton and over.
Crane 3: All hydraulic cranes and derricks with a manufacturer's rating of forty nine (49) ton and below, including boom trucks.

Crane 1	$ 59.91	$ 62.44
Crane 2	58.91	61.44
Crane 3	57.91	60.44

SUPPLEMENTAL BENEFITS
Per hour:

	$ 25.05	$ 25.90
	+ 9.85*	+ 10.10*

* This portion of benefits subject to same premium rate as shown for overtime wages.

OVERTIME PAY
See (B, B2, E, Q, X) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
NOTE: If a holiday falls on Sunday, it shall be observed on Monday.

REGISTERED APPRENTICES
WAGES:(1000) hours terms at the following percentage of Journeyworker's Class B wage.

1st term	60%
2nd term	65%
3rd term	70%
4th term	75%

SUPPLEMENTAL BENEFITS per hour: Same as Journeyworker

7-158-832TL.

Painter — 01/01/2025

JOB DESCRIPTION Painter **DISTRICT** 6

ENTIRE COUNTIES
Cayuga, Herkimer, Madison, Oneida, Onondaga, Seneca

PARTIAL COUNTIES
Lewis: Only the Townships of High Market, Lewis, Leyden, Lyonsdale, Osceola, Turin and West Turin.
Ontario: The City and Township of Geneva.
Oswego: Only the Townships of Amboy, Constantia, Williamstown and Oneida Lake.

WAGES

Per hour:	07/01/2024
Basic Rate (Brush & Roll)	$ 27.27
Sign Painting	27.27
Lead Based Paint Abatement	27.27
Drywall Taper/ Finisher	28.02
Wallcovering	28.02
Drywall Machine Operator	28.52
Spray	27.77

Parking Lot, Hwy Striping	27.77
Epoxy (Brush-Roller)	27.77
Epoxy (Spray)	27.77
Sandblasting (Operator)	27.77
Boatswain Chair	27.77
Swing Scaffold	27.77
Structural Steel (except bridges,tanks,tunnel)	27.77
Coal Tar epoxy	28.77
Asbestos Encapsulation	29.47

NOTE - SEE BRIDGE PAINTER RATES FOR BRIDGES, TANKS, OR TUNNELS.

SHIFT WORK

FOR ANY SHIFT WHICH STARTS PRIOR TO 6:00 AM OR AFTER 3:00 PM, ALL EMPLOYEES WHO WORK A SINGLE IRREGULAR WORK SHIFT ON GOVERNMENTAL MANDATED WORK SHALL BE PAID AN ADDITIONAL $2.00 PER HOUR ABOVE THE APPLICABLE WAGE SCALE.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker	$ 26.53

OVERTIME PAY

See (B, *F, R) on OVERTIME PAGE

* NOTE - On exterior work only, if work was missed during the week due to inclement weather, Saturday may be worked at straight time.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

NOTE: A holiday that falls on a Saturday will be celebrated on the preceding Friday. A holiday that falls on a Sunday will be celebrated on the following Monday.

REGISTERED APPRENTICES

WAGES per hour:

Painter/Decorator: 750 hour terms at the following wage rate:

1st	2nd	3rd	4th	5th	6th	7th	8th
$ 18.00	$ 18.50	$ 19.00	$ 19.50	$ 20.00	$ 21.00	$ 22.00	$ 23.00

Drywall Taper/ Finisher: 750 hour terms at the following wage rate:

1st	2nd	3rd	4th	5th	6th
$ 20.00	$ 20.50	$ 21.00	$ 21.50	$ 22.00	$ 23.00

SUPPLEMENTAL BENEFITS per hour:

Painter/Decorator:

1st	2nd	3rd	4th	5th	6th	7th	8th
$ 6.50	$ 6.50	$ 7.50	$ 7.50	$ 10.50	$ 10.50	$ 13.00	$ 13.00

Drywall Taper/ Finisher:

1st	2nd	3rd	4th	5th	6th
$ 7.50	$ 7.50	$ 7.50	$ 10.00	$ 10.00	$ 12.00

6-31

Painter — 01/01/2025

JOB DESCRIPTION Painter **DISTRICT** 3

ENTIRE COUNTIES

Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Cortland, Delaware, Erie, Genesee, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Niagara, Oneida, Onondaga, Ontario, Orleans, Oswego, Otsego, Schuyler, Seneca, St. Lawrence, Steuben, Tioga, Tompkins, Wayne, Wyoming, Yates

WAGES

Per hour: 07/01/2024

Bridge	$ 43.81
Tunnel	43.81
Tank*	41.81

For Bridge Painting Contracts, ALL WORKERS on and off the bridge (including Flagmen) are to be paid Painter's Rate; the contract must be ONLY for Bridge Painting.

Tank rate applies to indoor and outdoor tanks, tank towers, standpipes, digesters, waste water treatment tanks, chlorinator tanks, etc. Covers all types of tanks including but not limited to steel tanks, concrete tanks, fiberglass tanks, etc.

SHIFT WORK
Note an additional $1.50 per hour is required when the contracting agency or project specification requires any shift to start prior to 6:00am or after 12:00 noon.

SUPPLEMENTAL BENEFITS
Per hour:
$ 31.39

OVERTIME PAY
Exterior work only See (B, E4, F*, R) on OVERTIME PAGE.
All other work See (B, F*, R) on OVERTIME PAGE.
*Note - Saturday is payable at straight time if the employee misses work, except where a doctor's or hospital verification of illness is produced Monday through Friday when work was available to the employee.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wages per hour:

750 hour terms at the following wage:

1st	2nd	3rd	4th	5th	6th
$ 24.00	$ 26.00	$ 28.00	$ 30.00	$ 34.00	$ 38.00

Supplemental benefits per hour:

1st	2nd	3rd	4th	5th	6th
$ 6.60	$ 6.95	$ 7.30	$ 7.65	$ 8.00	$ 8.35

3-4-Bridge, Tunnel, Tank

Painter - Metal Polisher 01/01/2025

JOB DESCRIPTION Painter - Metal Polisher **DISTRICT** 8

ENTIRE COUNTIES
Albany, Allegany, Bronx, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Kings, Lewis, Livingston, Madison, Monroe, Montgomery, Nassau, New York, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Suffolk, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

WAGES

	07/01/2024
Metal Polisher	$ 39.33
Metal Polisher*	40.43
Metal Polisher**	43.33

*Note: Applies on New Construction & complete renovation
** Note: Applies when working on scaffolds over 34 feet.

SUPPLEMENTAL BENEFITS
Per Hour: 07/01/2024

Journeyworker:
All classification $ 12.79

OVERTIME PAY
See (B, E, P, T) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6, 11, 15, 16, 25, 26) on HOLIDAY PAGE
Overtime: See (5, 6, 11, 15, 16, 25, 26) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wages per hour:
One (1) year term at the following wage rates:

	07/01/2024
1st year	$ 19.67
2nd year	21.63
3rd year	23.60
1st year*	$ 22.06

2nd year*	22.07
3rd year*	24.14
1st year**	$ 22.17
2nd year**	24.13
3rd year**	26.10

*Note: Applies on New Construction & complete renovation
** Note: Applies when working on scaffolds over 34 feet.

Supplemental benefits:
Per hour:

1st year	$ 8.69
2nd year	8.69
3rd year	8.69

8-8A/28A-MP

Plumber — 01/01/2025

JOB DESCRIPTION Plumber **DISTRICT** 7

ENTIRE COUNTIES
Herkimer, Oneida

PARTIAL COUNTIES
Hamilton: Only the Town of Inlet.
Lewis: Towns of Lewis, Leyden, Lyonsdale, and West Turin.
Madison: Towns of Brookfield, Eaton, Fenner, Hamilton, Lebanon, Lenox, Lincoln, Madison, Nelson, Oneida, Smithfield, and Stockbridge.
Otsego: Towns of Cherry Valley, Exeter, Middlefield, Otsego, Plainfield, Richfield, Roseboom, and Springfield.

WAGES

Per hour:	07/01/2024	05/01/2025 Additional	05/01/2026 Additional
Plumber	$ 43.65	$ 3.35*	$ 3.45*
Steamfitter	43.65	3.35*	3.45*

*To be allocated at a later date

SHIFT WORK
Agency-mandated shift operations:

1. Shift work shall start no earlier than 6AM Monday and will conclude no later than 9AM Saturday (overtime premiums applicable after 8 hours in a shift).

2. Single irregular shiftwork, less than 3 consecutive days will be paid at the rate of time and one-half of the regular hourly rate.

3. 3 consecutive work days or more:
First Shift - Regular hourly rate.
Second Shift - Regular hourly rate plus 12%.
Third Shift - Regular hourly rate plus 18%.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 14.90
	+ 17.85**

** This portion of the benefit is subject to the SAME PREMIUM as shown for overtime on projects over $100 million in total construction cost (including engineering & architecture).

OVERTIME PAY
See (B, E, Q, *V) on OVERTIME PAGE
*Portion of supplemental benefits subject to V code when project cost is over $100 million (including engineering & architecture).

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
NOTE: If a holiday falls on Sunday, it will be observed the following day. If a holiday falls on Saturday, it will be observed that day unless so determined by the Federal Government to be celebrated on a different day.

REGISTERED APPRENTICES
WAGES: Yearly terms at the following percentages of Journeyworker's wage.

1st	2nd	3rd	4th	5th

50% 55% 60% 70% 85%

SUPPLEMENTAL BENEFITS per hour:
1st Term: $ 14.90
+ 8.35**

All others: $ 14.90
+ 13.39**

** This portion of the benefit is subject to the SAME PREMIUM as shown for overtime on projects over $100 million in total construction cost (including engineering & architecture).

7-112n-SF

Roofer 01/01/2025

JOB DESCRIPTION Roofer **DISTRICT** 6

ENTIRE COUNTIES
Cayuga, Cortland, Franklin, Herkimer, Jefferson, Lewis, Madison, Oneida, Onondaga, Oswego, Seneca, St. Lawrence

WAGES
Per hour: 07/01/2024

Roofer, Waterproofer $ 34.25

NOTE - Does not include metal roof flashings, gravel stop, or metal roofing; See Sheetmetal Worker wage schedule.

Additional per hour:
Green Roofing** $ 0.25
Pitch Removal & Appl. 1.50
Asbestos Abatement 1.50

** Green Roofing is any component of green technology or living roof above the roof membrane including, but not limited to, the fabric, dirt and plantings.

SHIFT WORK
WHEN MANDATED BY THE OWNER OR CONTRACTING AGENCY, THERE IS AN ADDITIONAL PREMIUM OF $4.00/HR FOR HOURS WORKED BEFORE 5:30AM AND AFTER 5:30PM.

SUPPLEMENTAL BENEFITS
Per hour:
Journeyworker $ 25.85

Additional contribution 0.75
on any Asbestos Abatement work

OVERTIME PAY
See (B, E, E2*, Q) on OVERTIME PAGE
*NOTE - If a holiday falls in that week and 32 hours were worked, Saturday will be paid at 1 1/2 times the rate.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
NOTE: When any of these holidays falls on Sunday, the following day shall be observed as a holiday.

REGISTERED APPRENTICES
WAGES per hour: 1000 hour terms at the following percentage of the Journeyworker's wage:

1st term (0 to 999) 65%
2nd term (1000 to 1999) 70%
3rd term (2000 to 2999) 75%
4th term (3000 to 3999) 85%

Additional per hour:
Green Roofing** $ 0.25
Pitch Removal & Appl. 1.50
Asbestos Abatement 1.50

SUPPLEMENTAL BENEFITS per hour:

1st term $ 19.48
2nd term 21.40

3rd term	24.85
4th term	25.85
Additional contribution on any Asbestos Abatement work	$ 0.75

6-195

Sheetmetal Worker — 01/01/2025

JOB DESCRIPTION Sheetmetal Worker **DISTRICT** 6

ENTIRE COUNTIES
Cayuga, Chenango, Cortland, Herkimer, Jefferson, Lewis, Madison, Oneida, Onondaga, Oswego, St. Lawrence

WAGES

Per hour:	07/01/2024
Sheetmetal Worker:	
**(under $10 million)	$ 35.25
**(over $10 million)	$ 36.25

**For total cost of Sheetmetal contract only.

TO INCLUDE METAL ROOF FLASHINGS, GRAVEL STOP, AND METAL STANDING SEAM ROOFING.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 22.85

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
When any holiday falls on a Saturday, the Friday before such holiday shall be recognized as the legal holiday. Any holiday falling on Sunday, the following Monday shall be recognized as the legal holiday.

REGISTERED APPRENTICES
WAGES per hour: One year terms at the following percentage of Journeyworker's wage.

1st	2nd	3rd	4th	5th
45%	55%	65%	75%	85%

SUPPLEMENTAL BENEFITS per hour:

1st	2nd	3rd	4th	5th
$13.53	$14.60	$15.66	$17.77	$18.84

6-58

Sprinkler Fitter — 01/01/2025

JOB DESCRIPTION Sprinkler Fitter **DISTRICT** 1

ENTIRE COUNTIES
Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orleans, Oswego, Otsego, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Tioga, Tompkins, Washington, Wayne, Wyoming, Yates

WAGES

Per hour	07/01/2024
Sprinkler Fitter	$ 42.00

SUPPLEMENTAL BENEFITS
Per hour

Journeyworker	$ 28.82

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

Note: When a holiday falls on Sunday, the following Monday shall be considered a holiday and all work performed on either day shall be at the double time rate. When a holiday falls on Saturday, the preceding Friday shall be considered a holiday and all work performed on either day shall be at the double time rate.

REGISTERED APPRENTICES

Wages per hour

One Half Year terms at the following wage.

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
$ 20.03	$ 22.26	$ 24.24	$ 26.46	$ 28.69	$ 30.91	$ 33.14	$ 35.37	$ 37.59	$ 39.82

Supplemental Benefits per hour

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
$ 9.18	$ 9.18	$ 20.90	$ 20.90	$ 21.15	$ 21.15	$ 21.15	$ 21.15	$ 21.15	$ 21.15

1-669

Teamster - Building — 01/01/2025

JOB DESCRIPTION Teamster - Building **DISTRICT** 1

ENTIRE COUNTIES

Hamilton, Herkimer, Oneida

PARTIAL COUNTIES

Chenango: Entire county except the Townships of Afton, Bainbridge, Coventry, Greene, Guilford, Oxford and Smithville.
Lewis: Only the Township of Grieg, Lewis, Leyden, Lowville, Lyonsdale, Martinsburg, Turin, West Turin and Watson.
Madison: Only the Townships of Brookfield, Eaton, Hamilton, Lebanon, Lincoln, Madison, Smithfield, Stockbridge and the City of Oneida
Otsego: Entire county EXCEPT Townships of Butternuts, Laurens, Maryland, Milford, Morris, Oneonta, Otego, Unidilla and Worchester.

WAGES

GROUP # A:
Straight trucks, winch, transit mix on the site, road oilers,
dump trucks, pick-ups, panel, water trucks, fuel trucks on the site
(including nozzle).

GROUP # B:
Low boy or Low boy trailer, Euclids or similar equipment.

WAGES per hour

	07/01/2024	07/01/2025
Group A	$ 31.44	$ 34.65
Group B	31.74	34.95

SUPPLEMENTAL BENEFITS

Per hour

Journeyworker	$ 28.58	$ 29.56

OVERTIME PAY

See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

Note: Any holiday which occurs on Sunday shall be observed the following Monday.

1-294z2

Teamster - Heavy&Highway — 01/01/2025

JOB DESCRIPTION Teamster - Heavy&Highway **DISTRICT** 1

ENTIRE COUNTIES

Albany, Columbia, Fulton, Greene, Hamilton, Herkimer, Montgomery, Oneida, Rensselaer, Saratoga, Schenectady, Schoharie, Washington

PARTIAL COUNTIES

Chenango: Entire county except the Townships of Afton, Bainbridge, Coventry, Greene, Guilford, Oxford and Smithville.
Lewis: Only the Township of Grieg, Lewis, Leyden, Lowville, Lyonsdale, Martinsburg, Turin, West Turin and Watson.
Madison: Only the Townships of Brookfield, Eaton, Hamilton, Lebanon, Lincoln, Madison, Smithfield, Stockbridge and the City of Oneida
Otsego: Entire county EXCEPT Townships of Butternuts, Laurens, Maryland, Milford, Morris, Oneonta, Otego, Unidilla and Worchester.
Warren: Only the Townships of Bolton, Warrensburg, Thurman, Stony Creek, Luzerne, Caldwell (Lake George), and Queensbury.

WAGES
GROUP #1:
Warehousemen, Yardmen, Truck Helpers, Pickups, Panel Trucks, Flatboy Material Trucks(straight jobs), Single Axel Dump Trucks, Dumpsters, Material Checkers and Receivers, Greasers, Truck Tiremen, Mechanics Helpers and Parts Chasers.

GROUP #2:
Tandems and Batch Trucks, Mechanics, Dispatcher.

GROUP #3:
Semi-Trailers, Low-boy Trucks, Asphalt Distributor Trucks, and Agitator, Mixer Trucks and dumpcrete type vehicles, Truck Mechanic, Fuel Trucks.

GROUP #4:
Specialized Earth Moving Equipment, Euclid type, or similar off-highway, where not self-loading, Straddle (Ross) Carrier, and self-contained concrete mobile truck.

GROUP #5:
Off-highway Tandem Back-Dump, Twin Engine Equipment and Double-Hitched Equipment where not self-loading.

WAGES per hour	07/01/2024
Group #1	$ 39.75
Group #2	39.81
Group #3	39.90
Group #4	40.03
Group #5	40.19

Hazardous waste projects that require a Level C or greater protection shall be paid an additional $ 1.00 per hour.

SHIFT WORK
All employees who work a single irregular work shift starting between 5pm and 1 am on governmental mandated night shifts shall be paid an additional $1.50 per hour.

SUPPLEMENTAL BENEFITS
Per hour:
$ 28.97
+$1.00 per*
hour worked

(*) not applicable to paid holidays

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

1-294h/h

Welder 01/01/2025

JOB DESCRIPTION Welder **DISTRICT** 1

ENTIRE COUNTIES
Albany, Allegany, Bronx, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Kings, Lewis, Livingston, Madison, Monroe, Montgomery, Nassau, New York, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Suffolk, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

WAGES
Per hour 07/01/2024

Welder: To be paid the same rate of the mechanic performing the work.*

*EXCEPTION: If a specific welder certification is required, then the 'Certified Welder' rate in that trade tag will be paid.

OVERTIME PAY

HOLIDAY

1-As Per Trade

Overtime Codes

Following is an explanation of the code(s) listed in the OVERTIME section of each classification contained in the attached schedule. Additional requirements may also be listed in the HOLIDAY section.

NOTE: Supplemental Benefits are 'Per hour worked' (for each hour worked) unless otherwise noted

(AA)	Time and one half of the hourly rate after 7 and one half hours per day
(A)	Time and one half of the hourly rate after 7 hours per day
(B)	Time and one half of the hourly rate after 8 hours per day
(B1)	Time and one half of the hourly rate for the 9th & 10th hours week days and the 1st 8 hours on Saturday. Double the hourly rate for all additional hours
(B2)	Time and one half of the hourly rate after 40 hours per week
(B3)	Time and one half of the hourly rate after 40 straight hours per week
(C)	Double the hourly rate after 7 hours per day
(C1)	Double the hourly rate after 7 and one half hours per day
(D)	Double the hourly rate after 8 hours per day
(D1)	Double the hourly rate after 9 hours per day
(E)	Time and one half of the hourly rate on Saturday
(E1)	Time and one half 1st 4 hours on Saturday; Double the hourly rate all additional Saturday hours
(E2)	Saturday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather
(E3)	Between November 1st and March 3rd Saturday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather, provided a given employee has worked between 16 and 32 hours that week
(E4)	Saturday and Sunday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather
(E5)	Double time after 8 hours on Saturdays
(F)	Time and one half of the hourly rate on Saturday and Sunday
(G)	Time and one half of the hourly rate on Saturday and Holidays
(H)	Time and one half of the hourly rate on Saturday, Sunday, and Holidays
(I)	Time and one half of the hourly rate on Sunday
(J)	Time and one half of the hourly rate on Sunday and Holidays
(K)	Time and one half of the hourly rate on Holidays
(L)	Double the hourly rate on Saturday
(M)	Double the hourly rate on Saturday and Sunday
(N)	Double the hourly rate on Saturday and Holidays
(O)	Double the hourly rate on Saturday, Sunday, and Holidays
(P)	Double the hourly rate on Sunday
(Q)	Double the hourly rate on Sunday and Holidays
(R)	Double the hourly rate on Holidays

(S) Two and one half times the hourly rate for Holidays

(S1) Two and one half times the hourly rate the first 8 hours on Sunday or Holidays One and one half times the hourly rate all additional hours.

(T) Triple the hourly rate for Holidays

(U) Four times the hourly rate for Holidays

(V) Including benefits at SAME PREMIUM as shown for overtime

(W) Time and one half for benefits on all overtime hours.

(X) Benefits payable on Paid Holiday at straight time. If worked, additional benefit amount will be required for worked hours. (Refer to other codes listed.)

Holiday Codes

PAID Holidays:

Paid Holidays are days for which an eligible employee receives a regular day's pay, but is not required to perform work. If an employee works on a day listed as a paid holiday, this remuneration is in addition to payment of the required prevailing rate for the work actually performed.

OVERTIME Holiday Pay:

Overtime holiday pay is the premium pay that is required for work performed on specified holidays. It is only required where the employee actually performs work on such holidays. The applicable holidays are listed under HOLIDAYS: OVERTIME. The required rate of pay for these covered holidays can be found in the OVERTIME PAY section listings for each classification.

Following is an explanation of the code(s) listed in the HOLIDAY section of each classification contained in the attached schedule. The Holidays as listed below are to be paid at the wage rates at which the employee is normally classified.

(1)	None
(2)	Labor Day
(3)	Memorial Day and Labor Day
(4)	Memorial Day and July 4th
(5)	Memorial Day, July 4th, and Labor Day
(6)	New Year's, Thanksgiving, and Christmas
(7)	Lincoln's Birthday, Washington's Birthday, and Veterans Day
(8)	Good Friday
(9)	Lincoln's Birthday
(10)	Washington's Birthday
(11)	Columbus Day
(12)	Election Day
(13)	Presidential Election Day
(14)	1/2 Day on Presidential Election Day
(15)	Veterans Day
(16)	Day after Thanksgiving
(17)	July 4th
(18)	1/2 Day before Christmas
(19)	1/2 Day before New Years
(20)	Thanksgiving
(21)	New Year's Day
(22)	Christmas
(23)	Day before Christmas
(24)	Day before New Year's
(25)	Presidents' Day
(26)	Martin Luther King, Jr. Day
(27)	Memorial Day
(28)	Easter Sunday

(29) Juneteenth

New York State Department of Labor - Bureau of Public Work
State Office Building Campus
Building 12 - Room 130
Albany, New York 12226

REQUEST FOR WAGE AND SUPPLEMENT INFORMATION

As Required by Articles 8 and 9 of the NYS Labor Law

Fax (518) 485-1870 or mail this form for new schedules or for determination for additional occupations.

This Form Must Be Typed

Submitted By: (Check Only One) ☐ Contracting Agency ☐ Architect or Engineering Firm ☐ Public Work District Office Date:

A. Public Work Contract to be let by: (Enter Data Pertaining to Contracting/Public Agency)

1. Name and complete address ☐ (Check if new or change)

Telephone Fax

E-Mail:

2. NY State Units (see Item 5).

- ☐ 01 DOT
- ☐ 02 OGS
- ☐ 03 Dormitory Authority
- ☐ 04 State University Construction Fund
- ☐ 05 Mental Hygiene Facilities Corp.
- ☐ 06 OTHER N.Y. STATE UNIT
- ☐ 07 City
- ☐ 08 Local School District
- ☐ 09 Special Local District, i.e., Fire, Sewer, Water District
- ☐ 1O Village
- ☐ 11 Town
- ☐ 12 County
- ☐ 13 Other Non-N.Y. State (Describe)

3. SEND REPLY TO ☐ (check if new or change)
Name and complete address:

Telephone Fax

E-Mail:

4. SERVICE REQUIRED. Check appropriate box and provide project information.

☐ New Schedule of Wages and Supplements.

APPROXIMATE BID DATE :

☐ Additional Occupation and/or Redetermination

PRC NUMBER ISSUED PREVIOUSLY FOR THIS PROJECT :

OFFICE USE ONLY

B. PROJECT PARTICULARS

5. Project Title

Description of Work

Contract Identification Number

Note: For NYS units, the OSC Contract No.

6. Location of Project:
Location on Site

Route No/Street Address

Village or City

Town

County

7. Nature of Project - Check One:

- ☐ 1. New Building
- ☐ 2. Addition to Existing Structure
- ☐ 3. Heavy and Highway Construction (New and Repair)
- ☐ 4. New Sewer or Waterline
- ☐ 5. Other New Construction (Explain)
- ☐ 6. Other Reconstruction, Maintenance, Repair or Alteration
- ☐ 7. Demolition
- ☐ 8. Building Service Contract

8. OCCUPATION FOR PROJECT :

- ☐ Construction (Building, Heavy Highway/Sewer/Water)
- ☐ Tunnel
- ☐ Residential
- ☐ Landscape Maintenance
- ☐ Elevator maintenance
- ☐ Exterminators, Fumigators
- ☐ Fire Safety Director, NYC Only
- ☐ Fuel Delivery
- ☐ Guards, Watchmen
- ☐ Janitors, Porters, Cleaners, Elevator Operators
- ☐ Moving furniture and equipment
- ☐ Trash and refuse removal
- ☐ Window cleaners
- ☐ Other (Describe)

9. Does this project comply with the Wicks Law involving separate bidding? YES ☐ NO ☐

10. Name and Title of Requester

Signature

SEE PAGE TWO FOR LAWS RELATING TO PUBLIC WORK CONTRACTS

NEW YORK STATE DEPARTMENT OF LABOR
Bureau of Public Work - Debarment List

LIST OF EMPLOYERS INELIGIBLE TO BID ON OR BE AWARDED ANY PUBLIC WORK CONTRACT

Under Article 8 and Article 9 of the NYS Labor Law, a contractor, sub-contractor and/or its successor shall be debarred and ineligible to submit a bid on or be awarded any public work or public building service contract/sub-contract with the state, any municipal corporation or public body for a period of five (5) years from the date of debarment when:

- Two (2) final determinations have been rendered within any consecutive six-year (6) period determining that such contractor, sub-contractor and/or its successor has WILLFULLY failed to pay the prevailing wage and/or supplements;
- One (1) final determination involves falsification of payroll records or the kickback of wages and/or supplements.

The agency issuing the determination and providing the information, is denoted under the heading 'Fiscal Officer'. DOL = New York State Department of Labor; NYC = New York City Comptroller's Office; AG = New York State Attorney General's Office; DA = County District Attorney's Office.

Debarment Database: To search for contractors, sub-contractors and/or their successors debarred from bidding or being awarded any public work contract or subcontract under NYS Labor Law Articles 8 and 9, or under NYS Workers' Compensation Law Section 141-b, access the database at this link: https://apps.labor.ny.gov/EDList/searchPage.do

For inquiries please call 518-457-5589.

NYSDOL Bureau of Public Work Debarment List 01/06/2025

Article 8

AGENCY	Fiscal Officer	FEIN	EMPLOYER NAME	EMPLOYER DBA NAME	ADDRESS	DEBARMENT START DATE	DEBARMENT END DATE
DOL	DOL	*****5754	0369 CONTRACTORS, LLC		515 WEST AVE UNIT PH 13NORWALK CT 06850	05/12/2021	05/12/2026
DOL	DOL	*****5784	A.J.M. TRUCKING, INC.		PO BOX 2064 MONROE NY 10950	02/12/2024	02/12/2029
DOL	DOL		AKHLAQ OULAKH		4307 28TH AVE ASTORIA NY 11103	10/11/2024	10/11/2029
DOL	NYC		ALL COUNTY SEWER & DRAIN, INC.		7 GREENFIELD DR WARWICK NY 10990	03/25/2022	03/25/2027
DOL	DOL	*****8387	AMERICAN PAVING & MASONRY, CORP.		8 FOREST AVE GLEN COVE NY 11542	05/24/2024	05/24/2029
DOL	DOL	*****8654	AMERICAN PAVING, INC.		8 FORREST AVE. GLEN COVE NY 11542	05/24/2024	05/24/2029
DOL	NYC		AMJED PARVEZ		401 HANOVER AVENUE STATEN ISLAND NY 10304	01/11/2021	01/11/2026
DOL	DOL		ANGELO F COKER		2610 SOUTH SALINA STREET SUITE 14SYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL		ANGELO GARCIA		515 WEST AVE UNIT PH 13NORWALK CT 06850	05/12/2021	05/12/2026
DOL	DOL		ANGELO STANCO		8 FOREST AVE. GLEN COVE NY 11542	05/24/2024	05/24/2029
DOL	DOL		ANGELO TONDO		449 WEST MOMBSHA ROAD MONROE NY 10950	06/06/2022	06/06/2027
DOL	DOL	*****4231	ANKER'S ELECTRIC SERVICE, INC.		10 SOUTH 5TH ST LOCUST VALLEY NY 11560	09/26/2022	09/26/2027
DOL	DOL		ANTHONY MONGELLI		PO BOX 2064 MONROE NY 10950	02/12/2024	02/12/2029
DOL	NYC		ARADCO CONSTRUCTION CORP		115-46 132RD ST SOUTH OZONE PARK NY 11420	09/17/2020	09/17/2025
DOL	DOL		ARNOLD A. PAOLINI		1250 BROADWAY ST BUFFALO NY 14212	02/03/2020	02/03/2025
DOL	NYC		AVM CONSTRUCTION CORP		117-72 123RD ST SOUTH OZONE PARK NY 11420	09/17/2020	09/17/2025
DOL	NYC		AZIDABEGUM		524 MCDONALD AVENUE BROOKLYN NY 11218	09/17/2020	09/17/2025
DOL	DOL	*****8421	B & B DRYWALL, INC		206 WARREN AVE APT 1WHITE PLAINS NY 10603	12/14/2021	12/14/2026
DOL	DOL		B&L RENOVATION CO.		618 OCEAN PARKWAY APT A6BROOKLYN NY 11230	09/17/2020	09/17/2025
DOL	NYC	*****2113	BHW CONTRACTING, INC.		401 HANOVER AVENUE STATEN ISLAND NY 10304	01/11/2021	01/11/2026
DOL	DOL	*****5078	BLACK RIVER TREE REMOVAL, LLC		29807 ANDREWS ROAD BLACK RIVER NY 13032	10/17/2023	10/17/2028
DOL	DOL		BRADLEY J SCHUKA		4 BROTHERS ROAD WAPPINGERS FALLS NY 12590	10/20/2020	10/20/2025
DOL	DOL	*****9383	C.C. PAVING AND EXCAVATING, INC.		2610 SOUTH SALINA ST SUITE 12SYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL	*****4083	C.P.D. ENTERPRISES, INC		P.O BOX 281 WALDEN NY 12586	03/03/2020	03/03/2025
DOL	DOL	*****5161	CALADRI DEVELOPMENT CORP.		1223 PARK ST. PEEKSKILL NY 10566	05/17/2021	05/17/2026
DOL	DOL	*****3391	CALI ENTERPRISES, INC.		1223 PARK STREET PEEKSKILL NY 10566	05/17/2021	05/17/2026
DOL	DOL	*****4155	CASA BUILDERS, INC.	FRIEDLANDER CONSTRUCTION	64 N PUTT CONNERS ROAD NEW PALTZ NY 12561	05/10/2023	05/10/2028
DOL	AG	*****7247	CENTURY CONCRETE CORP		2375 RAYNOR ST RONKONKOMA NY 11779	08/04/2021	08/04/2026
DOL	DOL	*****0026	CHANTICLEER CONSTRUCTION LLC		4 BROTHERS ROAD WAPPINGERS FALLS NY 12590	10/20/2020	10/20/2025
DOL	NYC	*****2117	CHARAN ELECTRICAL ENTERPRISES		9-11 40TH AVENUE LONG ISLAND CITY NY 11101	09/26/2023	09/26/2028
DOL	NYC		CHARLES ZAHRADKA		863 WASHINGTON STREET FRANKLIN SQUARE NY 11010	03/10/2020	03/10/2025
DOL	DOL		CHRISTOPHER GRECO		26 NORTH MYRTLE AVENUE SPRING VALLEY NY 10956	02/18/2021	02/18/2026
DOL	DOL	*****2281	CORRAO TRUCKING, INC.		PO BOX 393 NANUET NY 10954	09/17/2024	09/17/2029
DOL	DOL		CRAIG JOHANSEN		10 SOUTH 5TH ST LOCUST VALLEY NY 11560	09/26/2022	09/26/2027

DOL	DOL	*****3228	CROSS-COUNTY LANDSCAPING AND TREE SERVICE, INC.	ROCKLAND TREE SERVICE	26 NORTH MYRTLE AVENUE SPRING VALLEY NY 10956	02/18/2021	02/18/2026
DOL	DOL	*****7619	DANCO CONSTRUCTION UNLIMITED INC.		485 RAFT AVENUE HOLBROOK NY 11741	10/19/2021	10/19/2026
DOL	DOL		DANIEL ROBERT MCNALLY		7 GREENFIELD DRIVE WARWICK NY 10990	03/25/2022	03/25/2027
DOL	DOL		DARIAN L COKER		2610 SOUTH SALINA ST SUITE 2CSYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL		DARWIN PEGUESE		6400 BALTIMORE NATIONAL SUITE 602CANTONSVILLE NY 21228	10/24/2024	10/24/2029
DOL	DOL		DAVID FRIEDLANDER		64 NORTH PUTT CORNERS RD NEW PALTZ NY 12561	05/10/2023	05/10/2028
DOL	DOL		DINA TAYLOR		64 N PUTT CONNERS RD NEW PALTZ NY 12561	05/10/2023	05/10/2028
DOL	DOL	*****5175	EAGLE MECHANICAL AND GENERAL CONSTRUCTION LLC		11371 RIDGE RD WOLCOTT NY 14590	02/03/2020	02/03/2025
DOL	AG		EDWIN HUTZLER		23 NORTH HOWELLS RD BELLPORT NY 11713	08/04/2021	08/04/2026
DOL	DA		EDWIN HUTZLER		2375 RAYNOR STREET RONKONKOMA NY 11779	08/04/2021	08/04/2026
DOL	DOL	*****0780	EMES HEATING & PLUMBING CONTR		5 EMES LANE MONSEY NY 10952	01/20/2002	01/20/3002
DOL	DOL		EMIL KISZKO		84 DIAMOND ST BROOKLYN NY 11222	07/18/2024	07/18/2029
DOL	DOL	*****3298	EMJACK CONSTRUCTION CORP.		84 DIAMOND ST BROOKLYN NY 11222	07/18/2024	07/18/2029
DOL	DOL	*****3298	EMJACK CONSTRUCTION LLC		4192 SIR ANDREW CIRCLE DOYLESTOWN PA 18902	07/18/2024	07/18/2029
DOL	DOL		EUGENIUSZ "GINO" KUCHAR		195 KINGSLAND AVE BROOKLYN NY 11222	12/22/2023	12/22/2028
DOL	DA		FREDERICK HUTZLER		2375 RAYNOR STREET RONKONKOMA NY 11779	08/04/2021	08/04/2026
DOL	DOL	*****2998	G.E.M. AMERICAN CONSTRUCTION CORP.		195 KINGSLAND AVE BROOKLYN NY 11222	12/22/2023	12/22/2028
DOL	NYC		GAYATRI MANGRU		21 DAREWOOD LANE VALLEY STREAM NY 11581	09/17/2020	09/17/2025
DOL	DA		GEORGE LUCEY		150 KINGS STREET BROOKLYN NY 11231	01/19/1998	01/19/2998
DOL	DA		GIOVANNA TRAVALJA		3735 9TH ST LONG ISLAND CITY NY 11101	01/05/2023	01/05/2028
DOL	DA		GIOVANNI NAPOLITANO		2501 BAYVIEW AVENUE WANTAGH NY 11793	02/21/2024	02/21/2029
DOL	DA	*****0213	GORILLA CONTRACTING GROUP, LLC		505 MANHATTAN AVE WEST BABYLON NY 11704	10/05/2023	10/05/2028
DOL	DA	*****4760	GTX CONSTRUCTION ASSOCIATES, CORP		2501 BAYVIEW AVE WANTAGH NY 11793	02/21/2024	02/21/2029
DOL	DOL		HANS RATH		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	DOL		HERBERT CLEMEN		42 FOWLER AVENUE CORTLAND MANOR NY 10567	01/24/2023	01/24/2028
DOL	DOL		HERBERT CLEMEN		42 FOWLER AVENUE CORTLAND MANOR NY 10567	10/25/2022	10/25/2027
DOL	DOL	*****2397	ISLAND BREEZE MARINE, INC.		6400 BALTIMORE NATIONAL CANTONSVILLE MD 21228	10/24/2024	10/24/2029
DOL	DOL	*****9211	J. WASE CONSTRUCTION CORP.		8545 RT 9W ATHENS NY 12015	03/09/2021	03/09/2026
DOL	DOL		J.M.J CONSTRUCTION		151 OSTRANDER AVENUE SYRACUSE NY 13205	11/21/2022	11/21/2027
DOL	DOL		J.R. NELSON CONSTRUCTION		531 THIRD STREET ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL		J.R. NELSON CONSTRUCTION		531 THIRD STREET ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL		J.R. NELSON CONSTRUCTION		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		J.R. NELSON, LLC		531 THIRD STREET ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL		J.R. NELSON, LLC		531 THIRD STREET ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL		J.R. NELSON, LLC		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		J.R.N COMPANIES, LLC		531 THIRD STREET ALBANY NY 12206	12/12/2022	12/12/2027

DOL	DOL		J.R.N COMPANIES, LLC		531 THIRD STREET ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL		J.R.N COMPANIES, LLC		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL	*****1147	J.R.N. CONSTRUCTION, LLC		531 THIRD ST ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL	*****1147	J.R.N. CONSTRUCTION, LLC		531 THIRD ST ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL	*****1147	J.R.N. CONSTRUCTION, LLC		531 THIRD ST ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		JAMES J. BAKER		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026
DOL	DOL		JASON P. RACE		3469 STATE RT. 69 PERISH NY 13131	09/29/2021	09/29/2026
DOL	DOL		JASON P. RACE		3469 STATE RT. 69 PERISH NY 13131	02/09/2022	02/09/2027
DOL	DOL		JASON P. RACE		3469 STATE RT. 69 PERISH NY 13131	11/15/2022	11/15/2027
DOL	DOL		JASON P. RACE		3469 STATE RT. 69 PERISH NY 13131	03/01/2022	03/01/2027
DOL	DOL	*****7993	JBS DIRT, INC.		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026
DOL	DOL	*****2435	JEFFEL D. JOHNSON	JMJ7 AND SON	5553 CAIRNSTRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JEFFEL JOHNSON ELITE CARPENTER REMODEL AND CONSTRUCTION		C2 EVERGREEN CIRCLE LIVERPOOL NY 13090	11/21/2022	11/21/2027
DOL	DOL	*****2435	JEFFREY M. JOHNSON	JMJ7 AND SON	5553 CAIRNS TRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JIM PLAUGHER		17613 SANTE FE LINE ROAD WAYNEFIELD OH 45896	07/16/2021	07/16/2026
DOL	DOL		JMJ7 & SON CONSTRUCTION, LLC		5553 CAIRNS TRAIL LIVERPOOL NY 13041	11/21/2022	11/21/2027
DOL	DOL		JMJ7 AND SONS CONTRACTORS		5553 CAIRNS TRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JMJ7 CONTRACTORS		7014 13TH AVENUE BROOKLYN NY 11228	11/21/2022	11/21/2027
DOL	DOL		JMJ7 CONTRACTORS AND SONS		5553 CAIRNS TRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JMJ7 CONTRACTORS, LLC		5553 CAIRNS TRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JOHN MARKOVIC		47 MANDON TERRACE HAWTHORN NJ 07506	03/29/2021	03/29/2026
DOL	DOL		JOHN WASE		8545 RT 9W ATHENS NY 12015	03/09/2021	03/09/2026
DOL	DOL		JORGE RAMOS		8970 MIKE GARCIA DR MANASSAS VA 20109	07/16/2021	07/16/2026
DOL	DOL		JOSEPH K. SALERNO		1010 TILDEN AVE UTICA NY 13501	07/24/2023	07/24/2028
DOL	DOL		JOSEPH K. SALERNO II		1010 TILDEN AVE UTICA NY 13501	07/24/2023	07/24/2028
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	02/09/2022	02/09/2027
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	11/15/2022	11/15/2027
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	09/29/2021	09/29/2026
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	03/01/2022	03/01/2027
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	03/01/2022	03/01/2027
DOL	DOL		JRN CONSTRUCTION CO, LLC		1024 BROADWAY ALBANY NY 12204	11/07/2023	11/07/2028
DOL	DOL	*****1147	JRN CONSTRUCTION, LLC		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL	*****1147	JRN CONSTRUCTION, LLC		531 THIRD STREET ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL	*****1147	JRN CONSTRUCTION, LLC		531 THIRD STREET ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL		JRN PAVING, LLC		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		JRN PAVING, LLC		531 THIRD STREET ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL		JRN PAVING, LLC		531 THIRD STREET ALBANY NY 12206	11/07/2023	11/07/2028

DOL	DOL		JULIUS AND GITA BEHREND		5 EMES LANE MONSEY NY 10952	11/20/2002	11/20/3002
DOL	DOL		KARIN MANGIN		796 PHELPS ROAD FRANKLIN LAKES NJ 07417	12/01/2020	12/01/2025
DOL	DOL		KATE E. CONNOR		7088 INTERSTATE ISLAND RD SYRACUSE NY 13209	03/31/2021	03/31/2026
DOL	DOL		KEAN INDUSTRIES, LLC		2345 RT. 52 SUITE 2NHOPEWELL JUNCTION NY 12533	12/18/2023	12/18/2028
DOL	DOL	*****2959	KELC DEVELOPMENT, INC		7088 INTERSTATE ISLAND RD SYRACUSE NY 13209	03/31/2021	03/31/2026
DOL	DOL		KIMBERLY F. BAKER		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026
DOL	DOL		KMA GROUP II, INC.		29-10 38TH AVENUE LONG ISLAND CITY NY 11101	10/11/2023	10/11/2028
DOL	DOL	*****1833	KMA GROUP INC.		29-10 38TH AVENUE LONG ISLAND CITY NY 11101	10/11/2023	10/11/2028
DOL	DOL		KMA INSULATION, INC.		29-10 38TH AVENUE LONG ISLAND CITY NY 11101	10/11/2023	10/11/2028
DOL	DOL		KRIN HEINEMANN		2345 ROUTE 52, SUITE 2N HOPEWELL JUNCTION NY 12533	12/18/2023	12/18/2028
DOL	NYC		KULWANT S. DEOL		9-11 40TH AVENUE LONG ISLAND CITY NY 11101	09/26/2023	09/26/2028
DOL	DA	*****8816	LAKE CONSTRUCTION AND DEVELOPMENT CORPORATION		150 KINGS STREET BROOKLYN NY 11231	08/19/1998	08/19/2998
DOL	DOL		LEROY E. NELSON JR		531 THIRD ST ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		LEROY E. NELSON JR		531 THIRD ST ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL		LEROY E. NELSON JR		531 THIRD ST ALBANY NY 12206	11/07/2023	11/07/2028
DOL	AG	*****3291	LINTECH ELECTRIC, INC.		3006 TILDEN AVE BROOKLYN NY 11226	02/16/2022	02/16/2027
DOL	DOL		LOUIS A. CALICCHIA		1223 PARK ST. PEEKSKILL NY 10566	05/17/2021	05/17/2026
DOL	DOL	*****2196	MAINSTREAM SPECIALTIES, INC.		11 OLD TOWN RD SELKIRK NY 12158	02/02/2021	02/02/2026
DOL	DA		MANUEL P TOBIO		150 KINGS STREET BROOKLYN NY 14444	08/19/1998	08/19/2998
DOL	DA		MANUEL TOBIO		150 KINGS STREET BROOKLYN NY 11231	08/19/1998	08/19/2998
DOL	DOL		MAQSOOD AHMAD		618 OCEAN PKWY BROOKLYN NY 11230	09/17/2020	09/17/2025
DOL	NYC		MARIA NUBILE		84-22 GRAND AVENUE ELMHURST NY 11373	03/10/2020	03/10/2025
DOL	DOL	*****1320	MJC MASON CONTRACTING, INC.		42 FOWLER AVENUE CORTLAND MANOR NY 10567	10/25/2022	10/25/2027
DOL	DOL	*****1320	MJC MASON CONTRACTING, INC.		42 FOWLER AVENUE CORTLAND MANOR NY 10567	01/24/2023	01/24/2028
DOL	NYC		MUHAMMED A. HASHEM		524 MCDONALD AVENUE BROOKLYN NY 11218	09/17/2020	09/17/2025
DOL	NYC		NAMOW, INC.		84-22 GRAND AVENUE ELMHURST NY 11373	03/10/2020	03/10/2025
DOL	DOL	*****7790	NATIONAL BUILDING & RESTORATION CORP		1010 TILDEN AVE UTICA NY 13501	07/24/2023	07/24/2028
DOL	DOL	*****1797	NATIONAL CONSTRUCTION SERVICES, INC		1010 TILDEN AVE UTICA NY 13501	07/24/2023	07/24/2028
DOL	NYC		NAVIT SINGH		402 JERICHO TURNPIKE NEW HYDE PARK NY 11040	08/10/2022	08/10/2027
DOL	DOL		NELCO CONTRACTING, LLC		1024 BROADWAY ALBANY NY 12204	11/07/2023	11/07/2028
DOL	DA		NICHOLAS T. ANALITIS		505 MANHATTAN AVE WEST BABYLON NY 11704	10/05/2023	10/05/2028
DOL	DOL		NICHOLE E. FRASER A/K/A NICHOLE RACE		3469 STATE RT. 69 PERISH NY 13131	03/01/2022	03/01/2027
DOL	DOL		NICHOLE E. FRASER A/K/A NICHOLE RACE		3469 STATE RT. 69 PERISH NY 13131	11/15/2022	11/15/2027
DOL	DOL		NICHOLE E. FRASER A/K/A NICHOLE RACE		3469 STATE RT. 69 PERISH NY 13131	09/29/2021	09/29/2026
DOL	DOL		NICHOLE E. FRASER A/K/A NICHOLE RACE		3469 STATE RT. 69 PERISH NY 13131	02/09/2022	02/09/2027

NYSDOL Bureau of Public Work Debarment List 01/06/2025

Article 8

DOL	DOL	*****7429	NICOLAE I. BARBIR	BESTUCCO CONSTRUCTION, INC.	444 SCHANTZ ROAD ALLENTOWN PA 18104	09/17/2020	09/17/2025
DOL	NYC	*****5643	NYC LINE CONTRACTORS, INC.		402 JERICHO TURNPIKE NEW HYDE PARK NY 11040	08/10/2022	08/10/2027
DOL	DOL		PATRICK PENNACCHIO		2345 RT. 52 SUITE 2NHOPEWELL JUNCTION NY 12533	12/18/2023	12/18/2028
DOL	DOL		PATRICK PENNACCHIO		2345 RT. 52 SUITE 2NHOPEWELL JUNCTION NY 12533	12/18/2023	12/18/2028
DOL	DOL		PAULINE CHAHALES		935 S LAKE BLVD MAHOPAC NY 10541	03/02/2021	03/02/2026
DOL	DOL		PETER STEVENS		11 OLD TOWN ROAD SELKIRK NY 12158	02/02/2021	02/02/2026
DOL	DOL		PETER STEVENS		8269 21ST ST BELLEROSE NY 11426	12/22/2022	12/22/2027
DOL	DOL	*****4168	PHANTOM CONSTRUCTION CORP.		95-27 116TH STREET QUEENS NY 11419	07/12/2024	07/12/2029
DOL	DOL	*****4168	PHANTOM CONSTRUCTION CORP.		95-27 116TH STREET QUEENS NY 11419	05/28/2024	05/28/2029
DOL	DOL	*****0466	PRECISION BUILT FENCES, INC.		1617 MAIN ST PEEKSKILL NY 10566	03/03/2020	03/03/2025
DOL	NYC		RASHEL CONSTRUCTION CORP		524 MCDONALD AVENUE BROOKLYN NY 11218	09/17/2020	09/17/2025
DOL	DOL	*****1068	RATH MECHANICAL CONTRACTORS, INC.		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	DOL	*****2633	RAW POWER ELECTRIC CORP.		3 PARK CIRCLE MIDDLETOWN NY 10940	07/11/2022	07/11/2027
DOL	DA	*****7559	REGAL CONTRACTING INC.		24 WOODBINE AVE NORTHPORT NY 11768	10/01/2020	10/01/2025
DOL	DOL		RICHARD REGGIO		1617 MAIN ST PEEKSKILL NY 10566	03/03/2020	03/03/2025
DOL	DOL		ROBBYE BISSESAR		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	01/11/2003	01/11/3003
DOL	DOL		ROMEO WARREN		161 ROBYN RD MONROE NY 10950	07/11/2022	07/11/2027
DOL	DOL	*****7172	RZ & AL INC.		198 RIDGE AVENUE VALLEY STREAM NY 11581	06/06/2022	06/06/2027
DOL	DOL		SAL FRESINA MASONRY CONTRACTORS, INC.		1935 TEALL AVENUE SYRACUSE NY 13206	07/16/2021	07/16/2026
DOL	DOL		SAL MASONRY CONTRACTORS, INC.		(SEE COMMENTS) SYRACUSE NY 13202	07/16/2021	07/16/2026
DOL	DOL	*****9874	SALFREE ENTERPRISES INC		P.O BOX 14 2821 GARDNER RDPOMPEI NY 13138	07/16/2021	07/16/2026
DOL	DOL		SALVATORE A FRESINA A/K/A SAM FRESINA		107 FACTORY AVE P.O BOX 11070SYRACUSE NY 13218	07/16/2021	07/16/2026
DOL	DOL		SAM FRESINA		107 FACTORY AVE P.O BOX 11070SYRACUSE NY 13218	07/16/2021	07/16/2026
DOL	DA	*****0476	SAMCO ELECTRIC CORP.		3735 9TH ST LONG ISLAND CITY NY 11101	01/05/2023	01/05/2028
DOL	NYC	*****1130	SCANA CONSTRUCTION CORP.		863 WASHINGTON STREET FRANKLIN SQUARE NY 11010	03/10/2020	03/10/2025
DOL	DOL	*****2045	SCOTT DUFFIE	DUFFIE'S ELECTRIC, INC.	P.O BOX 111 CORNWALL NY 12518	03/03/2020	03/03/2025
DOL	DOL		SCOTT DUFFIE		P.O BOX 111 CORNWALL NY 12518	03/03/2020	03/03/2025
DOL	DA		SILVANO TRAVALJA		3735 9TH ST LONG ISLAND CITY NY 11101	01/05/2023	01/05/2028
DOL	DOL	*****0440	SOLAR GUYS INC.		8970 MIKE GARCIA DR MANASSAS VA 20109	07/16/2021	07/16/2026
DOL	NYC		SOMATIE RAMSUNAHAI		115-46 132ND ST SOUTH OZONE PARK NY 11420	09/17/2020	09/17/2025
DOL	DOL	*****2221	SOUTH BUFFALO ELECTRIC, INC.		1250 BROADWAY ST BUFFALO NY 14212	02/03/2020	02/03/2025
DOL	NYC	*****3661	SPANIER BUILDING MAINTENANCE CORP		200 OAK DRIVE SYOSSET NY 11791	03/14/2022	03/14/2027
DOL	DOL		STANADOS KALOGELAS		485 RAFT AVENUE HOLBROOK NY 11741	10/19/2021	10/19/2026
DOL	DOL	*****3496	STAR INTERNATIONAL INC		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	08/11/2003	08/11/3003

DOL	DOL	*****9528	STEEL-IT, LLC.		17613 SANTE FE LINE ROAD WAYNESFIELD OH 45896	07/16/2021	07/16/2026
DOL	DOL	*****3800	SUBURBAN RESTORATION CO. INC.		5-10 BANTA PLACE FAIR LAWN PLACE NJ 07410	03/29/2021	03/29/2026
DOL	DOL	*****9150	SURGE INC.		8269 21ST STREET BELLEROSE NY 11426	12/22/2022	12/22/2027
DOL	DOL		SYED MUHAMMAD S. JAFRI A/K/A SHARRUKH JAFRI		4307 28TH AVE ASTORIA NY 11103	10/11/2024	10/11/2029
DOL	DOL		SYED RAZA		198 RIDGE AVENUE NY 11581	06/06/2022	06/06/2027
DOL	DOL		TARLOK SINGH		95-27 116TH STREET QUEENS NY 11419	05/28/2024	05/28/2029
DOL	DOL		TARLOK SINGH		95-27 116TH STREET QUEENS NY 11419	07/12/2024	07/12/2029
DOL	DOL		TERRY THOMPSON		11371 RIDGE RD WOLCOTT NY 14590	02/03/2020	02/03/2025
DOL	DOL	*****9733	TERSAL CONSTRUCTION SERVICES INC		107 FACTORY AVE P.O BOX 11070SYRACUSE NY 13208	07/16/2021	07/16/2026
DOL	DOL		TERSAL CONTRACTORS, INC.		221 GARDNER RD P.O BOX 14POMPEI NY 13138	07/16/2021	07/16/2026
DOL	DOL		TERSAL DEVELOPMENT CORP.		1935 TEALL AVENUE SYRACUSE NY 13206	07/16/2021	07/16/2026
DOL	DOL	*****5766	THE COKER CORPORATION	COKER CORPORATIO N	2610 SOUTH SALINA ST SUITE 14SYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL	*****2426	THE MATRUKH GROUP, INC.		4307 28TH AVE PO BOX 9082ASTORIA NY 11103	10/11/2024	10/11/2029
DOL	DOL		TIMOTHY PERCY		29807 ANDREWS ROAD BLACK RIVER NY 13612	10/17/2023	10/17/2028
DOL	DA	*****1050	TRI STATE CONSTRUCTION OF NY CORP.		50-39 175TH PLACE FRESH MEADOWS NY 11365	03/28/2022	03/28/2027
DOL	DA	*****4106	TRIPLE H CONCRETE CORP		2375 RAYNOR STREET RONKONKOMA NY 11779	08/04/2021	08/04/2026
DOL	DOL	*****8210	UPSTATE CONCRETE & MASONRY CONTRACTING CO INC		449 WEST MOMBSHA ROAD MONROE NY 10950	06/06/2022	06/06/2027
DOL	DOL	*****6418	VALHALLA CONSTRUCTION, LLC.		796 PHLEPS ROAD FRANKLIN LAKES NJ 07417	12/01/2020	12/01/2025
DOL	NYC	*****2426	VICKRAM MANGRU	VICK CONSTRUCTI ON	21 DAREWOOD LANE VALLEY STREAM NY 11581	09/17/2020	09/17/2025
DOL	NYC		VICKRAM MANGRU		21 DAREWOOD LANE VALLEY STREAM NY 11581	09/17/2020	09/17/2025
DOL	DOL		VIKTORIA RATH		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	DOL		VINCENT CORRAO		PO BOX 393 NANUET NY 10954	09/17/2024	09/17/2029
DOL	DOL	*****8266	WILLIAM CHRIS MCCLENDON	MCCLENDON ASPHALT PAVING	1646 FALLS STREET NIAGARA FALLS NY 14303	05/01/2023	05/01/2028
DOL	DOL		WILLIAM CHRIS MCCLENDON		1646 FALLS STREET NIAGARA FALLS NY 14303	05/01/2023	05/01/2028
DOL	DOL		WILLIAM G. PROERFRIEDT		85 SPRUCEWOOD ROAD WEST BABYLON NY 11704	01/19/2021	01/19/2026
DOL	DOL	*****5924	WILLIAM G. PROPHY, LLC	WGP CONTRACTIN G, INC.	54 PENTAQUIT AVE BAYSHORE NY 11706	01/19/2021	01/19/2026
DOL	DOL		WILLIAM SCRIVENS		4192 SIR ANDREW CIRCLE DOYELSTOWN PA 18902	07/18/2024	07/18/2029
DOL	DOL		XENOFON EFTHIMIADIS		29-10 38TH AVENUE LONG ISLAND CITY NY 11101	10/11/2023	10/11/2028

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Phased construction.
4. Work performed by Owner.
5. Multiple Work Packages.
6. Work under Owner’s separate contracts.
7. Future work not part of this Project.
8. Owner’s product purchase contracts.
9. Owner-furnished/Contactor-installed (OFCI) product.
10. Owner-furnished/Owner-installed (OFOI) products.
11. Contractor-furnished/Owner-installed (CFOI) products.
12. Contractor’s use of site and premises.
13. Coordination with occupants.
14. Work restrictions.
15. Specification and Drawing conventions.
16. Miscellaneous provisions.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.
2. Section 017300 “Execution” for coordination of Owner-installed products.

1.3 DEFINITIONS

A. Work Package: A group of specifications, drawings, and schedules prepared by the design team to describe a portion of the Project Work for pricing, permitting, and construction.

1.4 PROJECT INFORMATION

A. Project Identification: Kessinger Dam Rehabilitation Project.

1. Project Location: 0 Fish Creek Dam Road, Taberg, NY.

B. Owner: City of Rome.

1. Owner's Representative: Patrick Surace, (315) 335-2653.

C. Engineer: CDM Smith, contact Nancy Vigneault, (315) 434-3247, vigneaultno@cdmsmith.com.

1. Engineer's Representative: TBD.

D. Engineer's Consultants: Engineer has retained the following design professionals who have prepared designated portions of the Contract Documents:

1. Topographic Survey: Bryant Associates.

a. Topographic Survey Representative: John Adams, L.S., 315-479-7565.

E. Other Owner Consultants: Owner has retained the following design professionals who have prepared designated portions of the Contract Documents:

1. Instrumentation and Controls: Aqualogics Systems, Inc. has prepared the following portions of the Contract Documents:

a. Appendix – proposal for control/programming; Control System Integration Representative: Aqualogics Systems Inc.
b. Scope of Service: Programming of control panels.

F. Construction Manager: N/A.

1. Construction Manager for this Project is Project's constructor. The terms "Construction Manager" and "Contractor" are synonymous.

G. Project Coordinator for Multiple Contracts: Owner shall serve as Project coordinator.

1.5 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and includes, but is not limited to, the following:

1. Concrete rehabilitation of the dam including the spillway, flip bucket, non-overflow sections, gatehouse, construction of a new retaining wall to replace existing wood and steel retaining wall along reservoir access ramp, new floating ice boom and anchors, new mixers, new autostrainers for screens, new intake trash racks, associated electrical upgrades for equipment, controls/programming for new equipment, spray nozzle system for screenings discharge trough, maintaining flow in the creek and to the City’s Water Filtration Plant, and other Work indicated in the Contract Documents.

B. Type of Contract:

1. Project will be constructed under coordinated, concurrent multiple contracts. See Section 011200 "Multiple Contract Summary" for a list of multiple contracts, a description of work included under each of the multiple contracts, and the responsibilities of Project coordinator.

1.6 WORK PERFORMED BY OWNER

A. Cooperate fully with Owner, so work may be carried out smoothly, without interfering with or delaying Work under this Contract or work by Owner. Coordinate the Work of this Contract with work performed by Owner.

B. Concurrent Work: Owner will perform the following construction operations at Project site. Those operations will be conducted simultaneously with Work under this Contract.

1. Owner will perform annual cleaning of the reservoir behind the dam in August or September during one of the anticipated two-year contract (Contractor will clean the other year). This is a one-day, approximately 8-hour effort where reservoir is drained and accumulated sediments are removed. Owner will coordinate a suitable timeframe with Contractor to perform this work within the late summer timeframe.
2. Owner will install a new electrical service to the gatehouse in 2025.

1.7 OWNER'S PRODUCT AND SERVICES PURCHASE CONTRACTS

A. Owner has negotiated a programming quotation with an integrator to be incorporated into the Work. The quotation is included in the appendices of these specifications book and Contractor will contract with the City-standard integrator for programming services associated with control panels as outlined in the quotation.

1. Contractor's responsibilities are same as if Contractor had negotiated the integrator services, including responsibility to renegotiate purchase and to execute final purchasing agreements.

B. Owner's Purchase Contracts Information:

1. Control systems integration services: See Appendix A.

a. Purchase Contract Firm and Representative: Aqualogics Systems, Inc.
b. Product Purchase Contract Scope: Integration services for controls
c. Product Purchase Status: Price negotiated by Owner, to be incorporated into the Contract Sum by Contractor; see Section 012100 "Allowances" for cash allowance for Control System Integration service Order to be placed by Contractor.

1.8 CONTRACTOR'S USE OF SITE AND PREMISES

A. Unrestricted Use of Site: Each Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project. Access to the building and the equipment operation must be maintained throughout construction.

B. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

C. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.9 COORDINATION WITH OCCUPANTS

A. Full Owner Occupancy: Owner will perform daily operations and maintenance activities at the gatehouse during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing access unless otherwise indicated.

1. Maintain access to existing driveway and building. Do not close or obstruct access to the gatehouse without written permission from Owner.
2. Notify Owner not less than 10 days in advance of activities that will affect Owner's operations.

1.10 WORK RESTRICTIONS

A. Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work to between 7:00 a.m. to 5:00 p.m., Monday through Friday, unless otherwise indicated. Work hours may be modified to meet Project requirements if approved by Owner and authorities having jurisdiction.

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging for temporary utility services according to requirements indicated:

1. Notify Engineer and Owner not less than five days in advance of proposed utility interruptions.
2. Obtain Engineer's written permission before proceeding with utility interruptions.

D. Noise, Vibration, Dust, and Odors: Coordinate operations that may result in high levels of noise and vibration, dust, odors, or other disruption to Owner occupancy with Owner.

1. Notify Engineer not less than **two** days in advance of proposed disruptive operations.
2. Obtain Engineer's written permission before proceeding with disruptive operations.

E. Smoking and Controlled Substance Restrictions: Use of tobacco products, alcoholic beverages, and other controlled substances on Owner’s property is not permitted.

1.11 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Text Color: Text used in the Specifications, including units of measure, manufacturer and product names, and other text may appear in multiple colors or underlined as part of a hyperlink; no emphasis is implied by text with these characteristics.
3. Hypertext: Text used in the Specifications may contain hyperlinks. Hyperlinks may allow for access to linked information that is not residing in the Specifications. Unless otherwise indicated, linked information is not part of the Contract Documents.
4. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 00 Contracting Requirements: General provisions of the Contract, including General and Supplementary Conditions, apply to all Sections of the Specifications.

C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

D. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations indicated on the Drawings.

1.12 MISCELLANEOUS PROVISIONS

A. Not used.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 011000

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SECTION 011200 - MULTIPLE CONTRACT SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes a summary of each contract, including responsibilities for coordination and temporary facilities and controls.

B. Specific requirements for Work of each contract are also indicated in individual Specification Sections and on Drawings.

C. Related Requirements:

1. Section 011000 "Summary" for the Work covered by the Contract Documents, restrictions on use of Project site, coordination with occupants, and work restrictions.
2. Section 013100 "Project Management and Coordination" for general coordination requirements.

1.3 DEFINITIONS

A. Permanent Enclosure: As determined by Engineer, the condition at which roofing is insulated and weathertight; exterior walls are insulated and weathertight; and openings are closed with permanent construction or substantial temporary closures equivalent in weather protection to permanent construction.

1.4 PROJECT COORDINATOR

A. Project coordinator shall be responsible for coordination between the General Construction Contract and Electrical Contract.

1. Electrical Contractor shall act as mechanical/electrical coordinator.

1.5 PROJECT COORDINATOR RESPONSIBILITIES

A. Project coordinator shall perform Project coordination activities for the multiple contracts, including, but not limited to, the following:

1. Provide typical overall coordination of the Work.
2. Coordinate shared access to workspaces.

3. Coordinate product selections for compatibility.
4. Provide overall coordination of temporary facilities and controls.
5. Approve interruptions of permanent and temporary utilities, including those necessary to make connections for temporary services.
6. Coordinate construction and operations of the Work with work performed by each Contract.
7. Coordinate sequencing and scheduling of the Work. Include the following:

    a. Initial Coordination Meeting: At earliest possible date, arrange and conduct a meeting with contractors for sequencing and coordinating the Work; negotiate reasonable adjustments to schedules.
    b. Review Contractors' Construction Schedule for entire Project

8. Provide photographic documentation.
9. Provide quality-assurance and quality-control services specified in Section 014000 "Quality Requirements."
10. Provide information necessary to adjust, move, or relocate existing utility structures affected by construction.
11. Coordinate cutting and patching.
12. Coordinate protection of the Work.
13. Coordinate firestopping.
14. Coordinate completion of interrelated punch list items.
15. Coordinate preparation of Project Record Documents if information from more than one contractor is to be integrated with information from other contractors to form one combined record.
16. Print and submit Record Documents if installations by more than one contractor are indicated on the same Contract Drawing or Shop Drawing.
17. Collect record Specification Sections from contractors, collate Sections into numeric order, and submit complete set.

1.6 GENERAL REQUIREMENTS OF CONTRACTS

A. Extent of Contract: Unless the Agreement contains a more specific description of the Work of each Contract, requirements indicated on Drawings and in Specification Sections determine which contract includes a specific element of Project.

1. Unless otherwise indicated, the work described in this Section for each contract shall be complete systems and assemblies, including products, components, accessories, and installation required by the Contract Documents.
2. Trenches and other excavation for the work of each contract shall be the work of the General Construction Contract.
3. Blocking, backing panels, sleeves, and metal fabrication supports for the work of each contract shall be the work of each contract for its own work.
4. Furnishing of access panels for the work of each contract shall be the work of each contract for its own work. Installation of access panels shall be the work of each contract for its own work.
5. Equipment pads for the work of each contract shall be the work of the General Construction Contract.
6. Painting for the work of each contract shall be the work of the General Construction Contract.

7. Cutting and Patching: Provided by the General Construction Contract.
8. Through-penetration firestopping for the work of each contract shall be provided by each contract for its own work.
9. Contractors' Startup Construction Schedule: Within five working days after schedule summary submittal has been received from Project coordinator, submit a startup horizontal bar-chart schedule showing construction operations sequenced and coordinated with overall construction.

B. Substitutions: Each contractor shall cooperate with other contractors involved to coordinate approved substitutions with remainder of the work.

1. The General Construction Contract shall coordinate substitutions.

C. Temporary Facilities and Controls: In addition to specific responsibilities for temporary facilities and controls indicated in this Section and in Section 015000 "Temporary Facilities and Controls," each contractor is responsible for the following:

1. Installation, operation, maintenance, and removal of each temporary facility necessary for its own normal construction activity, and costs and use charges associated with each facility, except as otherwise provided for in this Section.
2. Plug-in electric power cords and extension cords, supplementary plug-in task lighting, and special lighting necessary exclusively for its own activities.
3. Its own field office, complete with necessary furniture, utilities, and telephone service.
4. Its own storage and fabrication sheds.
5. Temporary enclosures for its own construction activities.
6. Staging and scaffolding for its own construction activities.
7. General hoisting facilities for its own construction activities, up to 2 tons.
8. Waste disposal facilities, including collection and legal disposal of its own hazardous, dangerous, unsanitary, or other harmful waste materials.
9. Progress cleaning of work areas affected by its operations on a daily basis.
10. Secure lockup of its own tools, materials, and equipment.
11. Construction aids and miscellaneous services and facilities necessary exclusively for its own construction activities.

D. Temporary Heating, Cooling, and Ventilation: The General Construction Contract is responsible for temporary heating, cooling, and ventilation, including utility-use charges, temporary meters, and temporary connections.

E. Use Charges: Comply with the following:

1. Sewer Service: There is no sewer service at the site.
2. Water Service: There is no water service at the site.
3. Electric Power Service: Electric power is limited at the site. There is limited additional capacity beyond what the Owner uses to operate the equipment and gatehouse.

1.7 GENERAL CONSTRUCTION CONTRACT

A. Work of the General Construction Contract includes, but is not limited to, the following:

1. Remaining work not identified as work under other contracts.

2. Site preparation, including clearing and earthwork.
3. Coffer dams and controls to maintain a dry work area.
4. Site improvements, including roadways, site grading and restoration.
5. Armoring downstream of non-overflow section with grouted riprap..
6. Selective demolition.
7. Rehabilitation of dam including spillway, non-overflow section, flip bucket, and gatehouse foundation walls, and gatehouse superstructure.
8. Retaining wall
9. Installation of drainage board (miradrain) on downstream side of spillway.
10. Guardrail and ladders.
11. Rehabilitation of interior finishes.
12. Installation of grates and plates over floor openings.
13. Miscellaneous items, including concrete equipment bases and painting of mechanical and electrical work and interior and exterior building.
14. Equipment, including the following:

    a. Trash racks.
    b. Auto-strainers.
    c. Spray water system upgrades to add nozzles to screenings discharge trough (also referred to as chute)
    d. Valves on the spray water system
    e. Mixers, including VFDs.
    f. Ice boom and associated anchoring.

15. Control system integration for equipment including upgrades in screen control panel as identified in the Aqualogics Systems, Inc. quotation.
16. Coordinate sequence of activities to accommodate tests and inspections, and coordinate schedule of tests and inspections with Project Coordinator.
17. Locate existing permanent benchmarks, control points, and similar reference points, and establish permanent benchmarks on Project site.
18. Provide field survey of critical points at the entrance to the tunnel from the lower level of the gatehouse and at the downstream manhole off of Boyd Road to set up control of temporary water bypass to the tunnel/Water Filtration Plant.
19. Maintain flow to the Water Filtration Plant and in the creek.
20. Provide field surveys of in-progress construction and site work and final property survey.
21. Provide progress cleaning of common areas.

B. Temporary facilities and controls in the General Construction Contract include, but are not limited to, the following:

1. Temporary facilities and controls that are not otherwise specifically assigned to the Electrical Contract.
2. Provide temporary facilities:

    a. Provide common-use field office for use by all personnel engaged in construction activities.
    b. Provide telephone service for common-use facilities.

3. Sediment and erosion control.
4. Stormwater control.

5. Unpiped temporary toilet fixtures, wash facilities, and drinking water facilities, including disposable supplies.
6. Temporary roads and paved areas.
7. Dewatering facilities and drains.
8. Excavation support and protection, unless required solely for the Work of another contract.
9. Special or unusual hoisting requirements for construction activities, including hoisting loads in excess of 2 tons, hoisting material or equipment into spaces below grade, and hoisting requirements outside building enclosure.
10. Project identification and temporary signs.
11. General waste disposal facilities.
12. Pest control.
13. Temporary stairs.
14. Temporary fire-protection facilities.
15. Barricades, warning signs, and lights.
16. Site enclosure fence.
17. Security enclosure and lockup.
18. Environmental protection.
19. Maintenance and restoration of Owner's existing facilities used as temporary facilities.

1.8 ELECTRICAL CONTRACT

A. Work of the Electrical Contract includes, but is not limited to, the following:

1. Provide upgraded electrical service and coordinate with utility for transformer upgrade.
2. Provide all electrical distribution as indicated on the drawings.
3. Electrical distribution to de-icing mixer, auto-strainer, and associated control equipment.
4. Providing new panelboard feeding new gatehouse loads and refeeding all existing gatehouse loads.

B. Temporary facilities and controls in the Electrical Contract include, but are not limited to, the following:

1. Electric power service and distribution.
2. Lighting, including site lighting.
3. Electrical connections to existing systems and temporary facilities and controls furnished by the General Construction Contract and Electrical Contract.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 011200

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SECTION 012001 – LUMP SUM PRICES AND PAYMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

A. Lump sum prices.

1.3 LUMP SUM PRICES – GENERAL CONTRACT

A. Payment of the lump sum price bid for Item No.1, Mobilization/ Demobilization shall constitute full compensation for all labor, materials, tools, equipment and incidentals necessary for mobilization/demobilization for constructing the Kessinger Dam rehabilitation complete, as shown and as specified in Divisions 01 through 46, except that required under Bid Items 2 through 42.

B. Payment of the lump sum price bid for Item No. 2, Spillway and Right Non-Overflow Section Cofferdams and Dewatering shall constitute full compensation for all labor, materials, tools, equipment and incidentals necessary for constructing the cofferdams upstream and downstream of the spillway and right non-overflow section, and parallel to flow in the middle of the spillway between construction phases and dewatering the work area complete, as shown and as specified in Division 01 and Section 015725 “Temporary Diversion and Cofferdams,” except that required under other Bid Items.

C. Payment of the lump sum price bid for Item No. 3, Gatehouse Cofferdam and Dewatering shall constitute full compensation for all labor, materials, tools, equipment and incidentals necessary for constructing the cofferdams upstream and downstream of the gatehouse and dewatering the work area complete, as shown and as specified in Divisions 01 and 015725 “Temporary Diversion and Cofferdams,” except that paid under other Bid Items.

D. Payment of the lump sum price bid for Item No. 16, Ice Boom and Anchors shall constitute full compensation for all labor, materials, tools, equipment and incidentals necessary for furnishing and constructing the ice boom and associated anchorage required as designed by boom manufacturer, as shown and as specified in Divisions 01 and 35, except that paid under other Bid Items.

E. Payment of the lump sum price bid for Item No. 17, Clear/ Prepare Area for Grouted Riprap shall constitute full compensation for all labor, materials, tools, equipment and incidentals necessary for clearing vegetation and trees/brush at edge of water adjacent to the right non-overflow section, as shown and as specified in Divisions 01, except that paid under other Bid Items.

F. Payment of the lump sum price bid for Item No. 31, Interior Gatehouse Painting, shall constitute full compensation for all labor, materials, tools, equipment and incidentals necessary for painting the interior above grade masonry walls and ceiling of the gatehouse as shown on the Drawings and as specified in Divisions 01 and Section 099123, except that paid under other Bid Items.

G. Payment of the lump sum price bid for Item No. 32, Exterior Gatehouse Painting, shall constitute full compensation for all labor, materials, tools, equipment and incidentals necessary for painting the exterior of the above grade masonry walls of the gatehouse, handrailing, and security bars, and roof overhang as shown on the Drawings and as specified in Divisions 01 and Section 099123, except that paid under other Bid Items.

H. Payment of the lump sum price bid for Item No. 34, Upstream Retaining Wall shall constitute full compensation for all labor, materials, tools, equipment and incidentals necessary for constructing the retaining wall upstream of the gatehouse complete, as shown and as specified in Divisions 01, 03, and 05, except that paid under other Bid Items.

I. Payment of the lump sum price bid for Item No. 36, Metal Grating shall constitute full compensation for all labor, materials, tools, equipment and incidentals necessary for furnishing and constructing the metal grating inside the gatehouse complete, as shown and as specified in Divisions 01 and 05, except that paid under other Bid Items.

J. Payment of the lump sum price bid for Item No 37, Handrail shall constitute full compensation for all labor, materials, tools, equipment and incidentals necessary for furnishing and constructing the handrail around the exterior of the gatehouse complete, as shown on Drawings and as specified in Division 1 and Section 055200.

K. Payment of the lump sum price bid for Item No. 39, Process Equipment Furnish/ Install shall constitute full compensation for all labor, materials, tools, equipment and incidentals necessary for furnishing and constructing the process equipment including deicing mixers, auto basket strainers, nozzles for screen discharge trough, and ancillary piping complete, as shown and as specified in Divisions 01, 03, 40 and 46, except that paid under other Bid Items.

L. Payment of the lump sum price bid for Item No. 40, Bypass Water Supply System shall constitute full compensation for all labor, materials, tools, equipment and incidentals necessary for constructing the temporary bypass water supply system complete including screening and controls, as shown and as specified in Section 015725 “Temporary Diversion and Cofferdams,” except that paid under other Bid Items.

1.4 LUMP SUM PRICES – ELECTRICAL CONTRACT

A. Payment of the lump sum price bid for Item No. 1, Mobilization/Demobilization shall constitute full compensation for all labor, materials, tools, equipment, and incidentals necessary for mobilization/demobilization for gatehouse rehabilitation and service area garage work, as shown and as specified in Divisions 01, 26, 40, and 46, except that paid under other Bid Items.

B. Payment of the lump sum price bid for Item No. 2, Electrical Improvements shall constitute full compensation for all labor, materials, tools, equipment and incidentals necessary for furnishing and constructing the electrical equipment, conduit, wiring, and ancillary equipment complete, as shown and as specified in Divisions 01, 26, 40, and 46, except that paid under other Bid Items.

1.5 EXTRA WORK

A. Extra work, if any, will be performed in accordance with Article 11 of the General Conditions and will be paid for in accordance with the provisions of Article 13 of the General Conditions.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 012001

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SECTION 012100 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements governing allowances.

B. Types of allowances include the following:

1. Lump-sum allowances.
2. Contingency allowances.

C. Related Requirements:

1. Section 012200 "Unit Prices" for procedures for using unit prices, including adjustment of quantity allowances when applicable.
2. Section 012600 “Contract Modification Procedures” for procedures for submitting and handling Change Orders.
3. Section 014000 "Quality Requirements" for procedures governing the use of allowances for field testing by an independent testing agency.

1.3 DEFINITIONS

A. Allowance: A quantity of work or dollar amount included in the Contract, established in lieu of additional requirements, used to defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order.

1.4 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise Engineer of the date when final selection, or purchase and delivery, of each product or system described by an allowance must be completed by the Owner to avoid delaying the Work.

B. At Engineer's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

C. Purchase products and systems selected by Engineer from the designated supplier.

1.5 ACTION SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances in the form specified for Change Orders.

1.6 INFORMATIONAL SUBMITTALS

A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.

C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.7 LUMP-SUM ALLOWANCES

A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Engineer under allowance and shall include taxes, freight**,** and delivery to Project site.

B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner or selected by Engineer under allowance shall be included as part of the Contract Sum and not part of the allowance.

C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.

1. If requested by Engineer, retain and prepare unused material for storage by Owner. Deliver unused material to Owner's storage space as directed.

1.8 CONTINGENCY ALLOWANCES

A. Use the contingency allowance only as directed by Engineer for Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.

B. Contractor's overhead, profit, and related costs for products and equipment ordered by Owner under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, taxes, insurance, equipment rental, and similar costs.

C. Change Orders authorizing use of funds from the contingency allowance will include Contractor's related costs and reasonable overhead and profit.

D. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.

1.9 ADJUSTMENT OF ALLOWANCES

A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, required maintenance materials, and similar margins.

1. Include installation costs in purchase amount only where indicated as part of the allowance.
2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other markups.
3. Submit substantiation of a change in scope of Work, if any, claimed in Change Orders related to unit-cost allowances.
4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.

B. Submit claims for increased costs due to a change in the scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.

1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of Work has changed from what could have been foreseen from information in the Contract Documents.
2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES – CONTRACT 1G

A. Allowance No. 41: Lump-Sum Allowance: Include the sum as indicated on the Bid Form for control system integration as specified in Aqualogics Systems Inc. quotation in Appendix A.

1. This allowance is for material and programming by Aqualogics Systems Inc. only. Contractor costs for coordination, overhead and profit are not included in this item and should be included in Item 39.

B. Allowance No. 42: Contingency Allowance: Include a contingency allowance of $500,000.00 for use according to Owner's written instructions.

3.4 SCHEDULE OF ALLOWANCES – CONTRACT 1E

A. Allowance No. 3: Lump-Sum Allowance: Include the sum as indicated on the Bid Form for National Grid to replace the transformer onsite. Payment under this item will be for invoices received from National Grid.

1. Contractor costs for coordination, overhead and profit are not included in this item.

B. Allowance No. 4: Contingency Allowance: Include a contingency allowance of $100,000 for use according to Owner’s written instructions.

END OF SECTION 012100

SECTION 012200 - UNIT PRICES AND PAYMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for unit prices.

B. Related Requirements:

1. Section 012100 "Allowances" for procedures for using unit prices to adjust quantity allowances.
2. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
3. Section 014000 "Quality Requirements" for field testing by an independent testing agency.

1.3 DEFINITIONS

A. Unit price is a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, labor and equipment required for installation or removal, insurance, overhead, and profit.

B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices.

C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.

D. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the Part 3 “Schedule of Unit Prices” Article contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES – CONTRACT 1G

A. Unit Price No. 4: Right Training Wall Concrete Demolition.

1. Description: Concrete removal and disposal off-site, in accordance with Drawings, Division 01 and Section 024119, "Selective Demolition."
2. Unit of Measurement: cubic yard of concrete removed based on measurements of the wall before and after removal.

B. Unit Price No. 5: Spillway/ Right Non-Overflow Section Concrete Demolition, Up to 6 Inches Thick.

1. Description: Concrete demolition and disposal off-site, in accordance with Drawings, Division 01 and Section 024119, "Selective Demolition."
2. Unit of Measurement: square yard of concrete excavated, based on measurements before and after removal.

C. Unit Price No. 6: Spillway/ Right Non-Overflow Section Concrete Demolition, 6 Inches to 8 Inches Thick.

1. Description: Concrete demolition and disposal off-site, in accordance with Drawings, Division 01 and Section 024119, "Selective Demolition."
2. Unit of Measurement: square yard of concrete excavated, based on measurements before and after removal.

D. Unit Price No. 7: Spillway/ Right Non-Overflow Section Concrete Demolition, 8 Inches to 12 Inches Thick.

1. Description: Concrete demolition and disposal off-site, in accordance with Drawings, Division 01 and Section 024119, "Selective Demolition."
2. Unit of Measurement: square yard of concrete excavated, based on measurements before and after removal.

E. Unit Price No. 8: Underwater Concrete Demolition on Upstream Face of Spillway.

1. Description: Concrete demolition and disposal off-site, in accordance with Drawings, Division 01 and Section 024119, "Selective Demolition."
2. Unit of Measurement: square yard of concrete excavated up to 6 inches thick, based on measurements before and after removal.

F. Unit Price No. 9: #4 Dowels Epoxied into Existing Spillway, Right Non-Overflow Section and Right and Left Training Walls and Bypass Channel Retaining Wall Concrete.

1. Description: Furnish and install #4 dowels into existing concrete, in accordance with Drawings, Division 01 and Section 050519, “Post Installed Anchors and Reinforcing Bars."

2. Unit of Measurement: each dowel, based on number of dowels installed.

G. Unit Price No. 10: Miradrain – 6-inch-Wide Strip.

1. Description: Furnish and install Miradrain with outlet pipes as shown and in accordance with Drawings, Division 01 and Section 071326, “Geocomposite Subdrainage."
2. Unit of Measurement: linear foot, based on actual linear feet installed, measured in place.

H. Unit Price No. 11: Right Training Wall Concrete.

1. Description: Furnish and place concrete for the training wall rehabilitation including reinforcing steel, waterstops and other items incidental as shown and in accordance with Drawings, Division 01 and Section 033000, “Cast-in-Place Concrete.”
2. Unit of Measurement: Cubic yards, based on actual area and depth installed measured in place.

I. Price No. 12: Spillway/ Right Non-Overflow Section Concrete, Up to 6 Inches Thick.

1. Description: Furnish and place concrete including reinforcing steel, waterstops and other items incidental as shown and in accordance with Drawings, Division 01 and Section 033000, “Cast-in-Place Concrete.” This item is for concrete placed in thicknesses up to 6 inches on the spillway or right non-overflow section.
2. Unit of Measurement: Square yards, based on actual area installed, measured in place.

J. Unit Price No. 13: Spillway/ Right Non-Overflow Section Concrete, 6 Inches to 8 Inches Thick.

1. Description: Furnish and place concrete including reinforcing steel, waterstops and other items incidental as shown and in accordance with Drawings, Division 01 and Section 033000, “Cast-in-Place Concrete.” This item is for concrete placed in thicknesses over 6 inches and up to 8 inches on the spillway or right non-overflow section.
2. Unit of Measurement: Square yards, based on actual area installed, measured in place.

K. Unit Price No. 14: Spillway/ Right Non-Overflow Section Concrete, 8 Inches to 12 Inches Thick.

1. Description: Furnish and place concrete including reinforcing steel, waterstops and other items incidental as shown and in accordance with Drawings, Division 01 and Section 033000, “Cast-in-Place Concrete.” This item is for concrete placed in thicknesses over 8 inches and up to 12 inches on the spillway or right non-overflow section.
2. Unit of Measurement: Square yards, based on actual area installed, measured in place.

L. Unit Price No. 15: Underwater Concrete Repair on Upstream Face of Spillway.

1. Description: Furnish and place concrete on the upstream face of the spillway that is below elevation 715.0’ including reinforcing steel as shown and in accordance with Drawings, Division 01 and Section 030100.61, “Concrete Repairs.”Unit of Measurement: Square yard, based on actual area installed measured in place.

M. Unit Price No. 18: Grouted Riprap.

1. Description: Furnish and place grouted riprap on the downstream side of the right non-overflow section as shown and in accordance with Drawings, Divisions 01 and 31 .
2. Unit of Measurement: Cubic yard, based on actual area and depth installed measured in place.

N. Unit Price No. 19: Crack Repair.

1. Description: Injecting cracks with epoxy or polyurethane grout as shown and in accordance with Drawings, Division 01 and Section 030100.61, “Concrete Repairs.”
2. Unit of Measurement: Linear feet of crack injected as measured in the field.

O. Unit Price No. 20: Exterior Gatehouse Wall Demolition

1. Description: Demolition of depth of 20 inches to 36 inches of the upper portion and 6 inches of the lower portion of the exterior of the gatehouse foundation walls and disposal of debris off-site, in accordance with Drawings, Division 01 and Section 024119, "Selective Demolition."
2. Unit of Measurement: Cubic yards of concrete excavated, based on measurements before and after removal.

P. Unit Price No. 21: Interior Gatehouse Wall Demolition, 1 Inch to 2 Inches Thick

1. Description: Demolition of 1 to 2 inches of concrete from the interior of the gatehouse foundation walls and disposal of debris off-site, in accordance with Drawings, Division 01 and Section 024119, "Selective Demolition."
2. Unit of Measurement: Square yards of concrete excavated, based on measurements before and after removal.

Q. Unit Price No. 22: Interior Gatehouse Wall Demolition, 6 Inch Thick

1. Description: Demolition of 6 inches of concrete from the interior of the gatehouse foundation walls and disposal of debris off-site, in accordance with Drawings, Division 01 and Section 024119, "Selective Demolition."
2. Unit of Measurement: Square yards of concrete excavated, based on measurements before and after removal.

R. Unit Price No. 23: Left Training Wall and Bypass Discharge Retaining Wall Demolition.

1. Description: Demolition of the left training wall and the retaining wall on the south side of the bypass discharge channel as indicted on the Drawings and disposal of debris off-site, in accordance with Division 01 and Section 024119, "Selective Demolition."
2. Unit of Measurement: Cubic yards of concrete excavated, based on actual area and depth installed measured in place.

S. Unit Price No. 24: #5 Dowels Epoxied into Gatehouse Concrete.

1. Description: Furnish and install #5 dowels into gatehouse concrete, in accordance with Drawings, Division 01 and Section 050519, “Post Installed Anchors and Reinforcing Bars."

2. Unit of Measurement: each dowel, based on number of dowels installed.

T. Unit Price No. 25: #6 Rock Dowels Epoxied Inside Gatehouse.

1. Description: Furnish and install #6 dowels through wall of gatehouse and into rock behind wall, in accordance with Division 01 and the Contract Drawings.
2. Unit of Measurement: each dowel, based on number of dowels installed.

U. Unit Price No. 26: Exterior Gatehouse New Concrete.

1. Description: Furnish and place concrete including reinforcing steel, waterstops and other incidental items as shown and in accordance with Drawings, Division 01 and Section 033000, "Cast-in-Place Concrete." This item is for concrete placed on the outside of the gatehouse foundation walls at a thickness between 6 inches and 36 inches.
2. Unit of Measurement: Cubic yards, based on actual volume of concrete installed as measured in placed.

V. Unit Price No. 27: Interior Gatehouse Overlay Repair Mortar, 1 Inch to 2 Inches Thick.

1. Description: Furnish and place overlay repair mortar as shown and in accordance with Drawings, Division 01 and Section 030100.61, "Concrete Repairs." This item is for overlay repair mortar placed between 1 inch and 2 inches thick on the inside foundation walls of the gatehouse.
2. Unit of Measurement: Square yards of overlay repair mortar installed as measured in place.

W. Unit Price No. 28: Interior Gatehouse New Concrete, 6 Inches Thick.

1. Description: Furnish and place concrete including reinforcing steel as shown on the Drawings and in accordance with Division 01 and Section 033000, "Cast-in-Place Concrete." This item is for concrete placed up to 6 inches thick on the inside foundation walls of the gatehouse.
2. Unit of Measurement: Square yards of concrete installed as measured in place.

X. Unit Price No. 29: Interior Gatehouse Plaster Repair of Masonry Walls.

1. Description: Removal of spalled, delaminated and deteriorating plaster wall system and installation of new plaster wall system indicated in the Contract Documents, in accordance with Drawings, Division 01 and Section 092400, "Cement Plastering".
2. Unit of Measurement: Square feet based on area of plaster installed as measured in place.

Y. Unit Price No. 30: Exterior Gatehouse Masonry Restoration.

1. Description: Repointing and restoration of the above grade masonry walls of the gatehouse indicated in the Contract Documents, in accordance with Drawings, Division 01 and Section 040120.64, "Masonry Repointing".
2. Unit of Measurement: Square feet based on area of masonry wall repointed and restored as measured in place.

Z. Unit Price No. 33: Left Training Wall and Bypass Discharge Retaining Wall Concrete.

1. Description: Furnish and place concrete including reinforcing steel as shown and in accordance with Division 01 and Section 033000, “Cast-in-Place Concrete” and as shown on the Drawings. This item is for concrete placed for the left training wall and the bypass discharge retaining wall.
2. Unit of Measurement: Cubic yards, based on actual area and depth installed, measured in place.

AA. Unit Price No. 35: Slotted Slide Gate and Manual Trash Rack (Exterior of Gatehouse).

1. Description: Furnish and install slotted slide gates and trash racks on the upstream face of the gatehouse as indicated in the Contract Documents, and in accordance with Division 01, Section 400557, “Actuators for Process Valves and Gates” and Section 400559.23 "Stainless Steel Slide Gates."
2. Unit of Measurement: Each slide gate and manual trash rack installed.

BB. Unit Price No. 38: Cementitious Slurry Waterproofing.

1. Description: Furnish and place cementitious slurry waterproofing on the inside and outside of the gatehouse foundation walls, the spillway training walls, and the retaining wall downstream of the gatehouse in accordance with Drawings, Division 01 and Section 030100.61, “Concrete Repairs.”

2. Unit of Measurement: Square yards of cementitious slurry waterproofing applied to walls, as measured in place.

END OF SECTION 012200

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Requirements:

1. Section 012100 "Allowances" for products selected under an allowance.
2. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.3 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

A. Substitution Requests: Submit documentation identifying product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Use form acceptable to Engineer.
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.

c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. Certificates and qualification data, where applicable or requested.
g. List of similar installations for completed projects, with project names and addresses as well as names and addresses of Engineers and owners.
h. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
j. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
k. Cost information, including a proposal of change, if any, in the Contract Sum.
l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Engineer's Action: If necessary, Engineer will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Engineer will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Forms of Acceptance: Change Order, Construction Change Directive, or Engineer's Supplemental Instructions for minor changes in the Work.
b. Use product specified if Engineer does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.7 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.

1. Conditions: Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Engineer will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
b. Substitution request is fully documented and properly submitted.
c. Requested substitution will not adversely affect Contractor's construction schedule.
d. Requested substitution has received necessary approvals of authorities having jurisdiction.
e. Requested substitution is compatible with other portions of the Work.
f. Requested substitution has been coordinated with other portions of the Work.
g. Requested substitution provides specified warranty.
h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Engineer will consider requests for substitution if received within 60 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Engineer.

1. Conditions: Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Engineer will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Engineer for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
b. Requested substitution does not require extensive revisions to the Contract Documents.
c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
d. Substitution request is fully documented and properly submitted.
e. Requested substitution will not adversely affect Contractor's construction schedule.

f. Requested substitution has received necessary approvals of authorities having jurisdiction.
g. Requested substitution is compatible with other portions of the Work.
h. Requested substitution has been coordinated with other portions of the Work.
i. Requested substitution provides specified warranty.
j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 012500

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

B. Related Requirements:

1. Section 012500 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.
2. Section 013100 “Project Management and Coordination” for requirements for forms for contract modifications provided as part of web-based Project management software.

1.3 MINOR CHANGES IN THE WORK

A. Engineer will issue Field Orders authorizing minor changes in the Work, not involving adjustment to the Contract Price or the Contract Time, on EJCDC Form C-942 or other form acceptable to Owner.

1.4 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Engineer will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Price or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Requests For Proposal (RFP) issued by Engineer are not instructions either to stop work in progress or to execute the proposed change.
2. Within time specified in Proposal Request or 15 days, when not otherwise specified, after receipt of RFP, submit a quotation estimating adjustments to the Contract Price and the Contract Time necessary to execute the change.

    a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include costs of labor and supervision directly attributable to the change.

d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
e. Quotation Form: Use forms acceptable to Engineer.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Engineer.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Price and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Proposal Request Form: Use form acceptable to Engineer.

1.5 ADMINISTRATIVE CHANGE ORDERS

A. Allowance Adjustment: See Section 012100 "Allowances" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Price to reflect actual costs of allowances.

B. Unit-Price Adjustment: See Section 012200 "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.

1.6 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Change Order Request, Engineer will issue a Change Order for signatures of Owner and Contractor on EJCDC Form C-941.

1.7 WORK CHANGE DIRECTIVE

A. Work Change Directive: Engineer may issue a Work Change Directive on EJCDC Document C-940 or other form acceptable to Owner. Work Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Work Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Price or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Work Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 012600

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SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Requirements:

1. Section 012001 “Lump Sum Price and Payment” for administrative requirements governing the use of lump sum prices.
2. Section 012100 "Allowances" for procedural requirements governing the handling and processing of allowances.
3. Section 012200 "Unit Prices and Payment" for administrative requirements governing the use of unit prices.
4. Section 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
5. Section 013200 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.3 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.

1. Coordinate line items in the schedule of values with items required to be indicated as separate activities in Contractor's construction schedule.
2. Submit the schedule of values to Engineer at earliest possible date, but no later than twenty days before the date scheduled for submittal of initial Application for Payment.
3. Subschedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values coordinated with each phase of payment.

4. Subschedules for Separate Elements of Work: Where the Contractor's construction schedule defines separate elements of the Work, provide subschedules showing values coordinated with each element.
5. Subschedules for Separate Design Contracts: Where the Owner has retained design professionals under separate contracts who will each provide certification of payment requests, provide subschedules showing values coordinated with the scope of each design services contract, as described in Section 011000 "Summary."

B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the schedule of values:

    a. Project name and location.
    b. Owner’s name.
    c. Owner’s Project number.
    d. Name of Engineer.
    e. Engineer's Project number.
    f. Contractor's name and address.
    g. Date of submittal.

2. Arrange schedule of values consistent with format of EJCDC Document C-620.
3. Arrange the schedule of values in tabular form, with separate columns to indicate the following for each item listed:

    a. Related Specification Section or division.
    b. Description of the Work.
    c. Name of subcontractor.
    d. Name of manufacturer or fabricator.
    e. Name of supplier.
    f. Change Orders (numbers) that affect value.
    g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent. Round dollar amounts to whole dollars, with total equal to Contract Sum.

        1) Labor.
        2) Materials.
        3) Equipment.

4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
6. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.

7. Purchase Contracts: Provide a separate line item in the schedule of values for each Purchase contract. Show line-item value of Purchase contract. Indicate Owner payments or deposits, if any, and balance to be paid by Contractor.
8. Overhead Costs, Proportional Distribution: Include total cost and proportionate share of general overhead and profit for each line item.
9. Overhead Costs, Separate Line Items: Show cost of temporary facilities and other major cost items that are not direct coat of actual work-in-place as separate line items.
10. Temporary Facilities: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
11. Closeout Costs. Include separate line items under Contractor and principal subcontracts for Project closeout requirements in an amount totaling five percent of the Contract Sum and subcontract amount.
12. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

1.5 APPLICATIONS FOR PAYMENT

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

B. Payment Application Times: The date for each progress payment is indicated in the Owner/Contractor Agreement. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

C. Payment Application Times: Submit Application for Payment to Engineer by the 15th of the month. The period covered by each Application for Payment is one month, ending on the last day of the month.

1. Submit draft copy of Application for Payment ten days prior to due date for review by Engineer.

D. Application for Payment Forms: Use EJCDC Document C-620 as form for Applications for Payment.

1. Other Application for Payment forms proposed by the Contractor may be acceptable to Engineer and Owner. Submit forms for approval with initial submittal of schedule of values.

E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Engineer will return incomplete applications without action.

1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.

F. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed.

1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment.
2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
3. Provide summary documentation for stored materials indicating the following:

    a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
    b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
    c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.

G. Transmittal: Submit three signed and notarized original copies of each Application for Payment to Engineer by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

H. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.

1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
2. When an application shows completion of an item, submit conditional final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
5. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.

I. Maintain an updated set of drawings to be used as record drawings in accordance with Section 017839 “Project Record Documents.” As a prerequisite for monthly progress payments, exhibit the updated record drawings for review by Owner and Engineer for completeness and accuracy.

J. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of values.

3. Contractor's construction schedule.
4. Combined Contractor's construction schedule incorporating Work of multiple contracts, with indication of acceptance of schedule by each Contractor.
5. Products list (preliminary if not final).
6. Schedule of unit prices.
7. Submittal schedule.
8. List of Contractor's staff assignments.
9. List of Contractor's principal consultants.
10. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
11. Initial progress report.
12. Report of preconstruction conference.
13. State and Federal funding documents described in Division 0 (Minority/Women-Owned Business Enterprise (M/WBE) utilization plan for example).

K. Application for Payment at Substantial Completion: After Engineer issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.

    a. Complete administrative actions, submittals, and Work proceeding this application, as described in Section 017700 “Closeout Procedures.”

2. Include initial submittal of closeout record drawings in accordance with Section 017839 “Project Record Documents.”
3. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

L. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Certification of completion of final punch list items.
3. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
4. Final submittal of closeout record drawings in accordance with Section 017839 “Project Record Documents.”
5. Updated final statement, accounting for final changes to the Contract Sum.
6. AIA Document G706.
7. AIA Document G706A.
8. AIA Document G707.
9. Evidence that claims have been settled.
10. Final liquidated damages settlement statement.
11. Proof that taxes, fees, and similar obligations are paid.
12. Waivers and releases.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 012900

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project, including, but not limited to, the following:

1. General coordination procedures.
2. Coordination drawings.
3. RFIs.
4. Digital project management procedures.
5. Project meetings.

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

C. Related Requirements:

1. Section 011200 "Multiple Contract Summary" for a description of the division of work among separate contracts and responsibility for coordination activities not in this Section.
2. Section 013200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
3. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
4. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

A. BIM: Building Information Modeling.

B. RFI: Request for Information. Request from Owner, Engineer, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.

B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses, cellular telephone numbers, and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1. Post copies of list in Project meeting room, in temporary field office and in prominent location in gatehouse. Keep list current at all times.

1.5 GENERAL COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results, where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Coordination of Multiple Contracts: Each contractor shall cooperate with Project coordinator, who shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its own operations with operations included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results, where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other contractors to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

C. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and scheduled activities of other contractors to

avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.

1.6 COORDINATION DRAWINGS

A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely indicated on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.

1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:

    a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
    b. Coordinate the addition of trade-specific information to coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
    c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
    d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
    e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
    f. Indicate required installation sequences.
    g. Indicate dimensions shown on Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternative sketches to Engineer indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

B. Coordination Drawing Organization: Organize coordination drawings as follows:

1. Mechanical Rooms: Provide coordination drawings for mechanical rooms, showing plans and elevations of mechanical, plumbing, and electrical equipment.
2. Structural Penetrations: Indicate penetrations and openings required for all disciplines.

3. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
4. Electrical Work: Show the following:

    a. Runs of vertical and horizontal conduit 1-1/4 inches in diameter and larger.
    b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
    c. Panel board, switchboard, switchgear, transformer, busway, generator, and motor-control center locations.
    d. Location of pull boxes and junction boxes, dimensioned from column center lines.

5. Review: Engineer will review coordination drawings to confirm that, in general, the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Engineer determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Engineer will so inform Contractor, who shall make suitable modifications and resubmit.
6. Coordination Drawing Prints: Prepare coordination drawing prints according to requirements in Section 013300 "Submittal Procedures."

C. Coordination Drawing Process: Prepare coordination drawings in the following manner:

1. Schedule submittal and review of Piping and process equipment and Electrical Shop Drawings to make required changes prior to preparation of coordination drawings.
2. General Contractor will locate piping and process equipment on a single layer, using blue color.
3. Electrical Installer will indicate service and feeder conduit runs and equipment in green color. .
4. General Contractor shall perform the final coordination review. As each coordination drawing is completed, Contractor will meet with Engineer to review and resolve conflicts on the coordination drawings.

D. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:

1. File Preparation Format:

    a. Same digital data software program, version, and operating system as original Drawings.

2. File Submittal Format: Submit or post coordination drawing files using PDF format.
3. Engineer will furnish Contractor one set of digital data files of Drawings for use in preparing coordination digital data files.

    a. Engineer makes no representations as to the accuracy or completeness of digital data files as they relate to Drawings.
    b. Digital Data Software Program: Drawings are available in AutoCAD
    c. Contractor shall execute a data licensing agreement in the form of AIA Document C106.

1.7 REQUEST FOR INFORMATION (RFI)

A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. Engineer will return without response those RFIs submitted to Engineer by other entities controlled by Contractor.
2. Coordinate and submit RFIs in a prompt manner to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.
2. Owner name.
3. Owner's Project number.
4. Name of Engineer.
5. Engineer's Project number.
6. Date.
7. Name of Contractor.
8. RFI number, numbered sequentially.
9. RFI subject.
10. Specification Section number and title and related paragraphs, as appropriate.
11. Drawing number and detail references, as appropriate.
12. Field dimensions and conditions, as appropriate.
13. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
14. Contractor's signature.
15. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

    a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. RFI Forms: AIA Document G716.

1. Attachments shall be electronic files in PDF format.

D. Engineer's Action: Engineer will review each RFI, determine action required, and respond. Allow seven days for Engineer's response for each RFI. RFIs received by Engineer after 1:00 p.m. will be considered as received the following working day.

1. The following Contractor-generated RFIs will be returned without action:

    a. Requests for approval of submittals.
    b. Requests for approval of substitutions.
    c. Requests for approval of Contractor's means and methods.
    d. Requests for coordination information already indicated in the Contract Documents.

e. Requests for adjustments in the Contract Time or the Contract Sum.
f. Requests for interpretation of Engineer's actions on submittals.
g. Incomplete RFIs or inaccurately prepared RFIs.

2. Engineer's action may include a request for additional information, in which case Engineer's time for response will date from time of receipt by Engineer of additional information.
3. Engineer's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."

a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Engineer in writing within 5 days of receipt of the RFI response.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Include the following:

1. Project name.
2. Name and address of Contractor.
3. Name and address of Engineer.
4. RFI number, including RFIs that were returned without action or withdrawn.
5. RFI description.
6. Date the RFI was submitted.
7. Date Engineer's response was received.
8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
9. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

F. On receipt of Engineer's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Engineer within three days if Contractor disagrees with response.

1.8 DIGITAL PROJECT MANAGEMENT PROCEDURES

A. Use of Engineer's Digital Data Files: Digital data files of Engineer's CAD drawings will be provided by Engineer for Contractor's use during construction.

1. Digital data files may be used by Contractor in preparing coordination drawings, Shop Drawings, and Project Record Drawings.
2. Engineer makes no representations as to the accuracy or completeness of digital data files as they relate to Contract Drawings.
3. Digital Drawing Software Program: Contract Drawings are available in AutoCAD.
4. Contractor shall execute a data licensing agreement in the form of AIA Document C106 Digital Data Licensing Agreement or Agreement form acceptable to Owner and Engineer.

a. Subcontractors and other parties granted access by Contractor to Engineer's digital data files shall execute a data licensing agreement in the form of AIA Document C106 or Agreement acceptable to Owner and Engineer.

5. The following digital data files will be furnished for each appropriate discipline:

a. Contract Drawings site plans and sections.

B. PDF Document Preparation: Where PDFs are required to be submitted to Engineer, prepare as follows:

1. Assemble complete submittal package into a single indexed file, incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.
3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

1.9 PROJECT MEETINGS

A. General: Project Coordinator will schedule meetings and conferences at Project site unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Engineer of scheduled meeting dates and times a minimum of seven days prior to meeting.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Engineer, within five days of the meeting.

B. Preconstruction Conference: Engineer will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Engineer, but no later than 15 days after execution of the Agreement.

1. Attendees: Authorized representatives of Owner Engineer, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:

a. Responsibilities and personnel assignments.
b. Tentative construction schedule.
c. Phasing.
d. Critical work sequencing and long lead items.
e. Designation of key personnel and their duties.
f. Lines of communications.
g. Procedures for processing field decisions and Change Orders.
h. Procedures for RFIs.
i. Procedures for testing and inspecting.

j. Procedures for processing Applications for Payment.
k. Distribution of the Contract Documents.
l. Submittal procedures.
m. Preparation of Record Documents.
n. Use of the premises and existing building.
o. Work restrictions.
p. Working hours.
q. Owner's occupancy requirements.
r. Responsibility for temporary facilities and controls.
s. Procedures for disruptions and shutdowns.
t. Construction waste management and recycling.
u. Office, work, and storage areas.
v. Equipment deliveries and priorities.
w. First aid.
x. Security.
y. Progress cleaning.
z. List of major subcontractors and suppliers.

3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity when required by other Sections and when required for coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Engineer and Owner’s designated operations staff of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

a. Contract Documents.
b. Options.
c. Related RFIs.
d. Related Change Orders.
e. Purchases.
f. Deliveries.
g. Submittals.
h. Sustainable design requirements.
i. Review of mockups.
j. Possible conflicts.
k. Compatibility requirements.
l. Time schedules.
m. Weather limitations.
n. Manufacturer's written instructions.
o. Warranty requirements.
p. Compatibility of materials.
q. Acceptability of substrates.
r. Temporary facilities and controls.
s. Space and access limitations.

t. Regulations of authorities having jurisdiction.
u. Testing and inspecting requirements.
v. Installation procedures.
w. Coordination with other work.
x. Required performance results.
y. Protection of adjacent work.
z. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Engineer, but no later than 90 days prior to the scheduled date of Substantial Completion.

1. Conduct the conference to review requirements and responsibilities related to Project closeout.
2. Attendees: Authorized representatives of Owner, Engineer, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:

a. Preparation of Record Documents.
b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
c. Procedures for completing and archiving web-based Project software site data files.
d. Submittal of written warranties.
e. Requirements for completing sustainable design documentation.
f. Requirements for preparing operations and maintenance data.
g. Requirements for delivery of material samples, attic stock, and spare parts.
h. Requirements for demonstration and training.
i. Preparation of Contractor's punch list.
j. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
k. Submittal procedures.
l. Coordination of separate contracts.
m. Owner's partial occupancy requirements.
n. Installation of Owner's furniture, fixtures, and equipment.
o. Responsibility for removing temporary facilities and controls.
p. Final cleaning.

4. Minutes: Entity conducting meeting will record and distribute meeting minutes.

E. Progress and Coordination Meetings: Engineer will conduct progress and coordination meetings at biweekly intervals.

1. Coordinate dates of meetings with preparation of payment requests.
2. Attendees: In addition to representatives of Owner and Engineer, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Review and correct or approve minutes of previous progress and coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

    a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

        1) Review schedule for next period.

    b. Review present and future needs of each entity present, including the following:

        1) Interface requirements.
        2) Sequence of operations.
        3) Status of submittals.
        4) Deliveries.
        5) Off-site fabrication.
        6) Access.
        7) Site use.
        8) Temporary facilities and controls.
        9) Progress cleaning.
        10) Quality and work standards.
        11) Status of correction of deficient items.
        12) Field observations.
        13) Work hours.
        14) Hazards and risks.
        15) Status of RFIs.
        16) Status of Proposal Requests.
        17) Pending changes.
        18) Status of Change Orders.
        19) Pending claims and disputes.
        20) Documentation of information for payment requests.
        21) Status of documentation to comply with funding agencies requirements.

4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.

a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting, where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

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SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Startup construction schedule.
2. Contractor's Construction Schedule.
3. Construction schedule updating reports.
4. Daily construction reports.
5. Site condition reports.
6. Unusual event reports.

B. Related Requirements:

1. Section 011200 "Multiple Contract Summary" for preparing a combined Contractor's Construction Schedule.
2. Section 012900 “Payment Procedures” for schedule of values and requirements for use of cost-loaded schedule for Applications for Payment.
3. Section 014000 “Quality Requirements” for schedule of tests and inspections.

1.3 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.

1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
2. Predecessor Activity: An activity that precedes another activity in the network.
3. Successor Activity: An activity that follows another activity in the network.

B. Cost Loading: The allocation of the schedule of values for completing an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum. Cost loading schedule is not required for this project.

C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine the critical path of Project and when activities can be performed.

D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

E. Event: The starting or ending point of an activity.

F. Float: The measure of leeway in starting and completing an activity.

1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

G. Resource Loading: The allocation of manpower and equipment necessary for completing an activity as scheduled.

1.4 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:

1. Working electronic copy of schedule file.
2. PDF file.
3. Two paper copies, of sufficient size to display entire period or schedule, as required.

B. Startup construction schedule.

1. Submittal of startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.

C. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.

D. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

1. Submit a working digital copy of schedule, using software indicated, and labeled to comply with requirements for submittals.

E. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, latest allowable start date, latest allowable finish date, status (where critical) and total float and free float in calendar days.

1. Activity Report: List of activities sorted by activity number and then early start date, or actual start date if known.

2. Logic Report: List of preceding and succeeding activities for each activity, sorted in ascending order by activity number and then by early start date, or actual start date if known.
3. Total Float Report: List of activities sorted in ascending order of total float.

F. Construction Schedule Updating Reports: Submit with Applications for Payment.

G. Daily Construction Reports: Submit at weekly intervals.

H. Site Condition Reports: Submit at time of discovery of differing conditions.

I. Unusual Event Reports: Submit at time of unusual event.

J. Qualification Data: For scheduling consultant.

1.5 QUALITY ASSURANCE

A. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to the preliminary construction schedule and Contractor's Construction Schedule, including, but not limited to, the following:

1. Review software limitations and content and format for reports.
2. Discuss constraints, including phasing .
3. Review schedule for work of Owner's separate contracts.
4. Review submittal requirements and procedures.
5. Review time required for review of submittals and resubmittals.
6. Review requirements for tests and inspections by independent testing and inspecting agencies.
7. Review time required for Project closeout and Owner startup procedures, including commissioning activities.
8. Review and finalize list of construction activities to be included in schedule.
9. Review procedures for updating schedule.
10. Submit at this conference a preliminary network defining the planned operation during the first 60 calendar days after the Notice to Proceed.

1.6 COORDINATION

A. Coordinate Contractor's Construction Schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from entities involved.
2. Coordinate each construction activity in the network with other activities, and schedule them in proper sequence.

1.7 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Program Description

1. A Critical Path Method (CPM) construction schedule shall be used to control the Work and to provide a basis for determining job progress. The construction schedule shall be prepared and maintained by the Contractor. All work shall be done in accordance with the established CPM schedule. The Contractor and all subcontractors shall cooperate fully in developing the construction schedule and in executing the work in accordance with the CPM schedule.
2. The construction schedule shall consist of a computerized CPM network (diagram of activities) presented in a time-scaled graphic (print-out) with reports, as specified herein.
3. For projects that involve multiple prime contractors (in lieu of a single general contractor), the general subcontractor is the prime contractor and it shall prepare and maintain the project schedule and be responsible to coordinate all other subs for scheduling into a cohesive integrated plan.

B. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

1. Use Microsoft Project or Primavera for current Windows operating system.

C. Qualifications:

1. The Contractor shall have the capability of preparing and utilizing the specified CPM schedule, or engage the services of a specialized scheduling professional to do so..

D. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

E. Activities: Treat each separate area as a separate numbered activity for each main element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Engineer.
2. Activities to facilitate the Work: Indicate start and completion dates for the following as applicable:

    a. Securing of approvals and permits required for performance of the Work.
    b. Temporary facilities.
    c. Construction of mock-ups, prototypes, and samples.
    d. Owner interfaces and furnishing of items.
    e. Interfaces with Separate Contracts.
    f. Regulatory agency approvals.
    g. Punch list.

3. Procurement Activities: Include procurement process activities for long lead-time items and major items, requiring a cycle of more than 60 days, as separate activities in

schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.

4. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.
5. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
6. Commissioning Time: Include no fewer than 15 days for commissioning.
7. Substantial Completion: Indicate completion in advance of date established for Substantial Completion and allow time for Engineer's administrative procedures necessary for certification of Substantial Completion.
8. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and Final Completion.

F. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

1. Phasing: Arrange list of activities on schedule by phase.
2. Work under More Than One Contract: Include a separate activity for each contract.
3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
4. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
5. Work Restrictions: Show the effect of the following items on the schedule:

    a. Coordination with existing construction.
    b. Limitations of continued occupancies.
    c. Uninterruptible services.
    d. Partial occupancy before Substantial Completion.
    e. Use-of-premises restrictions.
    f. Provisions for future construction.
    g. Seasonal variations.
    h. Environmental control.

6. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:

    a. Subcontract awards.
    b. Submittals.
    c. Purchases.
    d. Mockups.
    e. Fabrication.
    f. Sample testing.
    g. Deliveries.
    h. Installation.
    i. Tests and inspections.
    j. Adjusting.
    k. Curing.
    l. Startup and placement into final use and operation.
    m. Commissioning.

7. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:

    a. Structural completion.
    b. Completion of electrical installation.
    c. Substantial Completion.

8. Other Constraints: Maintenance of water supply flows to City's Water Filtration Plant and sequencing for short periods (several hours) when water supply is offline.
9. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion**.**

G. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:

1. Unresolved issues.
2. Unanswered Requests for Information.
3. Rejected or unreturned submittals.
4. Notations on returned submittals.
5. Pending modifications affecting the Work and the Contract Time.

H. Acceptability:

1. Submit the CPM schedule submittals, as specified, and resubmit as needed, until they are in compliance with Contract requirements.
2. The Engineer's review of the Contractor's construction schedule submittals will only be for conformance with the Contract requirements – including but not limited to contract time and work sequences specified in the contract documents. The Engineer's review of the schedule shall not include the Contractor's means and methods of construction or safety. The Engineer's concurrence, acceptance, or approval of the Contractor's schedule submittals will not relieve the Contractor from responsibility for complying with the Contract Scope, Contract Time or any other contract requirement. Any indication of concurrence, acceptance, or approval of the Contractor's schedule will only indicate a general conformance with the Contract Requirements.
3. Engineer's review of the Contractor's construction schedule submittals shall not relieve the Contractor from responsibility for any deviations from the Contract Documents unless the Contractor has in writing called Engineer's attention to such deviations at the time of submission and Engineer has given written concurrence to the specific deviations, nor shall any concurrence by the Engineer relieve Contractor from responsibility for errors and omissions in the submittals. Concurrence of the CPM Activity Network by the Engineer is advisory only and shall not relieve the Contractor of responsibility for accomplishing the Work within the Contract completion date(s).
4. Concurrence, acceptance, or approval of the Contractor's CPM schedule by the Engineer in no way makes the Engineer an insurer of the CPM schedule's success, nor liable for time or cost overruns resulting therefrom.
5. Failure to include any element of work required for the performance of this Contract will not excuse the Contractor from completing all Work required within the Contract completion date(s), notwithstanding the review of the network by the Engineer.

6. CPM schedules that contain activities with negative float, or which extend beyond the contract completion date, will not be acceptable.
7. Except where earlier completions are specified, CPM schedules which show completion of all work prior to the contract completion date may be indicated; however, in no event shall they constitute a basis for claim for delay by the Contractor.

I. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate Final Completion percentage for each activity. Activities shall not be considered to be complete until they are in fact 100 percent complete.
4. Submit a narrative report based on the CPM schedule evaluation, in a format agreed upon by the Contractor and the Engineer. The report shall include a description of the progress during the previous period in terms of completed activities, an explanation of each activity which is showing a delay, a description of problem areas, current and anticipated delaying factors and their estimated impact on performance of other activities and completion dates and an explanation of corrective action taken or proposed.

J. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.

K. The contract completion time will be adjusted only for causes specified in this Contract. In the event the Contractor requests an extension of any contract completion date, the Contractor shall furnish such justification and supporting evidence as the Engineer may deem necessary to determine whether the Contractor is entitled to an extension of time under the provisions of this Contract. The Engineer will, after receipt of such justification and supporting evidence, make findings of fact and will advise the Contractor in writing thereof. If the Engineer finds that the Contractor is entitled to any extension of any contract completion date, the Engineer’s determination as to the total number of days extension shall be based upon the currently approved CPM schedule and on all data relevant to the extension. Such data shall be included in the next updating of the schedule. Actual delays in activities which, according to the CPM schedule, do not affect any contract completion date shown by the critical path in the network will not be the basis for a change therein.

L. Distribution: Distribute copies of approved schedule to Engineer Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.

2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

1.8 STARTUP CONSTRUCTION SCHEDULE

A. Gantt-Chart Schedule: Submit startup, horizontal, Gantt-chart-type construction schedule within seven days of date established for the Notice to Proceed.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

1.9 GANTT-CHART SCHEDULE REQUIREMENTS

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's Construction Schedule within 30 days of date established for the Notice to Proceed.

1. Base schedule on the startup construction schedule and additional information received since the start of Project.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

1.10 CPM SCHEDULE REQUIREMENTS

A. Prepare network diagrams using AON (activity-on-node) format.

B. Startup Network Diagram: Submit diagram within 14 days of date established for the Notice to Proceed. Outline significant construction activities for the first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

C. CPM Schedule: Prepare Contractor's Construction Schedule using a time-scaled CPM network analysis diagram for the Work.

1. Develop network diagram in sufficient time to submit CPM schedule, so it can be accepted for use no later than 60 days after date established for the Notice to Proceed.

a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates.

2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
4. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule to coordinate with the Contract Time.

D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the startup network diagram, prepare a skeleton network to identify probable critical paths.

1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:

    a. Preparation and processing of submittals.
    b. Mobilization and demobilization.
    c. Purchase of materials.
    d. Delivery.
    e. Fabrication.
    f. Utility interruptions.
    g. Installation.
    h. Work by Owner that may affect or be affected by Contractor's activities.
    i. Testing and inspection.
    j. Commissioning.
    k. Punch list and Final Completion.
    l. Activities occurring following Final Completion.
    m. Maintenance of existing facilities.
    n. Contract milestones.

2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.

    a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.

E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall Project schedule.

F. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:

1. Contractor or subcontractor and the Work or activity.

2. Description of activity.
3. Main events of activity.
4. Immediate preceding and succeeding activities.
5. Early and late start dates.
6. Early and late finish dates.
7. Activity duration in workdays.
8. Total float or slack time.
9. Average size of workforce.

G. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:

1. Identification of activities that have changed.
2. Changes in early and late start dates.
3. Changes in early and late finish dates.
4. Changes in activity durations in workdays.
5. Changes in the critical path.
6. Changes in total float or slack time.
7. Changes in the Contract Time.

1.11 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. List of separate contractors at Project site.
3. Approximate count of personnel at Project site.
4. Equipment at Project site.
5. Material deliveries.
6. High and low temperatures and general weather conditions, including presence of rain or snow.
7. Testing and inspection.
8. Accidents.
9. Meetings and significant decisions.
10. Unusual events.
11. Stoppages, delays, shortages, and losses.
12. Meter readings and similar recordings.
13. Emergency procedures.
14. Orders and requests of authorities having jurisdiction.
15. Change Orders received and implemented.
16. Work Change Directives received and implemented.
17. Services connected and disconnected.
18. Equipment or system tests and startups.
19. Partial completions and occupancies.
20. Substantial Completions authorized.

B. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for

Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

C. Unusual Event Reports: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, responses by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

1. Submit unusual event reports directly to Owner within one day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013200

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SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Preconstruction photographs.
2. Concealed Work photographs.
3. Periodic construction photographs.
4. Final Completion construction photographs.

B. Related Requirements:

1. Section 017700 "Closeout Procedures" for submitting photographic documentation as Project Record Documents at Project closeout.
2. Section 017900 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.
3. Section 024119 "Selective Demolition" for photographic documentation before selective demolition operations commence.

1.3 INFORMATIONAL SUBMITTALS

A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph and video recording. Include same information as corresponding photographic documentation.

B. Digital Photographs: Submit image files within three days of taking photographs.

1. Submit photos on thumb-drive or file share site acceptable to Engineer and Owner. Include copy of key plan indicating each photograph's location and direction.
2. Identification: Provide the following information with each image description in file metadata tag:

a. Name of Project.
b. Name and contact information for photographer.
c. Name of Engineer.
d. Name of Contractor.
e. Date photograph was taken.
f. Description of location, vantage point, and direction.
g. Unique sequential identifier keyed to accompanying key plan.

1.4 QUALITY ASSURANCE

A. Photographer Qualifications: An individual who has been regularly engaged in taking photos of construction projects for not less than three years.

1.5 FORMATS AND MEDIA

A. Digital Photographs: Provide color images in JPG format, produced by a digital camera with minimum sensor size of 12 megapixels, and at an image resolution of not less than 3200 by 2400 pixels. Use flash in low light levels or backlit conditions.

B. Digital Video Recordings: Provide high-resolution, digital video in MPEG format, produced by a digital camera with minimum sensor resolution of 12 megapixels and capable of recording in full high-definition mode. Provide supplemental lighting in low light levels or backlit conditions.

C. Digital Images: Submit digital media as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

D. Metadata: Record accurate date and time from camera.

E. File Names: Name media files with date Project area and sequential numbering suffix.

F. Usage Rights

1. Obtain and transfer copyright usage rights from photographer and videographer to Owner for unlimited reproduction of photographic and videographic documentation.

1.6 CONSTRUCTION PHOTOGRAPHS

A. Photographer: Engage a qualified photographer to take construction photographs – this can be the Contractor’s project manager or superintendent if they have experience taking high quality construction photos.

B. General: Take photographs with maximum depth of field and in focus.

1. Maintain key plan with each set of construction photographs that identifies each photographic location.

C. Preconstruction Photographs: Before commencement of the Work take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Engineer.

1. Flag construction limits before taking construction photographs.
2. Take 20 photographs to show existing conditions adjacent to work areas and staging areas before starting the Work.
3. Take 20 photographs of existing buildings (gatehouse and building at top of hill) to accurately record physical conditions at start of construction.
4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

D. Concealed Work Photographs: Before proceeding with installing work that will conceal other work, take photographs sufficient in number, with annotated descriptions, to record nature and location of concealed Work, including, but not limited to, the following:

1. Underground utilities.
2. Underslab services.
3. Piping.
4. Electrical conduit.
5. Waterproofing and weather-resistant barriers.
6. Work which will normally be under water.

E. Periodic Construction Photographs: Take 20 photographs weekly. Select vantage points to show status of construction and progress since last photographs were taken.

F. Final Completion Construction Photographs: Take 20 photographs after date of Substantial Completion for submission as Project Record Documents. Engineer will inform photographer of desired vantage points.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013233

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SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Submittal schedule requirements.
2. Administrative and procedural requirements for submittals.

B. Related Requirements:

1. Section 012900 "Payment Procedures" for submitting Applications for Payment and the schedule of values.
2. Section 013100 "Project Management and Coordination" for submitting coordination drawings and subcontract list and for requirements for web-based Project software.
3. Section 013200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
4. Section 013233 "Photographic Documentation" for submitting preconstruction photographs, periodic construction photographs, and Final Completion construction photographs.
5. Section 014000 "Quality Requirements" for submitting test and inspection reports, and schedule of tests and inspections.
6. Section 017700 "Closeout Procedures" for submitting closeout submittals and maintenance material submittals.
7. Section 017823 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
8. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
9. Section 017900 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Engineer's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals: Written and graphic information and physical samples that do not require Engineer's responsive action. Submittals may be rejected for not complying with

requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

C. Mass Submittals: Six or more submittals or items in one day or 15 or more submittals or items in one week.

1.4 SUBMITTAL SCHEDULE

A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Engineer and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
2. Initial Submittal Schedule: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
3. Final Submittal Schedule: Submit concurrently with the first complete submittal of Contractor's construction schedule.

    a. Submit revised submittal schedule as required to reflect changes in current status and timing for submittals.

4. Format: Arrange the following information in a tabular format:

    a. Scheduled date for first submittal.
    b. Specification Section number and title.
    c. Submittal Category: Action; informational.
    d. Name of subcontractor.
    e. Description of the Work covered.
    f. Scheduled date for Engineer's final release or approval.
    g. Scheduled dates for purchasing.
    h. Scheduled date of fabrication.
    i. Scheduled dates for installation.
    j. Activity or event number.

1.5 SUBMITTAL FORMATS

A. Numbering System: Utilize the following example submittal identification numbering system to identify submittals and as file names for PDF submissions:

1. First Identifier - Alphabet Character: D, S, M, or I which represents Shop Drawing (including working drawings and product data), Sample, Manual (Operating & Maintenance) or Informational, respectively.
2. Second Identifier - Next 6 or 8 Digits: Applicable Specification Section Number. Do not mix submittals from different specification sections into a single submittal.

3. Third Identifier - Next Three Digits: Sequential number of each separate item or drawing submitted under each Specification Section, in chronological order submitted, starting at 001.
4. Fourth Identifier - Last Alphabet Character: A to Z, indicating the submission (or resubmission) of the same submittal, i.e., "A" = 1st submission, "B" = 2nd submission, "C" = 3rd submission, etc.
5. EXAMPLE: D-033000.13-008-B.

    a. D = Shop Drawing.
    b. 03 30 00.13 = Section; use only 6 digits for sections that do not include 8 digits.
    c. 008 = the eighth different submittal under this Section.
    d. B = the second submission (first resubmission) of that particular shop drawing.

B. Submittal Information: Include the following information in each submittal:

1. Project name.
2. Date.
3. Name of Engineer.
4. Name of Contractor.
5. Name of firm or entity that prepared submittal.
6. Names of subcontractor, manufacturer, and supplier.
7. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier and alphanumeric suffix for resubmittals.
8. Category and type of submittal.
9. Submittal purpose and description.
10. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
11. Drawing number and detail references, as appropriate.
12. Indication of full or partial submittal.
13. Location(s) where product is to be installed, as appropriate.
14. Other necessary identification.
15. Remarks.
16. Signature of transmitter.

C. Options: Identify options requiring selection by Engineer.

D. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Engineer on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.

E. Paper Submittals:

1. Place a permanent label or title block on each submittal item for identification; include name of firm or entity that prepared submittal.
2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Engineer.
3. Action Submittals: Submit three paper copies of each submittal unless otherwise indicated. Engineer will return one copies.

4. Informational Submittals: Submit two paper copies of each submittal unless otherwise indicated. Engineer will not return copies.
5. Additional Copies: Unless additional copies are required for final submittal, and unless Engineer observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
6. Transmittal for Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using Contractor's transmittal form.

F. Electronic Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.

1.6 SUBMITTAL PROCEDURES

A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Email: Prepare submittals as PDF package and transmit to Engineer by sending via email. Include PDF transmittal form. Include information in email subject line as requested by Engineer.

    a. Engineer will return annotated file. Annotate and retain one copy of file as a digital Project Record Document file.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
4. Coordinate transmittal of submittals for related parts of the Work specified in different Sections, so processing will not be delayed because of need to review submittals concurrently for coordination.

    a. Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineer's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 30 days for initial review of each submittal (and 45 days for multi-discipline reviews). Allow additional time if coordination with subsequent submittals is required. Engineer will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.

3. Resubmittal Review: Allow 15 days for review of each resubmittal.
4. Sequential Review: Where sequential review of submittals by Engineer's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.

5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Engineer and to Engineer's consultants, allow 30 days for review of each submittal. Submittal will be returned to Engineer before being returned to Contractor.

    a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Engineer.

D. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Engineer's action stamp.
4. Repetitive Reviews: Shop drawings, O&M manuals, and other submittals will be reviewed no more than twice at the Owner's expense. All subsequent reviews will be performed at the Contractor's expense. Reimburse the Owner for all costs invoiced by Engineer for the third and subsequent reviews.

E. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Engineer's action stamp.

1.7 SUBMITTAL REQUIREMENTS

A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer's catalog cuts.
    b. Manufacturer's product specifications.
    c. Standard color charts.
    d. Statement of compliance with specified referenced standards.
    e. Testing by recognized testing agency.
    f. Application of testing agency labels and seals.
    g. Notation of coordination requirements.
    h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:

    a. Wiring diagrams that show factory-installed wiring.
    b. Printed performance curves.
    c. Operational range diagrams.
    d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data before Shop Drawings, and before or concurrently with Samples.

B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data unless submittal based on Engineer's digital data drawing files is otherwise permitted.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

    a. Identification of products.
    b. Schedules.
    c. Compliance with specified standards.
    d. Notation of coordination requirements.
    e. Notation of dimensions established by field measurement.
    f. Relationship and attachment to adjoining construction clearly indicated.
    g. Seal and signature of professional engineer if specified.

2. Paper Sheet Size: Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.

    a. Two opaque (bond) copies of each submittal. Engineer will return one copy(ies).
    b. Three opaque copies of each submittal. Engineer will retain two copies; remainder will be returned.

C. Samples: Submit Samples for review of type, color, pattern, and texture for a check of these characteristics with other materials.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Permanently attach label on unexposed side of Samples that includes the following:

    a. Project name and submittal number.
    b. Generic description of Sample.
    c. Product name and name of manufacturer.
    d. Sample source.
    e. Number and title of applicable Specification Section.
    f. Specification paragraph number and generic name of each item.

3. Email Transmittal: Provide PDF transmittal. Include digital image file illustrating Sample characteristics and identification information for record.

4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

    a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units, showing the full range of colors, textures, and patterns available.

    a. Number of Samples: Submit one full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Engineer will return submittal with options selected.

6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

    a. Number of Samples: Submit three sets of Samples. Engineer will retain two Sample sets; remainder will be returned.

        1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
        2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

D. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
2. Manufacturer and product name, and model number if applicable.
3. Number and name of room or space.
4. Location within room or space.

E. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

F. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.

G. Certificates:

1. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
2. Contractor’s Certification: Each shop drawing, working drawing, product data, and sample shall have affixed to it the following Certification Statement:

    a. "Certification Statement: by this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data and I have checked and coordinated each item with other applicable approved shop drawings and all Contract requirements. "

3. Installer Certificates: Submit written statements on manufacturer's letterhead, certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
4. Manufacturer Certificates: Submit written statements on manufacturer's letterhead, certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
5. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
6. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
7. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of AWS B2.1/B2.1M on AWS forms. Include names of firms and personnel certified.

H. Test and Research Reports:

1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for substrate preparation and primers required.
2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
6. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

    a. Name of evaluation organization.
    b. Date of evaluation.
    c. Time period when report is in effect.
    d. Product and manufacturers' names.
    e. Description of product.
    f. Test procedures and results.
    g. Limitations of use.

1.8 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are insufficient to perform services or certification required, submit a written request for additional information to Engineer.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF file and three paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

1.9 PROPOSED PRODUCT LIST

A. Within 15days after date of Notice to Proceed, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

B. For products specified only by reference standards, indicate manufacturer, trade name, model or catalog designation, and reference standards.

1.10 CONTRACTOR'S REVIEW

A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Engineer.

B. Contractor Responsible for:

1. Determination and verification of materials including manufacturer’s catalog numbers.
2. Determination and verification of field measurements and field construction criteria.
3. Checking and coordinating information in submittal with requirements of Work and of Contract Documents.
4. Determination of accuracy and completeness of dimensions and quantities.
5. Confirmation and coordination of dimensions and field conditions at Site.
6. Construction means, techniques, sequences, and procedures.
7. Safety precautions.
8. Coordination and performance of Work of all trades.
9. Other requirements enumerated in Contract Documents.

C. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp. Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

1. Engineer will not review submittals received from Contractor that do not have Contractor's review and approval.

1.11 ENGINEER'S REVIEW

A. Do not make mass submittals to Engineer. If mass submittals are received, Engineer's review time stated above will be extended as necessary to perform proper review. Engineer will review mass submittals based on priority determined by Engineer after consultation with Owner and Contractor.

B. Action Submittals: Engineer will review each submittal, indicate corrections or revisions required, and return.

1. PDF Submittals: Engineer will indicate, via markup on each submittal, the appropriate action.

C. Informational Submittals: Engineer will review each submittal and will not return it, or will return it if it does not comply with requirements. Engineer will forward each submittal to appropriate party.

D. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Engineer.

E. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

F. Engineer will return without review submittals received from sources other than Contractor.

G. Submittals not required by the Contract Documents will be returned by Engineer without action.

H. Shop drawings will be returned to the Contractor with one of the following codes.

1. "APPROVED" - This code is assigned when there are no notations or comments on the submittal. When returned under this code the Contractor may release the equipment and/or material for manufacture.
2. "APPROVED AS NOTED" - This code is assigned when a confirmation of the notations and comments IS NOT required by the Contractor. The Contractor may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product.
3. "APPROVED AS NOTED/RESUBMIT" - This combination of codes is assigned when notations and comments are extensive enough to require a resubmittal of the package. The Contractor may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product. The resubmittal is to address all comments, omissions and non-conforming items that were noted. An additional box is checked to indicate whether the resubmission is for the complete package, or for parts of the package. If no box is checked, a complete resubmittal shall be provided. Review code may designate if a partial or full submittal is required. If full submittal is required, a complete resubmittal package addressing all comments shall be provided. If a partial submittal is designated, resubmittal shall only include information pertaining to those items noted in review comments requiring clarification and any portions of submittal impacted as a result of the response. Resubmittal is to be received by the Engineer within 30 calendar days of the date of the Engineer's transmittal requiring the resubmittal.
4. "REJECTED" - This code is assigned when the submittal does not meet the intent of the Contract Documents. The Contractor must resubmit the entire package revised to bring the submittal into conformance. It may be necessary to resubmit using a different manufacturer/vendor to meet the requirements of the Contract Documents.
5. "RECEIPT ACKNOWLEDGED (Not subject to Engineer's Approval)" - This code is assigned to acknowledge receipt of a submittal that is not subject to the Engineer's approval. This code is generally used with submittals involving the Contractor’s means and methods of construction work plans, and health and safety plans.

1.12 ELECTRONIC CAD FILES OF PROJECT DRAWINGS

A. Electronic CAD Files of Project Drawings: May only be used to expedite production of Shop Drawings for the Project. Use for other Projects or purposes is not allowed.

B. Electronic CAD Files of Project Drawings: Distributed only under the following conditions:

1. Use of files is solely at receiver's risk. Engineer does not warrant accuracy of files. Receiving files in electronic form does not relieve receiver of responsibilities for measurements, dimensions, and quantities set forth in Contract Documents. In the event of ambiguity, discrepancy, or conflict between information on electronic media and that in Contract Documents, notify Engineer of discrepancy and use information in hard-copy Drawings and Specifications.
2. CAD files do not necessarily represent the latest Contract Documents, existing conditions, and as-built conditions. Receiver is responsible for determining and complying with these conditions and for incorporating addenda and modifications.
3. User is responsible for removing information not normally provided on Shop Drawings and removing references to Contract Documents. Shop Drawings submitted with information associated with other trades or with references to Contract Documents will not be reviewed and will be immediately returned.

4. Receiver shall not hold Engineer responsible for data or file clean-up required to make files usable, nor for error or malfunction in translation, interpretation, or use of this electronic information.
5. Receiver shall understand that even though Engineer has computer virus scanning software to detect presence of computer viruses, there is no guarantee that computer viruses are not present in files or in electronic media.
6. Receiver shall not hold Engineer responsible for such viruses or their consequences, and shall hold Engineer harmless against costs, losses, or damage caused by presence of computer virus in files or media.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013300

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and quality-control services required by Engineer, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

C. Related Requirements:

1. Section 012100 "Allowances" for testing and inspection allowances.

1.3 DEFINITIONS

A. Experienced: When used with an entity or individual, "experienced," unless otherwise further described, means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

B. Field Quality-Control Tests and Inspections: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.

1. Use of trade-specific terminology in referring to a Work result does not require that certain construction activities specified apply exclusively to specific trade(s).

D. Mockups: Full-size physical assemblies that are constructed either as freestanding temporary built elements or as part of permanent construction. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.

1. Laboratory Mockups: Full-size physical assemblies constructed and tested at testing facility to verify performance characteristics.
2. Integrated Exterior Mockups: Mockups of the exterior envelope constructed on-site as indicated in-place portion of permanent construction, consisting of multiple products, assemblies, and subassemblies, with cutaways enabling inspection of concealed portions of the Work.

    a. Include each system, assembly, component, and part of the exterior wall to be constructed for the Project. Colors of components shall be those selected by the Engineer for use in the Project.

3. Room Mockups: Mockups of typical interior spaces complete with wall, floor, and ceiling finishes; doors; windows; millwork; casework; specialties; furnishings and equipment; and lighting.
4. Product Mockups: Mockups that may include multiple products, materials, or systems specified in a single Section.
5. In-Place Mockups: Mockups constructed on-site in their actual final location as part of permanent construction.

E. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria. Unless otherwise indicated, copies of reports of tests or inspections performed for other than the Project do not meet this definition.

F. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

G. Source Quality-Control Tests and Inspections: Tests and inspections that are performed at the source (e.g., plant, mill, factory, or shop).

H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. The term “testing laboratory” shall have the same meaning as the term “testing agency.”

I. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work, to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

J. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work, to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Engineer.

1.4 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Engineer.

B. Delegated-Design Services Statement: Submit a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

1.5 CONFLICTING REQUIREMENTS

A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements is specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, inform the Engineer regarding the conflict and obtain clarification prior to proceeding with the Work. Refer conflicting requirements that are different, but apparently equal, to Engineer for clarification before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Engineer for a decision before proceeding.

1.6 ACTION SUBMITTALS

A. Mockup Shop Drawings: For integrated exterior mockups.

1. Include plans, sections, elevations, and details, indicating materials and size of mockup construction.
2. Indicate manufacturer and model number of individual components.
3. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

1.7 INFORMATIONAL SUBMITTALS

A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.

B. Qualification Data: For Contractor's quality-control personnel and Delegated-Designer.

C. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility submitted to authorities having jurisdiction before starting work on the following systems:

1. Seismic-force-resisting system, designated seismic system, or component listed in the Statement of Special Inspections.
2. Primary wind-force-resisting system or a wind-resisting component listed in the Statement of Special Inspections.

D. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

E. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

1. Specification Section number and title.
2. Entity responsible for performing tests and inspections.
3. Description of test and inspection.
4. Identification of applicable standards.
5. Identification of test and inspection methods.
6. Number of tests and inspections required.
7. Time schedule or time span for tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

F. Reports: Prepare and submit certified written reports and documents as specified.

G. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.8 CONTRACTOR'S QUALITY-CONTROL PLAN

A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice of Award, and not less than five days prior to preconstruction conference. Submit in format acceptable to Engineer. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities and to coordinate Owner’s quality-assurance and quality-control activities. Coordinate with Contractor's Construction Schedule.

B. Quality-Control Personnel Qualifications: Engage qualified personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.

1. Project quality-control manager may also serve as Project superintendent.

C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.

D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:

1. Contractor-performed tests and inspections, including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections. Distinguish source quality-control tests and inspections from field quality-control tests and inspections.
2. Special inspections required by authorities having jurisdiction and indicated on the Statement of Special Inspections.
3. Owner-performed tests and inspections indicated in the Contract Documents, including tests and inspections indicated to be performed by Commissioning Authority.

E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring the Work into compliance with standards of workmanship established by Contract requirements and approved mockups.

F. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include Work Engineer has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming Work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.9 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, telephone number, and email address of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample-taking and testing and inspection.

11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, telephone number, and email address of technical representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement of whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, telephone number, and email address of factory-authorized service representative making report.
2. Statement that equipment complies with requirements.
3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
4. Statement of whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

1.10 QUALITY ASSURANCE

A. Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Design Professional Qualifications: A professional engineer / registered architect who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Design / engineering services are defined as those performed for installations of the system, assembly, or product that is similar in material, design, and extent to those indicated for this Project.

F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged in the activities indicated.

1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

G. Testing and Inspecting Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented in accordance with ASTM E329**,** and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect, demonstrate, repair and perform service on installations of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods. Contractor responsibilities include the following:

1. Provide test specimens representative of proposed products and construction.
2. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
3. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
4. Build site-assembled test assemblies and mockups, using installers who will perform same tasks for Project.
5. Build laboratory mockups at testing facility, using personnel, products, and methods of construction indicated for the completed Work.
6. When testing is complete, remove test specimens and test assemblies, and mockups; do not reuse products on Project.
7. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Engineer, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected Work complies with or deviates from the Contract Documents.

K. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups of size indicated.
2. Build mockups in location indicated or, if not indicated, as directed by Engineer.
3. Notify Engineer seven days in advance of dates and times when mockups will be constructed.
4. Employ supervisory personnel who will oversee same tasks during construction. Employ workers who will be employed to perform same tasks during the construction at Project.
5. Demonstrate the proposed range of aesthetic effects and workmanship.
6. Obtain Engineer's approval of mockups before starting corresponding Work, fabrication, or construction.

    a. Allow seven days for initial review and each re-review of each mockup.

7. Promptly correct unsatisfactory conditions noted by Architect's preliminary review, to the satisfaction of the Architect, before completion of final mockup.
8. Approval of mockups by the Architect does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
9. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
10. Demolish and remove mockups when directed unless otherwise indicated.

L. Integrated Exterior Mockups: Construct integrated exterior mockup according to approved Shop Drawings. Coordinate installation of exterior envelope materials and products for which mockups are required in individual Specification Sections, along with supporting materials. Comply with requirements in "Mockups" Paragraph.

1. Coordinate construction of the mockup to allow observation of air barrier installation, flashings, air barrier integration with fenestration systems, and other portions of the building air/moisture barrier and drainage assemblies, prior to installation of veneer, cladding elements, and other components that will obscure the Work.

M. Room Mockups: Construct room mockups according to approved Shop Drawings, incorporating required materials and assemblies, finished according to requirements. Provide required lighting and additional lighting where required to enable Engineer to evaluate quality of the Work. Comply with requirements in "Mockups" Paragraph.

1. Provide room mockups of the following rooms:

    a. Not applicable

N. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Specification Sections.

1.11 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
2. Payment for these services will be made from testing and inspection allowances specified in Section 012100 “Allowances,” as authorized by Change Orders.
3. Costs for retesting and reinspecting construction that replaces or is necessitated by Work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
2. Engage a qualified testing agency to perform quality-control services.

    a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspection will be performed.
4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
5. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

D. Testing Agency Responsibilities: Cooperate with Engineer and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Engineer and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections and state in each report whether tested and inspected Work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.

5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform duties of Contractor.

E. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."

F. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

G. Contractor’s Associated Requirements and Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspection equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's quality-control plan. Coordinate and submit concurrently with Contractor's Construction Schedule. Update and submit with each Application for Payments.

1. Schedule Contents: Include tests, inspections, and quality-control services, including Contractor- and Owner-retained services, commissioning activities, and other Project-required services paid for by other entities.
2. Distribution: Distribute schedule to Owner, Engineer, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.12 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner**,** , and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
2. Notifying Engineer and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to Engineer with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected Work complies with or deviates from the Contract Documents.
6. Retesting and reinspecting corrected Work.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Engineer.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Engineer's, and authorities' having jurisdiction reference during normal working hours.

1. Submit log at Project closeout as part of Project Record Documents.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspection, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "Approved": When used to convey Engineer's action on Contractor's submittals, applications, and requests, "approved" is limited to Engineer's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": A command or instruction by Engineer. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."

D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.

H. "Provide": Furnish and install, complete and ready for the intended use.

I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.4 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Abbreviations and acronyms not included in this list shall mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States." The information in this list is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. AABC - Associated Air Balance Council; www.aabc.com.
2. AAMA - American Architectural Manufacturers Association; www.aamanet.org.
3. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
4. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
5. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
6. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
7. ABMA - American Boiler Manufacturers Association; www.abma.com.
8. ACI - American Concrete Institute; (Formerly: ACI International); www.concrete.org
9. ACPA - American Concrete Pipe Association; www.concrete-pipe.org.
10. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
11. AF&PA - American Forest & Paper Association; www.afandpa.org.
12. AGA - American Gas Association; www.aga.org.
13. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
14. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
15. AI - Asphalt Institute; www.asphaltinstitute.org.
16. AIA - American Institute of Architects (The); www.aia.org.
17. AISC - American Institute of Steel Construction; www.aisc.org.
18. AISI - American Iron and Steel Institute; www.steel.org.
19. AITC - American Institute of Timber Construction; www.aitc-glulam.org.
20. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
21. ANSI - American National Standards Institute; www.ansi.org.
22. AOSA - Association of Official Seed Analysts, Inc.; www.aosaseed.com.
23. APA - APA - The Engineered Wood Association; www.apawood.org.
24. APA - Architectural Precast Association; www.archprecast.org.
25. API - American Petroleum Institute; www.api.org.
26. ARI - Air-Conditioning & Refrigeration Institute; (See AHRI).
27. ARI - American Refrigeration Institute; (See AHRI).
28. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
29. ASCE - American Society of Civil Engineers; www.asce.org.

30. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).
31. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
32. ASME - ASME International; (American Society of Mechanical Engineers); www.asme.org.
33. ASSE - American Society of Safety Engineers (The); www.asse.org.
34. ASSE - American Society of Sanitary Engineering; www.asse-plumbing.org.
35. ASTM - ASTM International; www.astm.org.
36. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
37. AWEA - American Wind Energy Association; www.awea.org.
38. AWI - Architectural Woodwork Institute; www.awinet.org.
39. AWMAC - Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.
40. AWPA - American Wood Protection Association; www.awpa.com.
41. AWS - American Welding Society; www.aws.org.
42. AWWA - American Water Works Association; www.awwa.org.
43. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.
44. BIA - Brick Industry Association (The); www.gobrick.com.
45. BICSI - BICSI, Inc.; www.bicsi.org.
46. BIFMA - BIFMA International; (Business and Institutional Furniture Manufacturer's Association); www.bifma.org.
47. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.
48. BWF - Badminton World Federation; (Formerly: International Badminton Federation); www.bissc.org.
49. CDA - Copper Development Association; www.copper.org.
50. CE - Conformite Europeenne; http://ec.europa.eu/growth/single-market/ce-marking/
51. CEA - Canadian Electricity Association; www.electricity.ca.
52. CEA - Consumer Electronics Association; www.ce.org.
53. CFFA - Chemical Fabrics and Film Association, Inc.; www.chemicalfabricsandfilm.com.
54. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
55. CGA - Compressed Gas Association; www.cganet.com.
56. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
57. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
58. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
59. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
60. CPA - Composite Panel Association; www.pbmdf.com.
61. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
62. CRRC - Cool Roof Rating Council; www.coolroofs.org.
63. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
64. CSA - CSA Group; www.csagroup.com.
65. CSA - CSA International; www.csa-international.org.
66. CSI - Construction Specifications Institute (The); www.csinet.org.
67. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.
68. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); www.cti.org.
69. CWC - Composite Wood Council; (See CPA).
70. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
71. DHI - Door and Hardware Institute; www.dhi.org.
72. ECA - Electronic Components Association; (See ECIA).
73. ECAMA - Electronic Components Assemblies & Materials Association; (See ECIA).
74. ECIA - Electronic Components Industry Association; www.eciaonline.org.

75. EIA - Electronic Industries Alliance; (See TIA).
76. EIMA - EIFS Industry Members Association; www.eima.com.
77. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
78. ESD - ESD Association; (Electrostatic Discharge Association); www.esda.org .
79. ESTA - Entertainment Services and Technology Association; (See PLASA).
80. ETL - Intertek (See Intertek); www.intertek.com.
81. EVO - Efficiency Valuation Organization; www.evo-world.org.
82. FCI - Fluid Controls Institute; www.fluidcontrolsinstitute.org.
83. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
84. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
85. FM Approvals - FM Approvals LLC; www.fmglobal.com.
86. FM Global - FM Global; (Formerly: FMG - FM Global); www.fmglobal.com.
87. FRSA - Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.; www.floridaroof.com.
88. FSA - Fluid Sealing Association; www.fluidsealing.com.
89. FSC - Forest Stewardship Council U.S.; www.fscus.org.
90. GA - Gypsum Association; www.gypsum.org.
91. GANA - Glass Association of North America; www.glasswebsite.com.
92. GS - Green Seal; www.greenseal.org.
93. HI - Hydraulic Institute; www.pumps.org.
94. HI/GAMA - Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).
95. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).
96. HPVA - Hardwood Plywood & Veneer Association; www.hpva.org.
97. HPW - H. P. White Laboratory, Inc.; www.hpwhite.com.
98. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
99. IAS - International Accreditation Service; www.iasonline.org.
100. ICBO - International Conference of Building Officials; (See ICC).
101. ICC - International Code Council; www.iccsafe.org.
102. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
103. ICPA - International Cast Polymer Alliance; www.icpa-hq.org.
104. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
105. IEC - International Electrotechnical Commission; www.iec.ch.
106. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
107. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.
108. IESNA - Illuminating Engineering Society of North America; (See IES).
109. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
110. IGMA - Insulating Glass Manufacturers Alliance; www.igmaonline.org.
111. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.okstate.edu.
112. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.
113. Intertek - Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); www.intertek.com.
114. ISA - International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); www.isa.org.
115. ISAS - Instrumentation, Systems, and Automation Society (The); (See ISA).
116. ISFA - International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); www.isfanow.org.
117. ISO - International Organization for Standardization; www.iso.org.

118. ISSFA - International Solid Surface Fabricators Association; (See ISFA).
119. ITU - International Telecommunication Union; www.itu.int/home.
120. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.
121. LMA - Laminating Materials Association; (See CPA).
122. LPI - Lightning Protection Institute; www.lightning.org.
123. MBMA - Metal Building Manufacturers Association; www.mbma.com.
124. MCA - Metal Construction Association; www.metalconstruction.org.
125. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
126. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
127. MHIA - Material Handling Industry of America; www.mhia.org.
128. MIA - Marble Institute of America; www.marble-institute.com.
129. MMPA - Moulding & Millwork Producers Association; www.wmmpa.com.
130. MPI - Master Painters Institute; www.paintinfo.com.
131. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; www.mss-hq.org.
132. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.
133. NACE - NACE International; (National Association of Corrosion Engineers International); www.nace.org.
134. NADCA - National Air Duct Cleaners Association; www.nadca.com.
135. NAIMA - North American Insulation Manufacturers Association; www.naima.org.
136. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
137. NBI - New Buildings Institute; www.newbuildings.org.
138. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
139. NCMA - National Concrete Masonry Association; www.ncma.org.
140. NEBB - National Environmental Balancing Bureau; www.nebb.org.
141. NECA - National Electrical Contractors Association; www.necanet.org.
142. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
143. NEMA - National Electrical Manufacturers Association; www.nema.org.
144. NETA - InterNational Electrical Testing Association; www.netaworld.org.
145. NFHS - National Federation of State High School Associations; www.nfhs.org.
146. NFPA - National Fire Protection Association; www.nfpa.org.
147. NFPA - NFPA International; (See NFPA).
148. NFRC - National Fenestration Rating Council; www.nfrc.org.
149. NHLA - National Hardwood Lumber Association; www.nhla.com.
150. NLGA - National Lumber Grades Authority; www.nlga.org.
151. NOFMA - National Oak Flooring Manufacturers Association; (See NWFA).
152. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
153. NRCA - National Roofing Contractors Association; www.nrca.net.
154. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
155. NSF - NSF International; www.nsf.org.
156. NSPE - National Society of Professional Engineers; www.nspe.org.
157. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
158. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
159. NWFA - National Wood Flooring Association; www.nwfa.org.
160. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
161. PDI - Plumbing & Drainage Institute; www.pdionline.org.
162. PLASA - PLASA; (Formerly: ESTA - Entertainment Services and Technology Association); www.plasa.org.
163. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
164. RFCI - Resilient Floor Covering Institute; www.rfci.com.

165. RIS - Redwood Inspection Service; www.redwoodinspection.com.
166. SAE - SAE International; www.sae.org.
167. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
168. SDI - Steel Deck Institute; www.sdi.org.
169. SDI - Steel Door Institute; www.steeldoor.org.
170. SEFA - Scientific Equipment and Furniture Association (The); www.sefalabs.com.
171. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
172. SIA - Security Industry Association; www.siaonline.org.
173. SJI - Steel Joist Institute; www.steeljoist.org.
174. SMA - Screen Manufacturers Association; www.smainfo.org.
175. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
176. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.
177. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
178. SPIB - Southern Pine Inspection Bureau; www.spib.org.
179. SPRI - Single Ply Roofing Industry; www.spri.org.
180. SRCC - Solar Rating & Certification Corporation; www.solar-rating.org.
181. SSINA - Specialty Steel Industry of North America; www.ssina.com.
182. SSPC - SSPC: The Society for Protective Coatings; www.sspc.org.
183. STI - Steel Tank Institute; www.steeltank.com.
184. SWI - Steel Window Institute; www.steelwindows.com.
185. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
186. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
187. TCNA - Tile Council of North America, Inc.; www.tileusa.com.
188. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.tema.org.
189. TIA - Telecommunications Industry Association (The); (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); www.tiaonline.org.
190. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).
191. TMS - The Masonry Society; www.masonrysociety.org.
192. TPI - Truss Plate Institute; www.tpinst.org.
193. TPI - Turfgrass Producers International; www.turfgrasssod.org.
194. TRI - Tile Roofing Institute; www.tileroofing.org.
195. UL - Underwriters Laboratories Inc.; http://www.ul.com.
196. UNI - Uni-Bell PVC Pipe Association; www.uni-bell.org.
197. USAV - USA Volleyball; www.usavolleyball.org.
198. USGBC - U.S. Green Building Council; www.usgbc.org.
199. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
200. WA - Wallcoverings Association; www.wallcoverings.org
201. WASTEC - Waste Equipment Technology Association; www.wastec.org.
202. WCLIB - West Coast Lumber Inspection Bureau; www.wclib.org.
203. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
204. WDMA - Window & Door Manufacturers Association; www.wdma.com.
205. WI - Woodwork Institute; www.wicnet.org.
206. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.
207. WWPA - Western Wood Products Association; www.wwpa.org.

B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.

1. DIN - Deutsches Institut fur Normung e.V.; www.din.de.
2. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
3. ICC - International Code Council; www.iccsafe.org.
4. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Information is subject to change and is up to date as of the date of the Contract Documents.

1. COE - Army Corps of Engineers; www.usace.army.mil.
2. CPSC - Consumer Product Safety Commission; www.cpsc.gov.
3. DOC - Department of Commerce; National Institute of Standards and Technology; www.nist.gov.
4. DOD - Department of Defense; www.quicksearch.dla.mil.
5. DOE - Department of Energy; www.energy.gov.
6. EPA - Environmental Protection Agency; www.epa.gov.
7. FAA - Federal Aviation Administration; www.faa.gov.
8. FG - Federal Government Publications; www.gpo.gov/fdsys.
9. GSA - General Services Administration; www.gsa.gov.
10. HUD - Department of Housing and Urban Development; www.hud.gov.
11. LBL - Lawrence Berkeley National Laboratory; Environmental Energy Technologies Division; www.eetd.lbl.gov.
12. OSHA - Occupational Safety & Health Administration; www.osha.gov.
13. SD - Department of State; www.state.gov.
14. TRB - Transportation Research Board; National Cooperative Highway Research Program; The National Academies; www.trb.org.
15. USDA - Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.
16. USDA - Department of Agriculture; Rural Utilities Service; www.usda.gov.
17. USDOJ - Department of Justice; Office of Justice Programs; National Institute of Justice; www.ojp.usdoj.gov.
18. USP - U.S. Pharmacopeial Convention; www.usp.org.
19. USPS - United States Postal Service; www.usps.com.

D. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. CFR - Code of Federal Regulations; Available from Government Printing Office; www.gpo.gov/fdsys.
2. DOD - Department of Defense; Military Specifications and Standards; Available from DLA Document Services; www.quicksearch.dla.mil.
3. DSCC - Defense Supply Center Columbus; (See FS).
4. FED-STD - Federal Standard; (See FS).

5. FS - Federal Specification; Available from DLA Document Services; www.quicksearch.dla.mil.

    a. Available from Defense Standardization Program; www.dsp.dla.mil.
    b. Available from General Services Administration; www.gsa.gov.
    c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org.

6. MILSPEC - Military Specification and Standards; (See DOD).
7. USAB - United States Access Board; www.access-board.gov.
8. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (See USAB).

E. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. CBHF; State of California; Department of Consumer Affairs; Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation; www.bearhfti.ca.gov.
2. CCR; California Code of Regulations; Office of Administrative Law; California Title 24 Energy Code; www.calregs.com.
3. CDHS; California Department of Health Services; (See CDPH).
4. CDPH; California Department of Public Health; Indoor Air Quality Program; www.cal-iaq.org.
5. CPUC; California Public Utilities Commission; www.cpuc.ca.gov.
6. NYSDEC – New York State Department of Environmental Conservation.
7. NYS EFC – New York State Environmental Facilities Corp.
8. SCAQMD; South Coast Air Quality Management District; www.aqmd.gov.
9. TFS; Texas A&M Forest Service; Sustainable Forestry and Economic Development; www.txforestservice.tamu.edu.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 014200

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Requirements:

1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.
2. Section 011200 "Multiple Contract Summary" for responsibilities for temporary facilities and controls for projects utilizing multiple contracts.

1.3 USE CHARGES

A. Installation, removal, and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities engaged in the Project to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Engineer, testing agencies, and authorities having jurisdiction.

B. Sewer Service: There is no sewer service available. Provide Porto-Jons

C. Water Service: There is no water service available. Provide water cooler.

D. Electric Power Service: Pay electric-power-service use charges for electricity used by all entities for construction operations.

E. Electric Power Service from Existing System: Electric power from Owner's existing system is limited. Provide connections and extensions of services as required for construction operations if the service size allows this or provide temporary generator for site power during construction.

F. Electric Power Service: Use charges are specified in Section 011200 "Multiple Contract Summary."

1.4 INFORMATIONAL SUBMITTALS

A. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel.

B. Implementation and Termination Schedule: Within 15 days of date established for commencement of the Work, submit schedule indicating implementation and termination dates of each temporary utility.

C. Project Identification and Temporary Signs: Show fabrication and installation details, including plans, elevations, details, layouts, typestyles, graphic elements, and message content.

D. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

E. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Include the following:

1. Locations of dust-control partitions at each phase of work.
2. HVAC system isolation schematic drawing.
3. Location of proposed air-filtration system discharge.
4. Waste-handling procedures.
5. Other dust-control measures.

F. Noise and Vibration Control Plan: Identify construction activities that may impact the occupancy and use of existing spaces within the building or adjacent existing buildings, whether occupied by others, or occupied by the Owner. Include the following:

1. Methods used to meet the goals and requirements of the Owner.
2. Concrete cutting method(s) to be used.
3. Location of construction devices on the site.
4. Show compliance with the use and maintenance of quieted construction devices for the duration of the Project.
5. Indicate activities that may disturb building occupants and that are planned to be performed during non-standard working hours as coordinated with the Owner.
6. Indicate locations of sensitive equipment areas or other areas requiring special attention as identified by Owner. Indicate means for complying with Owner's requirements.

1.5 QUALITY ASSURANCE

A. Temporary facilities shall comply with all applicable state and local ordinances, codes and regulations.

B. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

C. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

D. Accessible Temporary Egress: Comply with applicable provisions in the United States Access Board's ADA-ABA Accessibility Guidelines.

1.6 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil minimum thickness, with flame-spread rating of 15 or less in accordance with ASTM E84 and passing NFPA 701 Test Method 2.

B. Dust-Control Adhesive-Surface Walk-Off Mats: Provide mats, minimum 36 by 60 inches.

C. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.2 TEMPORARY FACILITIES

A. Field Offices: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

B. Engineer’s Field Office: Of sufficient size, but minimum 12-feet by 50-feet, to accommodate needs of Owner, Engineer, and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections for duration of project. Keep office clean and orderly. Furnish and equip offices as follows:

1. Field office trailer shall have at least one office, one conference room, one closet, and two exterior doors. A separate Porto-Jon shall be provided for Engineer/Owner use.
2. Conference room shall include built-in plan table.
3. Engineer's field office shall be weather-tight construction with floor, walls, and ceiling completely insulated. Each room shall have at least one operating window. Each window shall have a venetian blind and full insect screen. Furnish two sets of keys for each exterior door. Provide fully insulated skirting on all sides of the field office trailer. Provide steps, platforms, handrails, and boot scrapers for each exterior door.
4. Field office trailer shall be Mobile Mini, ModSpace, Williams Scotsman, or equal. Converted storage or box containers will not be acceptable.
5. Furnishings:

    a. Provide the following furnishings for the Engineer's temporary field office for the duration of the project. All furnishings shall be new – or in very good condition – subject to approval of the Engineer.

        1) One 60-inch by 30-inch desk with file drawer and 5 drawers, all lockable.
        2) Upholstered swivel type chair with arms.

3) One 30-inch by 84-inch conference table.
4) Ten armless side chairs (stacking type).
5) Two 54-inch by 30-inch folding tables.
6) One file cabinet, 4 drawer, legal size, Hon No. HN-315C, or equal.
7) One wastebasket.
8) One lockable storage cabinet, 72-inch high, 36-inch wide, and 18-inch deep.
9) One steel bookcase units, 4 shelves high, Hon No. HN-S48 ABC, or equal.
10) 4 painted steel coat hangers.
11) One electric bottled water dispenser with hot and cold outlets and refrigerator unit. Adequate water bottles shall be provided (and paid for by the Contractor) until Final Completion.
12) One wall-mounted first aid kit, McMaster-Carr 9501T1 or equal.
13) Two smoke detectors, with batteries.
14) Two dry erase boards, aluminum frame, 36-inch by 60-inch, markers and eraser, Quartet Model No. TS-S 535 or equal.
15) One 1000-watt minimum 1.4-cu.ft. microwave oven.
16) One 6-cf refrigerator.
17) One first aid kit, OSHA (1910.151.b) and ANSI (Z308.1-2003) compliant, suitable for ten people.

6. Equipment:

a. Contractor shall provide the following equipment for the Engineer's temporary field office for the duration of the project. All equipment shall be new.

1) A multifunction Photocopier, printer, facsimile and scanner.

b. With 50-sheet auto-feeder, capable of copying and printing.
c. Letter-sized, legal-sized, and 11-inch by 17-inch documents.
d. Contractor to provide paper and ink cartridges, as required, for the duration of the project.

1) Four 8-outlet surge protectors with six-foot cord and minimum 1800-joule energy rating or greater; as manufactured by Belkin, or equal.
2) One 4-cup or 12-cup coffeemaker with timer, by Krups, or equal.
3) One laptop computer model HP Pro Book 450 G9 15.6” Notebook with Intel Core i5 12th Gen i5-1235U Deca-core (10 core) 1.3 GHz processor, minimum of 16 GB RAM, 256 GB SSD, Intel Chip, Windows 11 Pro. Provide 3 year HP Care Pack, extended service, next business day on-site, maintenance, parts and labor, defective media return. Provide Microsoft Office 2021 Professional License. After completion of the project the laptop will become the property of the Owner.

7. Services:

a. Provide the following services for the duration of the project. Services shall include all costs for installation, use, maintenance, and removal of all products, services and equipment billed by each provider for each service specified herein.
b. Field office shall have complete and fully functional electrical and HVAC systems. Provide at least two smoke detectors hard-wired into the electrical system. Perform

all scheduled and unscheduled maintenance for all systems and as directed by the Engineer.

c. Electrical System: Provide connection to temporary electric service. Comply with the electrical requirements of the furnished office trailer. Provide main circuit panel, sufficient GFCI outlets and lighting in each room, exterior lights at each exterior door, and proper grounding of entire electrical system.

d. Plumbing system: Connect waste pipes to existing sanitary system or a waste holding tank. Heat trace and insulate exterior piping to prevent freezing. Where potable water service is not available, Contractor shall provide bottle water service with water chiller/dispenser.

e. HVAC System: Provide central heating and air conditioning system with programmable thermostat. System shall be capable of maintaining an interior temperature of 70 degrees F when the exterior temperature is 0 degrees F and an interior temperature of 75 degrees F when exterior temperature is 100 degrees F.

f. Bottled water service: Provide bottled water service complete with dispenser with hot- and cold-water taps and regular bottle and cup replenishment as directed by the Engineer.

g. Janitorial service: Provide janitorial services (at least weekly) that include dusting, sweeping, vacuuming, mopping, disinfection, and trash removal.

h. Sanitary service: Provide regular pumping of waste holding tank, if applicable, as needed.

i. Communications:

1) Provide, for the Engineer's use, three two-way radios with a minimum range of two miles, with chargers.

j. Internet Access:

1) Provide one air card for the Engineer's use for the duration of the project (through Final Completion), with unlimited data plans.

k. Pay all costs for installation, maintenance, and removal of the telephone and internet service and instruments. The monthly cost of all calls made and received by the Engineer, including toll and long-distance calls, shall be paid for by the Contractor for the duration of the project.

8. Supplies: Provide the following supplies for the duration of the project: copy paper, toner, toilet paper, paper towels, soap, light bulbs, and other consumables as required by the Engineer.

C. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

1. Store combustible materials apart from building.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.

1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
2. Heating, Cooling, and Dehumidifying Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction and marked for intended location and application.

PART 3 - EXECUTION

3.1 TEMPORARY FACILITIES, GENERAL

A. Conservation: Coordinate construction and use of temporary facilities with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

3.2 INSTALLATION, GENERAL

A. Locate facilities where shown on the Drawings or where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work. Engineer’s trailer shall be set up and ready for occupancy within 30 days of the Notice to Proceed.

1. Locate facilities to limit site disturbance as specified in Section 011000 "Summary."

B. Provide each facility ready for use within 30 days of the Notice to Proceed and prior to Commencement of Work at the site. Do not remove until approved by Engineer or are replaced by authorized use of completed permanent facilities.

3.3 ENGINEER'S OFFICE

A. Engineer's trailer shall be set up and ready for occupancy within 30 days of the Notice to Proceed and prior to commencement of Work at the site. All systems, furnishings, equipment, and services specified herein shall be furnished, installed, and completely operational for the field office to be considered established.

1. Provide regular office cleaning services for the duration of the project.
2. Provide supplies including, but not limited to restroom supplies (toilet tissue paper, paper towel, and soap), as well as light bulbs, air conditioner filters, etc.
3. Provide office supplies for printers and fax machines, etc.
4. Supply all fuel for heating and pay all utility bills.

B. Install field office plumb and level.

C. Engineer's trailer shall be removed, and the site shall be cleaned up and restored before Final Completion of the project.

3.4 CONTRACTOR'S FIELD OFFICE

A. Provide a temporary field office(s) for the Contractor's use for the duration of the project. An authorized representative of the Contractor shall be present at all times while the Work is in progress. Instructions received at the Contractors field office from the Engineer shall be considered delivered to the Contractor.

B. Locate field office(s) in accordance with approved shop drawings and as directed by the Owner.

C. Establish and occupy field office within 30 days of the Notice to Proceed, unless otherwise approved by the Engineer or Owner.

3.5 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service, if approved by Owner.

1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sewers and Drainage: Provide temporary facilities to remove effluent lawfully.

C. Sanitary Facilities: Provide temporary toilets, wash facilities, safety shower and eyewash facilities as required, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

D. Temporary Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

E. Temporary Light and Power: Provide by Electrical Contractor, including 220 Volt service for welding, complete with wiring, lamps and similar equipment as required to adequately light all work areas and with sufficient power capacity to meet the project needs. Make all necessary arrangements with the local electric company for temporary electric service and pay all expenses in connection therewith.

F. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.

1. Install electric power service overhead unless otherwise indicated.
2. Provide temporary generators and appropriate fuel containment where utility power is insufficient.

G. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, and inspections.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
2. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install WiFi cell phone access equipment.
3. In each temporary structure, post a list of important telephone numbers.

    a. Police and fire departments.
    b. Ambulance service.
    c. Contractor's home office.
    d. Contractor's emergency after-hours telephone number.
    e. Engineer's office.
    f. Engineers' offices.
    g. Owner's office.
    h. Principal subcontractors' field and home offices.

H. Electronic Communication Service: Provide secure WiFi wireless connection to internet with provisions for access by Engineer and Owner.

I. Project Computer: Provide a laptop computer for use by Engineer and Owner to access Project electronic documents and maintain electronic communications as detailed in Paragraph 2.2.B.6 above.

1. Printer: "All-in-one" unit equipped with printer server, combining color printing, photocopying, scanning, and faxing, or separate units for each of these three functions.
2. Internet Service: Broadband modem, router and ISP, equipped with hardware firewall, providing minimum 10 Mbps upload and 15 Mbps download speeds at each computer.
3. Internet Security: Integrated software, providing software firewall, virus, spyware, phishing, and spam protection in a combined application.
4. Backup: External hard drive, minimum 2 terabytes, with automated backup software providing daily backups.

3.6 SUPPORT FACILITIES INSTALLATION

A. Comply with the following:

1. Provide construction for temporary field offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible in accordance with ASTM E136. Comply with NFPA 241.
2.
3. Maintain support facilities until Engineer schedules Final Completion inspection. Remove just before Final Completion.

B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations.

1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.

C. Parking: Identify and use designated areas for construction personnel parking within the identified staging areas.

D. Storage and Staging: Use designated areas of Project site for storage and staging needs.

E. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
2. Remove snow and ice as required to minimize accumulations.

F. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.

1. Identification Signs: Provide Project identification signs as indicated on Drawings. Signs shall be constructed of A-A Ext – APA grade plywood, 1-in thick. Posts and braces shall be of pressure treated lumber.
2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.

a. Provide temporary, directional signs for construction personnel and visitors.

3. Maintain and touch up signs, so they are legible at all times.

G. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."

H. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

3.7 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

1. Comply with work restrictions specified in Section 011000 "Summary."

C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to requirements of NYS Construction General Permit or authorities having jurisdiction, whichever is more stringent.

1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant-protection zones.
2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

END OF SECTION 015000

SECTION 015725 – TEMPORARY DIVERSION AND COFFERDAMS

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 temporary construction dewatering, stream dewatering stormwater bypass, and surface water control and incorporates the design, equipment, materials, installation, operation, protection, monitoring and removal of dewatering and drainage system. This section also includes maintaining flows to the City's Water Filtration Plant (WFP) during bypass of gatehouse.

B. There are two general bypass scenarios:

1. Bypass of spillway is necessary to perform Work on the spillway, flip bucket, non-overflow sections training wall, and at edge of stream.
2. Bypass of gatehouse is necessary to perform Work below the normal water elevation on the gatehouse. This bypass must maintain stream flow to the tunnel which conveys flow to the City's Water Filtration Plant.

C. Provide dewatering system sufficient to lower groundwater and collect surface water, regardless of groundwater level or rainfall at any time during the work. Be responsible for the temporary groundwater and surface water system design.

D. Provide stormwater bypass plan for diversion and care of stream water including upstream drainage during construction, including, but not limited to, cofferdam(s), drains, sumps, and pumps.

E. Provide maintenance of flow plan to maintain water to the tunnel leading to the City's Water Filtration Plant, including but not limited to, screening, flow control gate/valve, flow metering, pipe restraints, and isolation from the lower level of the gatehouse. Maintenance of flow may be accomplished via a piped gravity system with a bulkhead on tunnel at connection to lower level of gatehouse or via a temporary bypass pumping system. Baskets on the screens inside of the gatehouse may be removed to temporarily accommodate a bypass pipe. Any modifications to the screens or gate in the gatehouse shall be approved by Owner and put back into original operational condition upon completion of the bypass.

F. Furnish all labor, equipment, and materials for all dewatering, stream dewatering, stormwater bypass, maintenance of flow to the WFP, and sediment removal operations and protective works necessary for care of the Fish Creek stream during construction.

G. The Engineer has developed a stream dewatering and stormwater bypass plan for one logical construction sequence as indicated on the Drawings.

1. Spillway Bypass - The dewatering and stormwater bypass design for the spillway is designed for a flow rate of 895 cfs in the stream which half the spillway can convey and maintain an elevation of 3 feet above crest of spillway. Based on the recent historical record (past 15 years) from USGS Gage 042425000 downstream of the dam, the spillway discharge is expected to exceed 895 cfs during an average of three events from June 1 to October 1. Exceedance events may last from 1 to 5 days. In a recent year with above average discharge (2021), the 895 cfs flow rate was exceeded six times. In a recent year with below average discharge (2012), the 895 cfs flow rate was not exceeded during the June 1 to October 1 time period.
2. Gatehouse Bypass – For a coffer dam that is 3 feet above the spillway crest elevation that isolates the gatehouse, the spillway can convey approximately 1,700 cfs assuming a 125-foot-long spillway. At this rate, based on the historic record from the last 15 years the coffer dam would be overtopped on average once between June 1 and October 1. In a recent year with above average discharge (2021), the 1,700 cfs flow rate was exceeded three times. In a recent year with below average discharge (2012), the 1,700 cfs flow rate was not exceeded during the June 1 to October 1 time period. If Contractor elects to bypass the gatehouse and half the spillway at the same time, the flow statistics in the paragraph above apply.
3. Prepare and submit a gatehouse bypass plan detailing how Contractor will maintain flow to the Water Filtration Plant.

    a. Field testing and operation of temporary bypass systems (pumping or gravity) as proposed by the Contractor for the purpose of diverting flow around work area.
    b. Design and operate bypass system. Submit design to Owner and Engineer for comment as part of submittal process.
    c. Bypassing requires 24 hours per day operation during the work at the gatehouse, until the concrete and equipment being bypassed are substantially completed and are capable of being returned to service.
    d. Maintenance of temporary bypass systems throughout the required period of service.
    e. Provide maintenance personnel onsite within 30 minutes of receiving notice (or no flow alarms) that there are problems associated with bypass system.
    f. Removal of temporary bypass systems from site.
    g. Manufacturer recommended preventive maintenance and on-call repair services and equipment replacement as is pertains to Contractor designed system.
    h. For bypass pumping: Contractor Option of Diesel Fuel: Total storage quantity of fuel allowable at the plant site to operate the temporary pumps shall not exceed the sum of the individual fuel tank capacities provided with each pump's diesel engine drive. Provide a refueling service to maintain continuous 24-hours per day, seven days per week pumping system operation. Diesel storage and pumps shall be downstream of the reservoir and in containment.

H. Obtain and pay for permits required for dewatering and drainage systems. Implement measurements to comply with dewatering and discharge permits requirements.

I. Remove and properly dispose of sediment, earthen materials, and other debris removed from the stream bed per the Drawings. All material shall be hauled and disposed of properly as approved by Owner.

J. The Contractor shall be responsible for monitoring weather forecasts, obtaining rainfall amounts from public sources, monitoring the water levels in Fish Creek and the upstream Tagasoke Reservoir at Boyd Dam and taking precautions to protect the work. In the event storms are forecast, the Contractor shall remove construction equipment and materials from the area vulnerable to flooding and otherwise take precautions to secure and protect the work against damage during passage of the flood. Damage to equipment, materials, foundations, concrete, embankments, structures, or any other part of the work caused by flood waters, or failure of the stormwater bypass or dewatering system shall be repaired by the Contractor at no additional cost to the Owner.

K. Related Requirements:

1. Section 312500 “Erosion and Sedimentation Controls” to prevent erosion, sedimentation, and contamination of adjacent properties.

1.3 DEFINITIONS

A. In-the-Dry: An excavation subgrade where all of the following are met:

1. Groundwater level has been lowered to at least 2 feet below lowest excavation level at all times.
2. Subgrade is stable with no ponded water, mud, or muck.
3. Subgrade is able to support construction equipment without rutting or disturbance.
4. Subgrade is suitable for placement and compaction of fill material, pipe, or concrete foundations.

B. Contractor’s Engineered Design: Prepared on behalf of Contractor by a licensed Professional Engineer.

C. Professional Engineer: Licensed in the State of New York meeting project qualifications and who is hired by Contractor.

1.4 ACTION SUBMITTALS

A. Dewatering and Stormwater Bypass Design Plan, Maintenance of Flow to WFP Plan: Written dewatering and stormwater bypass and maintenance of flow design plans, prepared by a qualified Professional Engineer licensed in the State of New York, that includes:

1. Stormwater Bypass Design Plan:

a. At least 30 days prior to beginning any work on the stormwater bypass and care of the stream water, the Contractor shall submit the stormwater diversion design and sequencing. Stormwater bypass plan shall include considerations for protecting work area from flooding associated with the Fish Creek stream. As a minimum, the plan should provide the same level of detail shown on the Construction Drawings and include location, height, and type of construction of any temporary cofferdams or flow rerouting schemes and where, when, and for how long pumping is anticipated.

2. Groundwater and Surface Water Design Plan:

    a. Description of proposed dewatering system and installation methods to be used for system elements and observation wells.
    b. Description of equipment, drilling methods, hole sizes, filter sand placement techniques, sealing materials, development techniques, number and location of dewatering points and observations wells.
    c. Dewatering system design calculations demonstrating that the proposed system meets all requirements herein and elsewhere.
    d. Sequence of well and well point placement coordinated with support of excavation system installation and control procedures to be adopted, if dewatering problems arise.
    e. Identification of anticipated area influenced by dewatering system and address impacts to adjacent existing and proposed structures.
    f. Coordinate dewatering and drainage submittals with excavation and support of excavation submittals.

3. Maintenance of Flow to WFP Plan:

    a. At least 30 days prior to beginning any work on the gatehouse bypass, the Contractor shall submit the maintenance of flow to WFP design and sequencing plan.
    b. A detailed description of each proposed temporary bypass system, including pumps, pump drives, piping, hoses, valves, fittings, controls, wiring and any other related accessories required to provide a complete operating system as applicable to Contractor designed system (i.e. a gravity bypass does not require submittals related to pumping systems).
    c. If Contractor elects to pump water to tunnel to maintain flows the submit the following

        1) Staging area and access requirements for all pumps.
        2) Number, size, material, location and method of installation of suction piping.
        3) Number, size, material, location and method of installation of discharge piping.
        4) Pump size, capacity, number of units, diesel engine specifications, fuel tank capacity, fuel consumption requirements, and method of refueling.
        5) Calculations of static lift, pipe size selection, friction losses, flow velocity and pump selection.
        6) Pump curves showing pump operating range.
        7) Proposed method of freeze protection.
        8) Proposed method of noise control for each pump.
        9) Temporary pipe supports, pipe restraints, air valve placement, anchorage, cover material and other accessories as required to stabilize the piping system.
        10) Installation schedule and maintenance schedule.
        11) Vendor phone number and pager number for 24-hour service.
        12) A minimum of five reference installations of projects with similar size in water pumping applications. Include contact names and phone numbers.
        13) List of recommended spare parts to be stored on-site for emergency maintenance.

14) Qualification Data: Information on the vendor's service staff capabilities and replacement parts inventory to show that the vendor has sufficient resources to provide emergency service and replacement equipment and/or parts to the site within 4 hours of a service call.
15) Description of System Operation and Controls: Include a list of all alarm conditions and procedures for correcting problems including equipment replacement.
16) Proposed Procedures for Facility Start-Up and Testing: Include description and schedule to demonstrate compliance with specified automatic operation and maintenance of a constant discharge pressure.
17) Operations Plan for Inclement Weather: Demonstrate the ability to maintain pumping system operations throughout inclement weather events.
18) Proposed Procedures for Dismantling the System: Include description, schedule, and restoration procedures to normal operations at the facility.
19) Contractor's operational vendor will review and verify bypass pumping system design and submit system layout drawings to Engineer for review and approval.

d. If Contractor elects a gravity bypass system:

1) Proposed layout and coordination of installation through the Owner's facility
2) Pipe size, pipe restraints, air valve placement, material, hydraulic flow capacity
3) System to screen coarse materials from entering the pipe
4) Temporary pipe supports, anchorage, cover material and other accessories as required to stabilize the piping system.
5) Installation schedule and maintenance schedule.

B. Shop Drawings: For dewatering system, prepared and sealed by a qualified Professional Engineer licensed in the State of New York.

1. Stormwater Bypass Design Plan and Maintenance of Flow to WFP Plan:

a. Include plans, elevations, sections, and details.
b. Show cofferdams in plan and sections detailing all critical elements of cofferdam construction.
c. Show flow rerouting schemes
d. For the maintenance of flow to the WFP, include pipe size and layout, location of flow measuring and control (gate/ valve) and screens.
e. Include where, when, and for how long pumping is anticipated.

2. Groundwater and Surface Water Design Plan:

a. Include plans, elevations, sections, and details.
b. Show arrangement, locations, and details of wells and well points; locations of risers, headers, filters, pumps, power units, and discharge lines; and means of discharge, control of sediment, and disposal of water.
c. Include pump capacity and anticipated discharge rate.

d. Include layouts of piezometers and flow-measuring devices for monitoring performance of dewatering system.
e. Show areas and depths of excavation to be dewatered and adjacent structures or facilities within the anticipated area influence.

C. Provide results (field notes, logs, field and laboratory tests) of subsurface investigation program that the Contractor may implement for data gathering for design of cofferdam needed for gatehouse and upstream retaining wall construction.

D. Sediment Removal Plan: Written sediment removal plan prepared by a qualified Professional Engineer licensed in the State of New York that includes:

1. Equipment proposed for removal of sediment within the streambed.
2. Methods of transporting sediment to the sediment stockpile/drying area.
3. Methods of promoting sediment drainage and drying procedures.
4. Environmental protection procedures around temporary stockpile/drying area.
5. Disposal area based off the results of sediment analyses performed as part of Part 3 "Subsurface Investigation" Article.
6. Methods of transporting dried sediment to the disposal area.
7. Methods to coordinate sediment removal with foundation grouting program.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Professional Engineer.

B. Field quality-control reports.

C. Existing Conditions: Using photographs or video recordings, show existing conditions of adjacent construction and site improvements that might be misconstrued as damage caused by dewatering operations. Submit before Work begins.

D. Record Drawings: Identify locations and depths of capped wells and well points and other abandoned-in-place dewatering equipment.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer that has specialized in installation of dewatering systems and dewatering work and having a minimum of 5 years' experience.

B. Professional Engineer Qualifications: Professional Engineer licensed in the State of New York; having a minimum of 5 years' experience in design and construction of dewatering and drainage systems; and having completed not less than 5 successful dewatering and drainage projects of equal type, size, and complexity to that required for the work.

C. Comply with authorities having jurisdiction for the following:

1. Drilling and abandoning of wells used for dewatering systems.
2. Water discharge and disposal from dewatering operations.

D. Obtain permits from all Federal, state and local authorities.

1.7 FIELD CONDITIONS

A. Project-Site Information: Geotechnical data have been prepared for this Project and are included in Appendix B. Owner is not responsible for interpretations or conclusions drawn from these data.

1. Make additional test borings and conduct other exploratory operations necessary for dewatering according to the performance requirements.
2. Groundwater levels may vary during the work and should not be assumed to be accurately represented by groundwater level readings reported in the geotechnical data.
3. The geotechnical data are included elsewhere in Project Manual.

B. Survey Work: Engage a qualified land surveyor or Professional Engineer licensed in the State of New York to survey adjacent existing buildings, structures, and site improvements; establish exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations.

PART 2 - PRODUCTS

2.1 DESIGN REQUIREMENTS

A. Stormwater Bypass Design.

1. The Contractor shall be responsible for the proper design and execution of methods for controlling stream water.
2. Design review and field monitoring activities by the Engineer shall not relieve the Contractor of his responsibilities for ensuring that stormwater diversion systems work properly.

B. Groundwater and Surface Water Design.

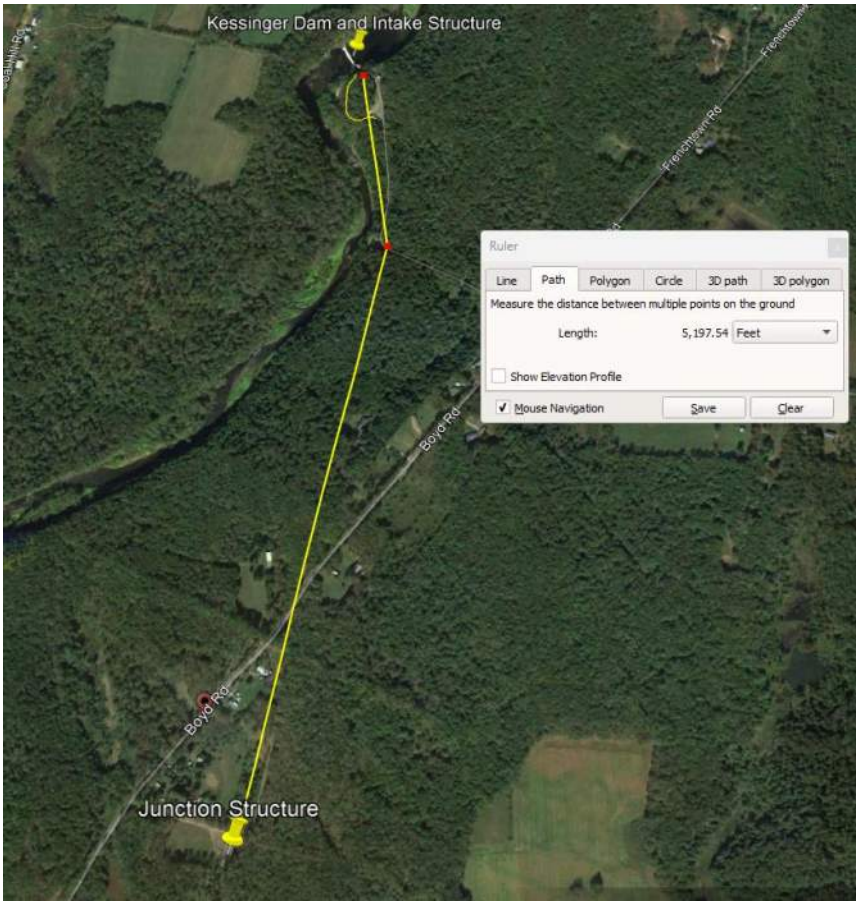
1. Dewatering Performance: Design, furnish, install, test, operate, monitor, and maintain dewatering system of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of surface and groundwater and permit excavation and construction to proceed in-the-dry in accordance with the requirements herein and elsewhere.

a. Design dewatering and stormwater bypass system, including comprehensive engineering analysis by the Contractor’s Design Engineer.
b. Continuously monitor and maintain dewatering operations to ensure required stream dewatering, prevention of flooding in excavation and cofferdam work area, and prevention of damage to subgrades and permanent structures.
c. Prevent surface water from entering excavations by grading, dikes, or other means.
d. Accomplish dewatering and stormwater bypass without damaging existing buildings, structures, and site improvements adjacent to excavation.
e. Remove dewatering and stormwater bypass system when no longer required for construction.

2. Design pumps, piping, cofferdam, ditches and dikes to control surface water from entering cofferdams and excavations.
3. Design sumps, and other groundwater control system components to prevent loss of fines from surrounding soils. Use sand filters with dewatering installations, unless screens are properly sized by Contractor's Design Engineer to prevent passage of fines from surrounding soils.
4. Maintain standby pumping systems and sources of standby power at various sites.
5. Design dewatering system to prevent damage to adjacent properties, buildings, structures, utilities, and facilities from dewatering operations. Be responsible for damage to properties, buildings or structures, sewers and other utility installations, pavements, and work that may result from dewatering or surface water control operations.
6. Regulatory Requirements: Comply with governing Federal, state and local regulations before beginning dewatering and stormwater bypass. Comply with water- and debris-disposal regulations of authorities having jurisdiction.
7. Maintain flow to the Water Filtration Plant through the tunnel system at all times.

C. Maintenance of Flow to WFP Plan

1. Design pumps, piping, pipe restraints, air valve placement, cofferdam, ditches and dikes to control surface water from entering cofferdams and excavations.
2. Maintain standby pumping systems and sources of standby power at various sites.
3. Design dewatering system to prevent damage to adjacent properties, buildings, structures, utilities, and facilities from dewatering operations. Be responsible for damage to properties, buildings or structures, sewers and other utility installations, pavements, and work that may result from dewatering or surface water control operations.
4. Maintain flow to the Water Filtration Plant through the tunnel system at all times.
5. See also requirements in “Maintenance of Flow to WFP Plan” Paragraph related to maintaining flow to the WFP. Provide control of flow to the WFP using a control valve(s) and water level measurements at the downstream junction structure on the tunnel which is approximately 1 mile away, located on Boyd Road as shown below.

6. 

2.2 MATERIALS

A. Equipment: Piping, pumping, and other equipment and materials to provide control of surface water and groundwater in excavations.

B. Grout: Mixture of portland cement and bentonite clay or sand suitable for sealing abandoned wells and piping.

PART 3 - EXECUTION

3.1 GENERAL

A. Dewater the stream bed in accordance with the Drawings and the approved Stormwater Bypass and Groundwater and Surface Water Dewatering Design Plan.

B. Control surface water and groundwater such that:

1. Excavation to final grade is made in-the-dry.
2. Natural undisturbed conditions of subgrade soils are maintained.
3. Softening, instability, or disturbance due to presence or seepage of water does not occur.
4. Construction and backfilling proceeds in-the-dry.

5. Floatation of completed portions of work shall be prohibited.

C. Methods of groundwater control may include but are not limited to perimeter trenches and sump pumping, perimeter groundwater cutoff, well points, ejectors, deep wells, or any combination.

D. Where groundwater levels are above proposed bottom of excavation level, provide a pumped dewatering system for pre-drainage of soils prior to excavation and for maintaining lowered groundwater level until construction has been completed such that structure, pipeline, or fill will not be floated or otherwise damaged.

E. Vary type of system, spacing of dewatering units, and other details of the work depending on soil and water conditions at each location.

F. Do work in a manner to protect adjacent structures and utilities without causing loss of ground or disturbance to pipe bearing soils or soils supporting overlying or adjacent structures.

G. Install, monitor, and report data from observation wells. Evaluate collected data relative to groundwater control system performance and modify systems necessary to dewater site.

H. Locate groundwater control system components where they will not interfere with construction activities adjacent to the work area or interfere with installation and monitoring of geotechnical instrumentation including observation wells. Do not make excavations for sumps or drainage ditches within or below 1H:1V slopes extending downward and out from edges of existing or proposed foundation elements or from downward vertical footprint of pipe without approval by the Engineer.

3.2 PREPARATION

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

1. Prevent surface water or groundwater from entering excavations, from ponding on prepared subgrades, and from flooding site or surrounding area.
2. Protect subgrades and foundation soils from softening and damage by rain or water accumulation.

B. Provide temporary grading to facilitate dewatering and control of surface water.

C. Protect and maintain temporary erosion and sedimentation controls as shown on Drawings, which are specified in Section 312500 “Erosion and Sedimentation Controls” during dewatering operations.

3.3 INSTALLATION

A. Install dewatering system utilizing sumps or similar methods complete with pump equipment, standby power and pumps, filter material gradation, valves, appurtenances, water disposal, and surface water controls.

1. Space sumps at intervals and depth as required to provide sufficient dewatering.
2. Use filters or other means to prevent pumping of fine sands or silts from the subsurface.

B. Place dewatering system into operation to lower water to the bottom of the gatehouse and upstream retaining wall.

C. Provide sumps, sedimentation tanks, and other flow-control devices as required by authorities having jurisdiction.

D. Provide standby equipment on-site, installed and available for immediate operation, to maintain dewatering on continuous basis if any part of system becomes inadequate or fails.

E. Vent air when filling the pipe and review if an Air Release Valve (ARV) is required at the high point to provide proper flow.

3.4 STORWATER BYPASS CONTROL

A. Do not interrupt or interfere with the natural flow of the streambed for any purpose or reason without the prior written approval of the Owner. Temporary structures such as berms, sandbags, pipeline diversions, etc., may be permitted for the control of streambed flow, as long as such measures are not a major obstruction to flood flows, do not worsen flooding, or alter historic flow routes.

B. At all times, pass the full flow of the streambed through the diversion except to reduce such flow by the amount of water used for construction purposes. Obtain written approval of the Owner and Engineer prior to any flow reduction in accordance with Federal, State, and local laws and regulations. Show streambed diversion phases on the plans in accordance with the Contractor's approved submittal.

C. Perform and sequence stormwater bypass in accordance with the narrative shown on the plans, the specifications herein, and the Contractor's approved submittal.

D. Provide erosion and sedimentation control measures as required. Provide vegetative cover to prevent erosion. If weather does not allow vegetative cover to be established, provide protection from erosion by other materials.

E. Be responsible for investigating and familiarizing himself with all site conditions that may affect the Work including surface water, potential flooding conditions, level of groundwater, and the time of year the work is to be done.

F. Stormwater bypass water control generally falls into the following categories:

1. Normal low flows along the streambed.
2. Storm/flood flows along the streambed.
3. Local surface inflows not conveyed by pipelines.

G. Submit dewatering and stormwater bypass plan in accordance with Part 1 "Action Submittals" Article. The Engineer provides one logical dewatering and stormwater bypass plan on the Drawings.

H. Coordinate, evaluate, design, construct, and maintain a temporary stormwater bypass system. These systems shall not worsen flooding, alter major flow paths, or worsen flow characteristics during construction. The Contractor is responsible to ensure that any such worsening of

flooding does not occur and is solely responsible for determining the methods and adequacy of water control measures.

I. Grade excavation to divert surface water and groundwater within excavation areas into sumps and dewatering wells.

3.5 EXCAVATION DEWATERING

A. Provide and maintain equipment and facilities to promptly remove and properly dispose of water entering excavations. Maintain excavations in-the-dry.

B. Excavation dewatering shall maintain the subgrade in a natural undisturbed condition and be in operation until the fill or structure to be built thereon have been completed to such extent that they will not be floated or otherwise damaged by allowing water levels to return to natural elevations.

C. Do not place concrete in water or submerge within 24 hours after being installed except as required and approved for cofferdam construction. Prevent water from flow over new concrete within four days after placement.

D. Prevent water from rising to cause unbalanced pressure on structures until concrete has set at least 7 days.

E. Conduct dewatering to preserve natural undisturbed condition of subgrade soils at bottom of excavation.

F. It is expected that initial dewatering plan may be modified to suit variable soil and water conditions encountered. Dewater and excavate in a manner without causing loss of ground or disturbance to pipe bearing soil or soil that supports overlying or adjacent structures.

G. If methods do not properly dewater excavation, install additional groundwater sumps and/ or seal cofferdam as required.

H. Surround dewatering units with suitable filter sand with no fines being removed by pumping. Pump continuously from dewatering system until pipe or structure is adequately backfilled. Provide stand-by pumps.

I. Collect water entering excavations from precipitation or surface runoff in shallow ditches around excavation perimeter, drained to a sump, and pump from excavation to maintain a bottom free from standing water.

J. Dispose of drainage to an approved area

3.6 SUBSURFACE INVESTIGATION

A. Prior to the start of cofferdam construction the Contractor may perform a subsurface investigation program as required by the Contactor for design of the cofferdam. Investigation may consist of test pits, borings through overburden and into rock with sampling as needed to develop appropriate geotechnical design parameters.

3.7 SEDIMENT REMOVAL

A. Remove sediment from the streambed as needed for construction of the upstream retaining wall, rehabilitation of the gate house and repairs to the upstream right abutment. Sediment removal may also be required for reconstruction of the stilling basin/ flip bucket and installation of the downstream cofferdam.

B. Disposal of sediment earthen materials, and other debris shall be performed according to permit requirements, state and federal regulations and as approved by the Owner.

END OF SECTION 015725

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SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

B. Related Requirements:

1. Section 011000 “Summary” for Contractor requirements related to Owner-furnished products.
2. Section 012100 "Allowances" for products selected under an allowance.
3. Section 012300 "Alternates" for products selected under an alternate.
4. Section 012500 "Substitution Procedures" for requests for substitutions.
5. Section 014200 "References" for applicable industry standards for products specified.
6. Section 017700 “Closeout Procedures” for submitting warranties.

1.3 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility. Salvaged items or items reused from other projects are not considered new products. Items that are manufactured or fabricated to include recycle contract materials are considered new products, unless indicated otherwise.
3. Comparable Product: Product by named manufacturer that is demonstrated and approved through the comparable product submittal process described in PART 2 “Comparable Products” Article, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model

number or other designation. Published attributes and characteristics of basis-of-design product establish salient characteristics of products.

1. Evaluation of Comparable Products: In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification. Manufacturer's published attributes and characteristics of basis-of-design product also establish salient characteristics of products for purposes of evaluating comparable products.

C. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or product from another named manufacturer that does meet the requirements of the specifications; submit a comparable product request or substitution request, if applicable.

D. Comparable Product Request Submittal: An action submittal requesting consideration of a comparable product, including the following information:

1. Identification of basis-of-design product or fabrication or installation method to be replaced, including Specification Section number and title and Drawing numbers and titles.
2. Data indicating compliance with the requirements specified in PART 2 "Comparable Products" Article.

E. Basis-of-Design Product Specification Submittal: An action submittal complying with requirements in Section 013300 "Submittal Procedures."

F. Substitution: Refer to Section 012500 "Substitution Procedures" for definition and limitations on substitutions.

1.4 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1. Resolution of Compatibility Disputes between Multiple Contractors:

a. Contractors are responsible for providing products and construction methods compatible with products and construction methods of other contractors.
b. If a dispute arises between the multiple contractors over concurrently selectable but incompatible products, Engineer will determine which products shall be used.

B. Identification of Products: Except for required labels and operating data, do not attach or imprint manufacturer or product names or trademarks on exposed surfaces of products or equipment that will be exposed to view in occupied spaces or on the exterior.

1. Labels: Locate required product labels and stamps on a concealed surface, or, where required for observation following installation, on a visually accessible surface that is not conspicuous.
2. Equipment Nameplates: Provide a permanent nameplate on each item of service- or power-operated equipment. Locate on a visually accessible but inconspicuous surface. Include information essential for operation, including the following:

    a. Name of product and manufacturer.
    b. Model and serial number.
    c. Capacity.
    d. Speed.
    e. Ratings.

3. See individual identification Sections in Division 26 for additional equipment identification requirements.

1.5 COORDINATION

A. Modify or adjust affected work as necessary to integrate work of approved comparable products and approved substitutions.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products, using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with the Contract Documents and that products are undamaged and properly protected.

C. Storage:

1. Provide a secure location and enclosure at Project site for storage of materials and equipment.
2. Store products to allow for inspection and measurement of quantity or counting of units.

3. Store materials in a manner that will not endanger Project structure.
4. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation and with adequate protection for wind.
5. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.
8. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written standard warranty form furnished by individual manufacturer for a particular product and issued in the name of the Owner or endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner and issued in the name of the Owner or endorsed by manufacturer to Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included in the Project Manual, prepare a written document, using indicated form properly executed.
3. See other Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.

2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Engineer will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
6. Or Equal: For products specified by name and accompanied by the term "or equal," "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

    a. Submit additional documentation required by Engineer in order to establish equivalency of proposed products. Unless otherwise indicated, evaluation of "or equal" product status is by the Engineer, whose determination is final.

B. Product Selection Procedures:

1. Sole Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

    a. Sole product may be indicated by the phrase "Subject to compliance with requirements, provide the following."

2. Sole Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

    a. Sole manufacturer/source may be indicated by the phrase "Subject to compliance with requirements, provide products by the following."

3. Limited List of Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.

    a. Limited list of products may be indicated by the phrase "Subject to compliance with requirements, provide one of the following."

4. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product that complies with requirements.

    a. Non-limited list of products is indicated by the phrase "Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to, the following."
    b. Provision of an unnamed product is not considered a substitution, if the product complies with requirements.

5. Limited List of Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.

    a. Limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, provide products by one of the following."

6. Non-Limited List of Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer that complies with requirements.

    a. Non-limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, available manufacturers whose products may be incorporated in the Work include, but are not limited to, the following."
    b. Provision of products of an unnamed manufacturer is not considered a substitution, if the product complies with requirements.

7. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications may additionally indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

    a. For approval of products by unnamed manufacturers, comply with requirements in Section 012500 "Substitution Procedures" for substitutions for convenience.

C. Visual Matching Specification: Where Specifications require the phrase "match Engineer's sample," provide a product that complies with requirements and matches Engineer's sample. Engineer's decision will be final on whether a proposed product matches.

    1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 012500 "Substitution Procedures" for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Engineer from manufacturer's full range" or a similar phrase, select a product that complies with requirements. Engineer will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

E. Sustainable Product Selection: Where Specifications require product to meet sustainable product characteristics, select products complying with indicated requirements. Comply with requirements in Division 01 sustainability requirements Section and individual Specification Sections.

    1. Select products for which sustainable design documentation submittals are available from manufacturer.

2.2 COMPARABLE PRODUCTS

A. Conditions for Consideration of Comparable Products: Engineer will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Engineer may return requests without action, except to record noncompliance the following requirements:

1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those of the named basis-of-design product. Significant product qualities include attributes, such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects, with project names and addresses and names and addresses of Engineers and owners, if requested.
5. Samples, if requested.

B. Engineer’s Action on Comparable Products Submittal: If necessary, Engineer will request additional information or documentation for evaluation, as specified in Section 013300 “Submittal Procedures.”

1. Form of Approval of Submittal: As specified in Section 013300 “Submittal Procedures.”
2. Use product specified if Engineer does not issue a decision on use of a comparable product request within time allocated.

C. Submittal Requirements, Two-Step Process: Approval by the Engineer of Contractor's request for use of comparable product is not intended to satisfy other submittal requirements. Comply with specified submittal requirements.

PART 3 - EXECUTION (NOT USED)

END OF SECTION 016000

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SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work, including, but not limited to, the following:

1. Construction layout.
2. Field engineering and surveying.
3. Installation of the Work.
4. Cutting and patching.
5. Coordination of Owner's portion of the Work.
6. Coordination of Owner-installed products.
7. Progress cleaning.
8. Starting and adjusting.
9. Protection of installed construction.

B. Related Requirements:

1. Section 011000 "Summary" for coordination of Owner's separate contracts, and limits on use of Project site.
2. Section 013300 "Submittal Procedures" for submitting surveys.
3. Section 017700 "Closeout Procedures" for submitting final survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, replacing defective work, and final cleaning.
4. Section 024119 "Selective Demolition" for demolition and removal of selected portions of the building.

1.3 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of subsequent work.

1.4 PREINSTALLATION MEETINGS

A. Cutting and Patching Conference: Conduct conference at Project site.

1. Prior to commencing work requiring cutting and patching, review extent of cutting and patching anticipated and examine procedures for ensuring satisfactory result from cutting and patching work. Inform Engineer of scheduled meeting. Require representatives of each entity directly concerned with cutting and patching to attend, including the following:

    a. Contractor's superintendent.
    b. Trade supervisor responsible for cutting operations.
    c. Trade supervisor(s) responsible for patching of each type of substrate.
    d. Mechanical, electrical, and utilities subcontractors' supervisors, to the extent each trade is affected by cutting and patching operations.

2. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For land surveyor.

B. Certified Surveys: Submit two copies signed by land surveyor.

C. Certificates: Submit certificate signed by land surveyor, certifying that location and elevation of improvements comply with requirements.

D. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

1.6 CLOSEOUT SUBMITTALS

A. Final Property Survey: Submit 10 copies showing the Work performed and record survey data.

1.7 QUALITY ASSURANCE

A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

B. Professional Engineer Qualifications: Refer to Section 014000 “Quality Requirements.”

C. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

1. Structural Elements: When cutting and patching structural elements, or when encountering the need for cutting and patching of elements, whose structural function is not known, notify Engineer of locations and details of cutting and await directions from Engineer before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.

2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:

    a. Primary operational systems and equipment.
    b. Plumbing piping systems.
    c. Mechanical systems piping and ducts.
    d. Control systems.
    e. Communication systems.
    f. Conveying systems.
    g. Electrical wiring systems.
    h. Operating systems of special construction.

3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:

    a. Water, moisture, or vapor barriers.
    b. Membranes and flashings.
    c. Exterior curtain-wall construction.
    d. Sprayed fire-resistive material.
    e. Equipment supports.
    f. Piping, ductwork, vessels, and equipment.
    g. Noise- and vibration-control elements and systems.

4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Engineer's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

D. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of specified products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Engineer for the visual and functional performance of in-place materials. Use materials that are not considered hazardous.

C. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, gas service piping, and water-service piping; underground electrical services; and other utilities.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

C. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Engineer in accordance to requirements in Section 013100 "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks and existing conditions. If discrepancies are discovered, notify Engineer promptly.

B. Engage a land surveyor experienced in laying out the Work, using the following accepted surveying practices.

1. Establish benchmarks and control points to set lines and levels of top of spillway, retaining wall, grading changes, and gatehouse.
2. Establish limits of use of Project site.
3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
4. Inform installers of lines and levels to which they must comply.
5. Check the location, level and plumb, of every major element as the Work progresses.
6. Notify Engineer when deviations from required lines and levels exceed allowable tolerances.
7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement,.

D. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Engineer.

3.4 FIELD ENGINEERING

A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

1. Do not change or relocate existing benchmarks or control points without prior written approval of Engineer. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Engineer before proceeding.
2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

C. Final Survey: Engage a land surveyor to prepare a final survey showing significant features for Project including spillway and non-overflow section elevations and location, gatehouse walkway and retaining wall elevations, topo elevations of access road at the gatehouse vicinity and along Creekside.. Include on the survey a certification, signed by land surveyor, that topography and key elevations of Project are accurately positioned as shown on the survey.

1. Show monuments or benchmarks, site improvements and utilities, existing improvements and significant vegetation, and grade contours,.

3.5 INSTALLATION

A. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces, unless otherwise indicated on Drawings.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure satisfactory results as judged by Engineer. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy of type expected for Project.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items onsite and placement in permanent locations.

F. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels.

G. Templates: Obtain and distribute to the parties involved templates for Work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to

confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions with manufacturer.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Engineer.
2. Allow for building movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

I. Joints: Make joints of uniform width. Where joint locations in exposed Work are not indicated, arrange joints for the best visual effect, as judged by Engineer. Fit exposed connections together to form hairline joints.

J. Repair or remove and replace damaged, defective, or nonconforming Work.

1. Comply with Section 017700 "Closeout Procedures" for repairing or removing and replacing defective Work.

3.6 CUTTING AND PATCHING

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

C. Temporary Support: Provide temporary support of Work to be cut.

D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching in accordance with requirements in Section 011000 "Summary."

F. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or

adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.

G. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as practicable, as judged by Engineer. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

    a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    b. Restore damaged pipe covering to its original condition.

3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

    a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch, corner to corner of wall and edge to edge of ceiling. Provide additional coats until patch blends with adjacent surfaces.

4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.

H. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.7 COORDINATION OF OWNER'S PORTION OF THE WORK

A. Site Access: Provide access to Project site for Owner's separate contractors.

B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's separate contactors.

1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's separate contractors' portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.
2. Preinstallation Conferences: Include Owner's separate contractors at preinstallation conferences, covering portions of the Work that are to receive Owner's separate contractors' work. Attend preinstallation conferences conducted by Owner's separate contractors' construction personnel if portions of the Work depend on Owner's construction.

3.8 PROGRESS CLEANING

A. Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 degrees F.
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

    a. Use containers intended for holding waste materials of type to be stored.

4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where Work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways.

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.9 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

3.10 PROTECTION AND REPAIR OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Repair Work previously completed and subsequently damaged during construction period Repair to like-new condition.

C. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.

D. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017300

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.

B. Related Requirements:

1. Section 012900 “Payment Procedures” for requirements for Applications for Payment for Substantial Completion and Final Completion.
2. Section 013233 "Photographic Documentation" for submitting Final Completion construction photographic documentation.
3. Section 017823 "Operation and Maintenance Data" for additional operation and maintenance manual requirements.
4. Section 017839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
5. Section 017900 "Demonstration and Training" for requirements to train the Owner's maintenance personnel to adjust, operate, and maintain products, equipment, and systems.

1.3 DEFINITIONS

A. List of Incomplete Items: Contractor-prepared list of items to be completed or corrected, prepared for the Engineer’s use prior to Engineer’s inspection, to determine if the Work is substantially complete.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of cleaning agent.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.5 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items required by other Sections.

1.7 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: 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.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: 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.
2. Submit closeout submittals specified in other Division 01 Sections, including Project Record Documents, operation and maintenance manuals, and similar final record information.
3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. 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.

    a. Schedule of Maintenance Material Items: 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 Engineer's signature for receipt of submittals.

5. Submit testing, adjusting, and balancing records.
6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Complete startup and testing of systems and equipment.
2. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 017900 "Demonstration and Training."

3. Participate with Owner in conducting inspection and walkthrough.
4. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
5. Complete final cleaning requirements.
6. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: 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. 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.

1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.8 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining Final Completion, complete the following:

1. Submit a final Application for Payment in accordance with Section 012900 "Payment Procedures."
2. Certified List of Incomplete Items: Submit certified copy of Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Engineer. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit Final Completion photographic documentation.

B. Inspection: 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.

1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.9 LIST OF INCOMPLETE ITEMS

A. Organization of List: Include name and identification of each area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Include the following information at the top of each page:

a. Project name.
b. Date.
c. Name of Engineer.
d. Name of Contractor.
e. Page number.

1.10 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: 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.

B. Partial Occupancy: 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.

C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

D. Warranty Electronic File: Provide 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.

1. Submit by email to Engineer.

E. Warranties in Paper Form:

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.

F. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to the water supply, health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

1. 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 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. Clean flooring, removing debris, dirt, and staining: clean according to manufacturer’s recommendations.
h. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials.
i. Remove labels that are not permanent.
j. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
k. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
l. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
m. Leave Project clean and ready for occupancy.

B. Construction Waste Disposal: Comply with waste disposal requirements in Section 015000 "Temporary Facilities and Controls."

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations required by Section 017300 “Execution” before requesting inspection for determination of Substantial Completion.

END OF SECTION 017700

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SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1. Operation and maintenance documentation directory manuals.
2. Emergency manuals.
3. Systems and equipment operation manuals.
4. Systems and equipment maintenance manuals.
5. Product maintenance manuals.

B. Related Requirements:

1. Section 011200 "Multiple Contract Summary" for coordinating operation and maintenance manuals covering the Work of multiple contracts.
2. Section 013300 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.

1.3 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS

A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.

1. Engineer will comment on whether content of operation and maintenance submittals is acceptable.
2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.

B. Format: Submit operation and maintenance manuals in the following format:

1. Submit by email to Engineer. Enable reviewer comments on draft submittals.
2. Submit three paper copies. Engineer will return two copies.

C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Engineer will comment on whether general scope and content of manual are acceptable.

D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Engineer will return copy with comments.

1. Correct or revise each manual to comply with Engineer's comments. Submit copies of each corrected manual within 15 days of receipt of Engineer's comments and prior to commencing demonstration and training.

E. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

1.5 FORMAT OF OPERATION AND MAINTENANCE MANUALS

A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.

1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

B. Manuals, Paper Copy: Submit manuals in the form of hard-copy, bound and labeled volumes.

1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents, and indicate Specification Section number on bottom of spine. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment. Enclose title pages and directories in clear plastic sleeves.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

    a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
    b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

1.6 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

A. Organization of Manuals: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:

1. Title page.
2. Table of contents.
3. Manual contents.

B. Title Page: Include the following information:

1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of Owner.
4. Date of submittal.
5. Name and contact information for Contractor.
6. Name and contact information for Construction Manager.
7. Name and contact information for Engineer.
8. Name and contact information for Commissioning Authority.
9. Names and contact information for major consultants to the Engineer that designed the systems contained in the manuals.
10. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

1.7 SYSTEMS AND EQUIPMENT OPERATION MANUALS

A. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

B. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
2. Performance and design criteria if Contractor has delegated design responsibility.
3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

C. Descriptions: Include the following:

1. Product name and model number. Use designations for products indicated on Contract Documents.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

D. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

E. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

F. Piped Systems: Diagram piping as installed and identify color coding where required for identification.

1.8 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

A. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

B. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranties and bonds as described below.

C. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

D. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:

1. Standard maintenance instructions and bulletins; include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

a. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

E. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training video recording, if available.

F. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

G. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

I. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.

1. Do not use original project record documents as part of maintenance manuals.

1.9 PRODUCT MAINTENANCE MANUALS

A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

C. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 017823

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SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for Project Record Documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.
4. Miscellaneous record submittals.

B. Related Requirements:

1. Section 011200 "Multiple Contract Summary" for coordinating Project Record Documents covering the Work of multiple contracts.
2. Section 012900 “Payment Procedures” for maintaining and exhibiting project record documents as a prerequisite for progress payments.
3. Section 017300 "Execution" for final property survey.
4. Section 017700 "Closeout Procedures" for general closeout procedures.
5. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.3 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit one set(s) of marked-up record prints.
2. Number of Copies: Submit copies of Record Drawings as follows:

a. Initial Submittal:

1) Submit PDF electronic files of scanned record prints and one set(s) of file prints.
2) Engineer will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.

b. Final Submittal:

1) Submit PDF electronic files of scanned Record Prints and three set(s) of file prints.

B. Record Specifications: Submit annotated PDF electronic files of Project's Specifications, including addenda and Contract modifications.

C. Record Product Data: Submit annotated PDF electronic files and directories of each submittal.

1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit annotated PDF electronic files and directories of each submittal.

1.4 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation, where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
b. Accurately record information in an acceptable drawing technique.
c. Record data as soon as possible after obtaining it.
d. Record and check the markup before enclosing concealed installations.
e. Cross-reference record prints to corresponding photographic documentation.

2. Content: Types of items requiring marking include, but are not limited to, the following:

a. Dimensional changes to Drawings.
b. Revisions to details shown on Drawings.
c. Depths of foundations.
d. Locations and depths of underground utilities.
e. Revisions to routing of piping and conduits.
f. Revisions to electrical circuitry.
g. Actual equipment locations.
h. Duct size and routing.
i. Locations of concealed internal utilities.
j. Changes made by Change Order or Work Change Directive.
k. Changes made following Engineer's written orders.
l. Details not on the original Contract Drawings.
m. Field records for variable and concealed conditions.
n. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record prints with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Engineer. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:

1. Format: Annotated PDF electronic file with comment function enabled and final topo survey in .DWG format.
2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
3. Refer instances of uncertainty to Engineer for resolution.
4. Engineer will furnish Contractor with one set of digital data files of the Contract Drawings for use in recording information.

    a. See Section 013100 "Project Management and Coordination" for requirements related to use of Engineer's digital data files.
    b. Engineer will provide data file layer information. Record markups in separate layers.

C. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Format: Annotated PDF electronic file with comment function enabled.
3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
4. Identification: As follows:

    a. Project name.
    b. Date.
    c. Designation "PROJECT RECORD DRAWINGS."
    d. Name of Engineer.
    e. Name of Contractor.

1.5 RECORD PRODUCT DATA

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and revisions to Project Record Documents as they occur; do not wait until end of Project.

B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.

C. Format: Submit Record Product Data as annotated PDF electronic file.

1. Include Record Product Data directory organized by Specification Section number and title, electronically linked to each item of Record Product Data.

1.6 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals as PDF electronic file.

1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

1.7 MAINTENANCE OF RECORD DOCUMENTS

A. Maintenance of Record Documents: Store Record Documents in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Engineer's reference during normal working hours. As a prerequisite for monthly progress payments, exhibit the updated record documents for review by Owner and Engineer for accuracy and completeness.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 017839

SECTION 017900 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:

1. Instruction in operation and maintenance of systems, subsystems, and equipment.
2. Demonstration and training video recordings.

1.3 INFORMATIONAL SUBMITTALS

A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.

B. Qualification Data: For facilitator.

C. Attendance Record: For each training module, submit list of participants and length of instruction time.

D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.4 CLOSEOUT SUBMITTALS

A. Demonstration and Training Video Recordings: Submit two copies within seven days of end of each training module.

1. Identification: On each copy, provide an applied label with the following information:

a. Name of Project.
b. Name and address of videographer.
c. Name of Engineer.

d. Name of Contractor.
e. Date of video recording.

2. Transcript: Prepared in PDF electronic format. Include a cover sheet with same label information as the corresponding video recording and a table of contents with links to corresponding training components. Include name of Project and date of video recording on each page.
3. At completion of training, submit complete training manual(s) for Owner's use prepared in same PDF file format required for operation and maintenance manuals specified in Section 017823 "Operation and Maintenance Data."

1.5 QUALITY ASSURANCE

A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.

B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 014000 "Quality Requirements," experienced in operation and maintenance procedures and training.

C. Videographer Qualifications: A professional videographer who is experienced photographing demonstration and training events similar to those required.

D. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:

1. Inspect and discuss locations and other facilities required for instruction.
2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
3. Review required content of instruction.
4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.6 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data have been reviewed and approved by Engineer.

1.7 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:

    a. System, subsystem, and equipment descriptions.
    b. Performance and design criteria if Contractor is delegated design responsibility.
    c. Operating standards.
    d. Regulatory requirements.
    e. Equipment function.
    f. Operating characteristics.
    g. Limiting conditions.
    h. Performance curves.

2. Documentation: Review the following items in detail:

    a. Emergency manuals.
    b. Systems and equipment operation manuals.
    c. Systems and equipment maintenance manuals.
    d. Product maintenance manuals.
    e. Project Record Documents.
    f. Identification systems.
    g. Warranties and bonds.
    h. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following, as applicable:

    a. Instructions on meaning of warnings, trouble indications, and error messages.
    b. Instructions on stopping.
    c. Shutdown instructions for each type of emergency.
    d. Operating instructions for conditions outside of normal operating limits.
    e. Sequences for electric or electronic systems.
    f. Special operating instructions and procedures.

4. Operations: Include the following, as applicable:

    a. Startup procedures.
    b. Equipment or system break-in procedures.
    c. Routine and normal operating instructions.
    d. Regulation and control procedures.
    e. Control sequences.
    f. Safety procedures.
    g. Instructions on stopping.

h. Normal shutdown instructions.
i. Operating procedures for emergencies.
j. Operating procedures for system, subsystem, or equipment failure.
k. Seasonal and weekend operating instructions.
l. Required sequences for electric or electronic systems.
m. Special operating instructions and procedures.

5. Adjustments: Include the following:

a. Alignments.
b. Checking adjustments.
c. Noise and vibration adjustments.
d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:

a. Diagnostic instructions.
b. Test and inspection procedures.

7. Maintenance: Include the following:

a. Inspection procedures.
b. Types of cleaning agents to be used and methods of cleaning.
c. List of cleaning agents and methods of cleaning detrimental to product.
d. Procedures for routine cleaning.
e. Procedures for preventive maintenance.
f. Procedures for routine maintenance.
g. Instruction on use of special tools.

8. Repairs: Include the following:

a. Diagnosis instructions.
b. Repair instructions.
c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
d. Instructions for identifying parts and components.
e. Review of spare parts needed for operation and maintenance.

1.8 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 017823 "Operation and Maintenance Data."

B. Set up instructional equipment at instruction location.

1.9 INSTRUCTION

A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.

B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

1. Owner will furnish Contractor with names and positions of participants.

C. Scheduling: Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

1. Schedule training with Owner, through Engineer, with at least seven days' advance notice.

D. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.

E. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of an oral performance-based test.

F. Cleanup: Collect used and leftover educational materials and remove from Project site. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

G. Provide training for:
1) Mixers.
2) Trash rack gates.
3) Floating boom.
4) Auto-strainers.
5) Electrical equipment.

H. Training shall be provided based on manufacturer’s recommendations and for a minimum of two 1-hour sessions per each equipment.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 017900

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SECTION 024119 - SELECTIVE DEMOLITION

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. Demolition and removal of selected portions of building or structure.
2. Demolition and removal of selected site elements.
3. Salvage of existing items to be reused or recycled.

B. Related Requirements:

1. Section 011000 "Summary" for restrictions on use of the premises, Owner-occupancy requirements, and phasing requirements.
2. Section 017300 "Execution" for cutting and patching procedures.

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.

B. Remove Hazardous Materials: Isolate and remove hazardous materials from existing construction and properly dispose as required by existing regulations.

C. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse.

D. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.

E. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

F. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

1.4 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.5 PREINSTALLATION MEETINGS

A. Predemolition Conference: Conduct conference at Project site.

1. Inspect and discuss condition of construction to be selectively demolished.
2. Review structural load limitations of existing structure.
3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
5. Review areas where existing construction is to remain and requires protection.

1.6 INFORMATIONAL SUBMITTALS

A. Engineering Survey: Submit engineering survey of condition of building.

B. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control, and for noise control. Indicate proposed locations and construction of barriers.

C. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted and temporary measures are provided for Owner to safely operate the facility.
2. Interruption of utility services. Indicate how long utility services will be interrupted.
3. Coordination for shutoff, capping, and continuation of utility services.

D. Predemolition Photographs or Video: Show existing conditions of adjoining construction, including finish surfaces, that might be misconstrued as damage caused by demolition operations. Comply with Section 013233 "Photographic Documentation." Submit before Work begins.

E. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition.

1.7 FIELD CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. Notify Engineer of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.

1. If suspected hazardous materials are encountered, do not disturb; immediately notify Engineer and Owner.

E. Storage or sale of removed items or materials on-site is not permitted.

F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1.8 COORDINATION

A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.

C. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.

1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

D. Steel Tendons: Locate tensioned steel tendons and include recommendations for de-tensioning.

E. Survey of Existing Conditions: Record existing conditions by use of measured drawings, preconstruction photographs or video, and templates.

1. Comply with requirements specified in Section 013233 "Photographic Documentation."
2. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.
3. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.

1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.

    a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
    b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
    c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
    d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
    e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
    f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
    g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

3.3 PROTECTION

A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
4. Cover and protect furniture, furnishings, and equipment that have not been removed.
5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."

B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of selective demolition.

C. Remove temporary barricades and protections where hazards no longer exist.

3.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
5. Maintain fire watch during and for at least 1 hour after flame-cutting operations.
6. Maintain adequate ventilation when using cutting torches.
7. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
8. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.

9. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
10. Dispose of demolished items and materials promptly. Comply with requirements in Section 017419 "Construction Waste Management and Disposal."

B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with access road, walkways, and Owner’s operation of the gatehouse.

C. Removed and Salvaged Items:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

D. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Engineer, items may be removed to a suitable, protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete: Demolish in small sections. Using power-driven saw, cut concrete to a depth of at least 1-inch at junctures with construction to remain. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly trim openings to dimensions indicated.

B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.

C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, and then break up and remove.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction and

recycle or dispose of them according to Section 017419 "Construction Waste Management and Disposal."

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

B. Burning: Do not burn demolished materials.

3.7 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

3.8 SELECTIVE DEMOLITION SCHEDULE

A. Remove: Outer concrete of spillway, training walls, non-overflow sections, and gatehouse walls and elevated slab as shown on Drawings .

B. Remove: Handrailings and existing earth retaining supports.

C. Remove and Salvage: Trash racks.

D. Existing to Remain: As shown on Drawings.

E. Dismantle: n/a.

END OF SECTION 024119

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SECTION 030100.61 - CONCRETE REPAIRS

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 concrete repair consisting of the following:

1. Removal of existing concrete.
2. Bonding new concrete.
3. Repair mortar.
4. Crack and leaking construction joint repair (polyurethane chemical grout injection).
5. Crack repair (epoxy adhesive injection).
6. Spalled, deteriorated, and disintegrated concrete repair.
7. Underwater concrete repair.
8. Cementitious slurry waterproofing.
9. Sealing of joints between existing and new concrete.

B. Related Requirements:

1. Section 033000 "Cast-in-Place Concrete” for ground and elevated cast concrete.
2. Section 030130.71 "Modifications to Existing Concrete” for modifying existing concrete.
3. Section 050519 “Post-Installed Anchors and Reinforcing Bars” for testing of drilled in injection adhesive anchor system.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Including manufacturers printed performance criteria, product life, working time after mixing, surface preparation and application requirements and procedures, curing, and volatile organic compound data.
2. Storage requirements including temperature, humidity, and ventilation.
3. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for:

a. Polyurethane chemical grout.
b. Crack repair epoxy adhesive.
c. Epoxy bonding agent.
d. Repair mortars.
e. Epoxy adhesive paste.
f. Sealant.

4. Include rated capacities, operating characteristics, and accessories.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and manufacturer.

B. Product Certificates: Notarized certificate for each repair material stating that product meets requirements of this Section and has manufacturer's current printed literature on product package or container.

C. System and Material Certificates:

1. Certify that materials specified herein are made for use in continuous immersion in contact with potable water and is certified by NSF/ANSI Standard 61.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company with a minimum of 10 years' documented experience and having an ongoing program to train, certify, and technically support installers.

B. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

C. Contractor's Supervisor: Having attended a training program sponsored by manufacturer supplying project approved materials.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery of Materials: Deliver materials in original, new, and unopened packages and containers clearly labeled with information referenced in Division 01 and the following information:

1. Manufacturer's stock number and batch number.
2. Date of manufacture.
3. Expiration or use-by date.

B. Storage of Materials:

1. Store only approved materials on site.

1.7 FIELD CONDITIONS

A. Conform to temperatures and other environmental factors as stated within manufacturer's published installation instructions for storage, substrate conditions, application, curing, and other procedures required by work of this Section.

1.8 WARRANTY

A. Manufacturer's Warranty: Manufacturer and Installer agree to repair or replace components of that fail(s) in materials or workmanship within specified warranty period.

1. Warranty Period: 5 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SYSTEM PERFORMANCE

A. Use materials in compliance with state and local regulations.

B. Use materials where completed system is in compliance with ANSI/NSF 61 requirements for potable water and after 30 days is non-toxic and free of taste and odor.

2.2 MATERIALS

A. Polyurethane Chemical Grout:

1. Single component, expanding, moisture reactive polyurethane grout designed to seal cracks and open joints in concrete that is certified by ANSI/NSF 61 for use in potable water applications. Provide cured chemical grout that forms a compressed closed cell urethane foam that completely fills the crack or joint.
2. Accelerator: May be used if recommended by approved polyurethane chemical grout manufacturer.
3. Provide injection packers for application of polyurethane chemical grout.
4. Acceptable Manufacturers and Products: Provide one of the following or equal:

a. BASF Corporation: Concresive 1210 IUG.
b. Sika Corporation: SikaFix HH.
c. W. R. Grace & Co.: HA Multigel NF, by De Neef.

B. Crack Repair Epoxy Adhesive:

1. ASTM C 881/ C 881M, Type V, Grade 2, Class C; two-component, solvent-free, moisture insensitive epoxy resin material suitable for repairing cracks in concrete by injection or gravity feed; formulated for specific size of opening or crack being injected.

a. When using crack repair epoxy adhesive in structures containing potable water or water to be treated for potable use the epoxy paste used for the surface seal shall be certified by ANSI/NSF 61 for use in potable water applications.

2. Acceptable Manufacturers and Products: Provide one of the following or equal:

a. Euclid Chemical Company: EUCO #452.
b. Five Star Products Inc.: Bonding Adhesive.
c. Sika Corporation: Sikadur 35 Hi-Mod LV.

C. Epoxy Bonding Agent:

1. Two-component, solvent-free, asbestos-free moisture insensitive epoxy resin material used to bind plastic concrete to hardened concrete and complying with requirements of ASTM C 881, Type V, Grade 2, Class C.
2. Acceptable Manufacturers and Products: Provide one of the following or equal:

    a. Euclid Chemical Company: Dural 452 MV.
    b. Sika Corporation: Sikadur 32, Hi-Mod.
    c. Simpson Strong-Tie Company Inc.: FX-762.

D. Horizontal Repair Mortars - Polymer-Modified Portland Cement Mortar:

1. Two-component polymer-modified, portland cement-based mortar used to repair horizontal surfaces with a migrating corrosion inhibitor and having a minimum compressive strength of 7,000 psi at 28 days tested in accordance with ASTM C 881 or ASTM C 109.

    a. Provide adhesive formulation that is certified by ANSI/NSF 61 for use in potable water applications.

2. Acceptable Manufacturers and Products: Provide one of the following or equal:

    a. BASF Corporation: MasterEmaco T 310CI.
    b. Euclid Chemical Company: DuralTop Flowable Mortar.
    c. Sika Corporation: SikaTop 122 Plus.

E. Vertical and Overhead Repair Mortars - Polymer-Modified Portland Cement Mortar:

1. Two-component polymer-modified, portland cement based, fast setting, non-sag mortar used to repair vertical and overhead surfaces with a migrating corrosion inhibitor and having a minimum compressive strength of 5,000 psi at 28 days tested in accordance with ASTM C 881 or ASTM C109.

    a. Provide adhesive formulation that is certified by ANSI/NSF 61 for use in potable water applications.

2. Acceptable Manufacturers and Products: Provide one of the following or equal:

    a. Euclid Chemical Company: DuralTop Gel.
    b. Sika Corporation: SikaTop 123 Plus.
    c. US MIX Company: US SPEC H2.

F. Overlay Repair Mortar – Cementitious Structural Repair Mortar.

1. One-component cementitious, fiber reinforced repair mortar that can be low pressure spray applied to vertical surfaces or trowel applied. Provide repair mortar with minimum compressive strength of 7,000 psi at 28 days tested in accordance with ASTM C 881 or ASTM C 109.

a. Provide adhesive formulation that is certified by ANSI/NSF 61 for use in potable water applications.

2. Acceptable Manufacturers and Products: Provide one of the following or equal:

a. Sika Corporation: SikaRepair-224.
b. Euclid Chemical Company: Tamms Structural Mortar.
c. BASF Corporation: MasterEmaco S 488Cl.

G. Underwater Repair Mortar – Cementitious Structural Repair Mortar.

1. One-component cementitious repair mortar that can be hand applied underwater without segregating, bleeding, or washout. Provide repair mortar with minimum compressive strength of 6,000 psi at 28 days tested in accordance with ASTM C 881 or ASTM C 109, and an underwater bond strength of 1,000 psi at 14 days tested in accordance with ASTM C 882.
2. Acceptable Manufacturers and Products: Provide one of the following or equal:

a. SpecChem: RepCon UW Mortar.
b. Euclid Chemical Company: Speed Crete Blue Line.

H. Waterproofing and Protective Slurry Mortar.

1. Two-component, polymer-modified, cementitious protective and waterproofing slurry mortar for applications to concrete surfaces.

a. Provide adhesive formulation that is certified by ANSI/NSF 61 for use in potable water applications.

2. Acceptable Manufacturers and Products: Provide one of the following or equal:

a. Sika Corporation: SikaTop Seal 107.

I. Epoxy Paste Adhesive:

1. Two-component, solvent-free, moisture insensitive epoxy resin material used as an adhesive for mating surfaces where the glue line is 1/8 inchor less and to bond fresh, plastic concrete to clean, sound hardened concrete and complying with requirements of ASTM C 881, Type IV, Grade 3, Class C.

a. Provide adhesive formulation that is certified by ANSI/NSF 61 for use in potable water applications.

2. Test Data: Base test upon material and curing condition of 73 plus/minus two degrees F and 50 plus/minus five percent Relative Humidity.
3. Acceptable Manufacturers and Products: Provide one of the following or equal:

a. Sika Corporation: Sikadur 31 Hi-Mod Gel.
b. Euclid Chemical Company: Dural 452 Gel.
c. BASF Corporation: MasterEmaco ADH 1420.

J. Sealant:

1. Comply with ASTM C 920 for following conditions:

a. Sealant for Joints in Horizontal Surfaces: Type S or M, Grade P or NS, Class 25.
b. Sealant for Joints in Sloping and Vertical Surfaces: Type S or M, Grade NS, Class 25.

2. Provide sealants made for use in continuous immersion in contact with potable water and certified by NSF/ANSI Standard 61. Provide gray colored sealants unless otherwise indicated, specified, or approved.

2.3 ACCESSORY MATERIALS

A. Backer Rods:

1. Open Cell Backer Rod: Extruded, open cell polyurethane foam. Diameter shall not be less than 200 percent of the joint width dimension.
2. Closed Cell Backer Rod: Extruded, non-staining, resilient closed cell polyethylene foam, compatible with sealant. Diameter shall not be less than 25 percent greater than the joint width. Sealant shall not adhere to backer rod.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, installation tolerances and other conditions affecting performance of the Work.

B. Examine products before installation. Reject products or materials that are wet, moisture damaged, or mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Manufacturer’s Representative: Be present for first three days of installation to give instructions to installation crew and then make periodic site visits to ensure products are being installed in accordance with published instructions.

B. When removing materials or portions of existing structures and when making openings in existing structures, erect barriers, shoring and bracing, and other protective devices to prevent damage to structures beyond the limits of new work, protect personnel, control dust, and prevent damage by falling or flying debris. Comply with requirements of Section 015000 “Temporary Facilities and Controls.”

3.3 GENERAL

A. Store, mix, apply, and cure materials for each repair system in strict compliance with manufacturer's installation instructions. Make repairs necessary, without additional compensation, so completed work complies with Contract Document work scopes.

B. Where concrete is repaired near an expansion joint or control joint, preserve isolation between components on either side of the joint.

C. Identify reinforcing locations prior to drilling using reinforcing bar locators so that drill hole locations may be adjusted to avoid reinforcing interference. When drilling holes for dowels and bolts, stop drilling if reinforcing is encountered. Relocate hole to avoid reinforcing as approved by the Engineer. Do not cut reinforcing without prior approval by the Engineer.

D. Concrete designated to be removed to specific limits indicated or directed by the Engineer, shall be done by saw cutting (1 inch deep) at limits of removal followed by line drilling, chipping, sandblasting, or airblasting, as appropriate in areas where deteriorated, damaged, or unsound concrete is to be removed. Remove concrete such that surrounding concrete and existing reinforcing to be left in place and existing in place equipment are not damaged.

1. Perform full thickness saw-cutting at limits of concrete to be removed only if indicated, specified, or after obtaining written approval from the Engineer.

E. Saw-cut edges straight for vertically and horizontally repair areas. Make intersecting cuts perpendicular to each other.

F. Stop saw cutting if reinforcing is encountered. Do not cut reinforcing without prior approval by the Engineer. Identify reinforcing locations within one foot of saw cut locations in any direction prior to saw cutting using reinforcing bar locators.

G. Clean concrete surfaces of efflorescence, deteriorated concrete, dirt, laitance, and existing repair materials such as liners, adhesives, and epoxies. Remove foreign matter and deleterious films by sandblasting, airblasting, scarifying or other mechanical means to sound original concrete.

H. Thoroughly clean repair area with oil-free compressed air, then install bonding agent. Place repair materials within open time of epoxy bonding agent.

I. Consolidate repair material, completely filling all portions of area to be filled.

J. Bring finished repair surfaces into alignment with adjacent existing surfaces to provide a uniform, flush, and even surface. Match repair surfaces to adjacent existing surfaces in texture, including any coatings or surface treatments that had been provided for existing surface.

K. Remove excess material from faces of materials being repaired and adjacent walls, floors, and slabs. Leave exposed faces of surface materials clean and ready to accept subsequent work.

L. Repair or replace concrete indicated or specified to be left in place, but that is damaged because of the work of this Section. Perform work by approved means and methods.

3.4 CRACK AND CONSTRUCTION JOINT REPAIR (POLYURETHANE CHEMICAL GROUT INJECTION REPAIR TYPE "A")

A. Apply polyurethane chemical grout to leaking cracks, joints, and voids in existing concrete.

B. Install polyurethane chemical grout through drilled-in injection ports installed as recommended by polyurethane chemical grout manufacturer. Install and cure polyurethane repair materials in accordance with manufacturer's requirements.

C. Remove injection ports and seal with grout. Leave repair area flush with surrounding concrete surfaces.

3.5 CRACK REPAIR (EPOXY ADHESIVE INJECTION REPAIR TYPE "B")

A. Repair cracks on horizontal surfaces by gravity feeding crack repair epoxy adhesive into cracks. Pressure inject cracks less than 1/16 inch in thickness.

B. Repair cracks on vertical surfaces by pressure injecting crack repair epoxy adhesive through injection ports sealed to surface with crack repair epoxy adhesive.

C. Clean cracks by sandblasting, water jet, or high-pressure oil free air to remove loose matter, dirt, laitance, oil, grease or other contaminants. Prior to injection of the crack apply a surface seal of epoxy paste to crack faces.

1. Establish openings in surface seal (injection ports) along the crack. Do not allow distance between injection ports to be greater than slab or wall thickness.
2. Begin injection at first port at one end of the crack. For vertical or inclined surfaces begin injection at lowest point of the crack. Continue injection at first port until injected epoxy begins to flow out of second port in line.
3. Plug first port and continue injection from second port. Inject entire crack following same sequence. Continue injecting crack and do not stop until crack is completely injected.
4. After injected epoxy has cured, remove or cut off ports and grind flush with adjacent concrete surface. Do not allow indentations or protrusions caused by port placements.

3.6 SPALLED/DETERIORATED CONCRETE REPAIR (REPAIRS TYPE "C", "E", AND "F")

A. Only use polymer-modified cementitious repair mortar for surface repair of spalled or deteriorated concrete.

B. Comply with manufacturer's recommendations for concrete removal, surface preparation, mixing, application, lift thickness, finishing, moist curing, and form removal.

C. Saw cut perimeter of deteriorated concrete to form a rectangle with straight edges to depth indicated. Remove fractured, loose, broken, softened, and deteriorated concrete by abrasive blasting, chipping, or other appropriate means to sound concrete. Chip concrete substrate to obtain a surface profile with a new fractured aggregate surface.

D. Remove dirt, oil, grease, and other bond inhibiting materials from surface by dry mechanical means such as sand blasting, chipping, or wire brushing. Thoroughly clean surface of loose or

weakened material and dust by dry mechanical means such as oil-free air blast. Follow recommendations of repair mortar manufacturer for additional surface preparation.

E. Do not damage reinforcing steel that is to be incorporated into new concrete. Where reinforcing steel with active corrosion is encountered, use following procedure:

1. Use dry mechanical means to remove loose material, contaminants and rust from exposed reinforcing steel.
2. When more than half of reinforcing bar diameter is exposed, chip out behind reinforcing steel, 1 inch minimum.
3. Make distance chipped behind a reinforcing bar equal to or exceed minimum placement depth of material being used, 1 inch minimum.
4. If existing reinforcing steel has lost more than 15 percent of its original cross-sectional area, splice in new reinforcing as shown on Drawings.

F. Repair cracks encountered in substrate area of spalled or deteriorated concrete repair as specified directed by the Engineer.

G. Repair Mortar Placement:

1. Follow procedures recommended by manufacturer for mixing and placement of repair mortar.
2. After initial mixing of repair mortar, do not add water to change the consistency, should the mix begin to stiffen.
3. Saturate substrate surface dry (SSD) with no standing water during application.
4. Apply scrub coat to substrate, filling all pores and voids.
5. While scrub coat is still plastic, apply polymer-modified repair mortar. Place repair mortar to an even, uniform plane to restore the member to its original surface.
6. For applications greater than 1 inch in depth, apply repair mortar in lifts. Score exposed surface of each lift to produce a roughened surface before applying the next lift. Allow lift to reach final set before proceeding with subsequent lift.

H. Finishing:

1. Apply repair mortar with a smooth, steel trowel finish, unless otherwise noted.
2. Have no sharp edges when repair is completed. Make exterior corners, such as at penetrations, with a 1 inch radius. Make interior corners square.

I. Curing: Perform as recommended by repair mortar manufacturer, except that cure period shall be at least 24 hours and done by means of a continuous fog spray or moist cure with wet burlap.

J. Repairs Requiring Formwork:

1. Remove fractured, loose, deteriorated, and unsound concrete by bush hammering, chipping, high pressure water blast, or other appropriate dry mechanical means. Remove dirt, oil, grease, and other bond inhibiting materials from concrete surface.
2. Treat existing anchor bolts, exposed reinforcing steel, and reinforcing to be incorporated into repair mortar, as specified below.
3. Construct leakproof forms as required by project conditions. Line or coat forms with release agents recommended by repair mortar manufacturer. Provide forms of adequate

strength, securely anchored in place and shored to resist the forces imposed by repair mortar and its placement.

4. Saturate existing concrete surfaces with water, with no standing water during application. Prime concrete surface with a scrub coat of repair mortar. Restore area to original limits or as shown using repair mortar before scrub coat dries. Extend repair mortar with 3/8 inch aggregate only as recommended by manufacturer of repair mortar.

3.7 OVERLAY CONCRETE REPAIR MORTAR (REPAIR TYPE “x”)

A. Only use cementitious structural repair mortar for surface repair of spalled or deteriorated concrete.

B. Comply with manufacturer's recommendations for surface preparation, mixing, application, lift thickness, finishing, and moist curing.

C. Remove dirt, oil, grease, and other bond inhibiting materials from surface by dry mechanical means such as sand blasting, chipping, or wire brushing. Thoroughly clean surface of loose or weakened material and dust by dry mechanical means such as oil-free air blast. Follow recommendations of repair mortar manufacturer for additional surface preparation.

D. Do not damage reinforcing steel that is to be incorporated into new concrete.

E. Repair Mortar Placement:

1. Follow procedures recommended by manufacturer for mixing and placement of repair mortar.
2. After initial mixing of repair mortar, do not add water to change the consistency, should the mix begin to stiffen.
3. Saturate substrate surface dry (SSD) with no standing water during application.
4. For applications greater than 2 inches in depth, apply repair mortar in lifts. Score exposed surface of each lift to produce a roughened surface before applying the next lift. Allow lift to reach final set before proceeding with subsequent lift.

3.8 CONCRETE COATING REPAIR (REPAIR TYPE “x”)

A. Only use polymer-modified, cementitious protective and waterproofing slurry mortar for applications to concrete surfaces.

B. Comply with manufacturer’s recommendations for surface preparation, mixing, application, application thickness, finishing, and curing.

C. Remove damaged and deteriorated coating as directed by Engineer and install new concrete or repair materials as shown on the Drawings. Scarify concrete materials, either while still wet or by abrasive blasting cured concrete, to a concrete surface profile (CSP) 3. Thoroughly clean surface of loose or weakened material and dust by dry mechanical means such as oil-free air blast. Follow recommendations of manufacturer for additional surface preparation.

D. Repair cracks encountered in substrate area of the coating repair as specified and directed by the Engineer.

E. Slurry Mortar Placement:

1. Follow procedures recommended by manufacturer for mixing and placement of slurry mortar.

a. Apply two coats at manufacturer's recommended thickness for waterproofing.
b. Slurry mortar can be applied by trowel or spray equipment as recommended by manufacturer.
c. Finishing: Finish as recommended by slurry mortar manufacturer, except provide non-slip at walking surfaces.

F. Curing: Perform as recommended by slurry mortar manufacturer.

3.9 UNDERWATER CONCRETE REPAIR (REPAIR TYPE "x")

A. Only use repair mortar suitable for underwater applications to concrete surfaces.

B. Comply with manufacturer's recommendations for surface preparation, mixing, application, application thickness, finishing, and curing.

C. Remove fractured, loose, broken, softened, and deteriorated concrete by underwater high pressure water jetting or other appropriate means to sound concrete. Concrete substrate to obtain a concrete surface profile (CSP) 6.

D. Repair cracks encountered in substrate area of the coating repair as specified and directed by the Engineer.

E. Repair Mortar Placement:

1. Follow procedures recommended by manufacturer for mixing and placement of repair mortar.
2. After initial mixing of repair mortar, do not add water to change the consistency, should the mix begin to stiffen.
3. Apply repair mortar underwater. Place repair mortar to an even, uniform plane to restore the member to its original surface.
4. For applications greater than 3 inch in depth, apply repair mortar in lifts. Score exposed surface of each lift to produce a roughened surface before applying the next lift. Allow lift to reach final set before proceeding with subsequent lift.

3.10 INSTALLATION - SEALANTS

A. Install sealants in clean dry recesses free of frost, oil, grease, form release agent, loose material, laitance, dirt, dust, and other deleterious materials that will impair bond.

B. Apply sealant conforming to manufacturer's recommendations including concrete cure, temperature, moisture, mixing, primer, primer cure time, joint and recess preparation, tooling, and curing.

C. Apply masking tape to each side of joint prior to sealant installation. Remove masking tape afterwards, along with any spillage to leave a sealant installation with neat straight edges.

3.11 FIELD QUALITY CONTROL

A. At completion of repairs, Contractor, Engineer, and material Installer shall meet to inspect installed work. Repair leaking joints, cracks, or voids in accordance with manufacturer's instructions. At completion of various repairs, Contractor, Engineer, and Installer shall reinspect repaired problem areas. Make subsequent repairs until work is in conformance with Contract Documents.

B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

C. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.

D. Crack Repair Epoxy Adhesive: The Engineer may take random 2 inches diameter core samples for visual inspection and strength testing to verify adequacy of repairs.

END OF SECTION 030100.61

SECTION 030130.71 - MODIFICATIONS TO EXISTING CONCRETE

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. Cutting, removing, or modifying parts of existing concrete structures or appurtenances.
2. Addressing existing steel reinforcing bars encountered.
3. Bonding new concrete or grout to existing concrete.

B. Related Requirements:

1. Section 030100.61 “Concrete Repairs” for repair materials and related repair work.
2. Section 033000 “Cast-In-Place Concrete” for concrete materials, and related work.
3. Section 050519 “Post-Installed Anchors and Reinforcing Bars” for anchors and related accessories.
4. Section 055000 “Metals Fabrications” for various metals and related fabrications.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to modifications to existing concrete including, but not limited to, the following:

    a. Verify specialist's personnel, equipment, and facilities needed to make progress and avoid delays.
    b. Materials, material application, sequencing, tolerances, and required clearances.
    c. Quality-control program.
    d. Coordination with building occupants.

2. Attendees:

    a. Owner.
    b. Resident Engineer.
    c. Contractor.
    d. Engineer.
    e. Manufacturer Representative.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Submit manufacturer's technical literature and installation instructions that include:

a. Current printed recommendations and product data sheets for products including performance criteria, product life, working time after mixing, surface preparation and application requirements and procedures, curing, volatile organic compound data, and safety requirements.
b. Storage requirements including temperature, humidity, and ventilation.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: Documentation of the qualifications for Contractor qualifications, Manufacturer's qualifications, and Contractor's supervisor as specified in PART 1 “Quality Assurance” Article.

B. Material Certificates: For each material provided.

1.6 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Have a minimum of ten years’ experience within last 10 years in manufacture and use of specified products and have an ongoing program of training, certifying, and technically supporting Contractor's personnel.

B. Contractor Qualifications: Complete a program of instruction in application of approved manufacturer's material and provide certification from manufacturer attesting to their training and status as an approved applicator.

C. Contractor's Supervisor: Have attended a training program sponsored by manufacturer supplying materials approved for this project.

D. Manufacturer’s Representative: A representative of product manufacturer who will visit the site for first three days of installation to give instructions to installation crew. Make periodic site visits to ensure products being installed are in accordance with published instructions.

E. Be solely responsible for workmanship and quality of modification work. Inspections by the manufacturer, the Engineer, or others do not limit Contractor's responsibility for work quality.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials in original, new and unopened packages and containers clearly labeled with the following information:

1. Manufacturer's name.
2. Name or title of material, and other product identification.
3. Manufacturer's stock number and batch number.
4. Date of manufacture.

5. Instructions.
6. Expiration date.

B. Storage: Store products in accordance with manufacturers' published recommendations and the following supplementary requirements:

1. Store only approved materials on site and in locations as directed.
2. Keep area clean and accessible.
3. Comply with health and fire regulations including those of the Occupational Safety and Health Administration (OSHA).

C. Handling: Handle products carefully and in accordance with manufacturers' published recommendations and the following supplementary requirements:

1. Prevent inclusion of foreign materials.
2. Do not open containers or mix components until necessary preparatory work has been completed and application work will start immediately.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with this Section and applicable state and local regulations.

B. Refer to Section 030100.61 “Concrete Repairs.”

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions under which modification work is to be installed, and notify Engineer in writing of conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to Engineer.

B. Examine substrates and conditions, with Installer present, for compliance with requirements for maximum moisture content, installation tolerances and other conditions affecting performance of the Work.

3.2 INSTALLATION - GENERAL

A. Do not shift, cut, remove, or otherwise alter existing structure or concrete until authorization is given by the Engineer.

B. When removing materials from or making openings in existing structures, take precautions and erect necessary barriers, shoring and bracing, and other protective devices. Prevent damage to

structures beyond limits necessary for new work, protect personnel, control dust, and to prevent damage to structures or contents by falling or flying debris.

C. Unless otherwise permitted, shown, or specified, cut existing concrete by line drilling.

D. Construction Tolerances: Comply with requirements specified elsewhere in Division 03, except as modified herein, and elsewhere in Contract Documents.

E. Make locations and phases of the work available for access by the Engineer or other personnel designated by the Engineer. Provide ventilation and safe access to the work.

F. Cut, remove, or otherwise modify parts of existing structures or appurtenances as indicated, specified, or as necessary to complete the work. Finishes, joints, reinforcements, sealants, and similar materials are specified in their respective Sections. Install work complying with requirements of this Section and as indicated.

G. Locations, details, and limits of modifications are indicated on Drawings. Comply with requirements of this Section and as indicated on Drawings.

H. Examine areas and conditions under which modification work is to be installed, and notify Engineer in writing of conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to Engineer.

I. Store, mix, apply, and cure materials in strict compliance with manufacturer's instructions.

J. Where concrete is to be modified near an expansion joint or control joint, preserve isolation between components on either side of the joint.

K. When drilling holes for dowels and bolts or when coring holes for slab or wall penetrations, stop drilling if reinforcing is encountered. Do not cut reinforcing without prior approval by the Engineer. Relocate hole to avoid reinforcing as approved by the Engineer.

1. Identify reinforcing locations prior to drilling using reinforcing bar locators so that drill hole locations may be adjusted to avoid reinforcing interference.

L. Saw-cut edges for modification areas vertically and horizontally straight. Make intersecting cuts perpendicular to each other.

M. Stop saw cutting if reinforcing is encountered. Do not cut reinforcing without prior approval by the Engineer. Identify reinforcing locations within 1 foot of saw cut locations in any direction prior to saw cutting using reinforcing bar locators.

N. Clean concrete surfaces of efflorescence, deteriorated concrete, dirt, laitance, and existing repair materials such as liners, adhesives, and epoxies. Remove foreign matter and deleterious films by sandblasting, oil-free air-blasting, scarifying, or other mechanical means to sound original concrete.

O. Consolidate modification materials, completely filling portions of the area to be filled.

P. Bring finished surfaces into alignment with adjacent existing surfaces to provide a uniform, flush, and even surface. Match repair surfaces to adjacent existing surfaces in texture including any coatings or surface treatments that had been provided for the existing structure.

Q. Repair or replace concrete indicated or specified to be left in place that is damaged because of the work by approved means without additional compensation.

3.3 CONCRETE REMOVAL

A. When removing materials from or making openings in existing structures, take precautions and erect necessary barriers, shoring and bracing, and other protective devices. Prevent damage to structures beyond limits necessary for new work, protect personnel, control dust, and to prevent damage to structures or contents by falling or flying debris.

B. Concrete designated to be removed to specific limits indicated or directed by the Engineer, perform saw cutting 1 inch deep at limits of removal followed by line drilling and chipping, sandblasting, or oil-free airblasting, as appropriate in the areas where concrete is to be taken out. Remove concrete such that surrounding concrete and existing reinforcing to be left in place and existing in place equipment are not damaged.

1. Perform full thickness saw-cutting at limits of concrete to be removed only if indicated, herein specified, or after obtaining written approval from the Engineer.

C. Where existing reinforcing is exposed due to saw cutting or line drilling and no new material is to be placed on cut surface, apply a 1/4 inch thick surface treatment of epoxy paste to entire cut surface.

D. Where joint between new concrete or grout and existing concrete will be exposed in finished work, remove concrete edge by making a 1 inch deep saw cut on each exposed surface of existing concrete or as indicated.

3.4 CONNECTION SURFACE PREPARATION

A. Concrete areas requiring patching, repairs, or modifications, prepare connection surfaces as specified, as indicated, or as directed by the Engineer.

B. Remove loose and deteriorated materials, efflorescence, existing repair materials, dirt, oil, grease, and other bond inhibiting materials from concrete surface by dry mechanical means such as sandblasting, chipping, wire brushing, or other mechanical means as approved by the Engineer.

1. Uniformly roughen concrete surface to approximately 1/4 inch amplitude with pointed chipping tools. Thoroughly clean surface of loose or weakened material by sandblasting or air-blasting.
2. Irregular voids or surface stones need not be removed if they are sound, free of laitance, and firmly embedded into parent concrete.

C. If reinforcing steel is exposed, mechanically clean to remove loose material, contaminants, and rust as approved by the Engineer. If half of reinforcing steel diameter is exposed, chip out

behind the steel. Chip distance behind the steel to a minimum of 1 inch. Do not damage reinforcing to be incorporated in new concrete or repair mortar during removal operation.

D. Clean reinforcing from existing removed or deteriorated concrete that is shown to be incorporated in new concrete or repair mortar by mechanical means to remove loose material and products of corrosion before proceeding. Cut, bend, or lap to new reinforcing as indicated and provide with 1 inch minimum clear cover.

E. Use following specific concrete surface preparation Methods where indicated, specified, or as directed by the Engineer:

1. Method A:

    a. Uniformly roughen concrete surface at connection to expose a fresh face 1/4 inch of a full amplitude, distance between high and low points and side to side.
    b. Thoroughly clean and saturate surfaces with water; prevent standing water during application.
    c. Scrub cement paste (cement and water mixed to consistency of a thick paste) into substrate filling concrete pores and voids.
    d. Place new concrete against scrub coat of cement paste while cement paste is still plastic.

2. Method B:

    a. Roughen and clean existing concrete surface at connection.
    b. Saturate existing concrete substrate to saturated surface dry (SSD) with no standing water during application
    c. Place new concrete or grout mixture per Section 033000 “Cast-in-Place Concrete.”

3. Method C:

    a. Use adhesive anchoring system, as specified in Section 050519 “Post-Installed Anchors”, for installation of reinforcing steel dowels into existing concrete where indicated.
    b. Perform installation complying strictly with manufacturer's recommendations, including drill bit diameter, surface preparation, injection, and installation of dowels.
    c. Drill concrete to embedded deformed bars to indicated depths.
    d. Use oil-free compressed air to blast out loose particles and dust from drilled holes. Clean dowels to be free of dirt, oil, grease, ice, or other deleterious material that would reduce bond.
    e. Concrete in existing structures is considered to have a strength of 3,000 psi.

4. Method D:

    a. Combination of Method B and Method C.

3.5 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect completed installations.

1. Perform inspection with Contractor, material installer, and the Engineer present. Give minimum of 72 hours' notice prior to time of inspection.
2. Repair modifications not in conformance with Contract Documents in accordance with manufacturer's instructions at no additional cost to Owner.
3. At completion of non-conforming repairs, Contractor, material installer, and the Engineer shall reinspect the repaired problem areas.
4. Prepare inspection reports, identifying acceptable work, type and locations of unacceptable work, and actions taken to correct unacceptable work.
5. Complete field quality control work without additional compensation.

END OF SECTION 030130.71

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SECTION 033000 - CAST-IN-PLACE CONCRETE

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 cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.

B. Related Requirements:

1. Section 030100.61 "Concrete Repairs" repairs to existing concrete structures.

2. Section 030130.71 “Modifications to existing Concrete” for modifying existing concrete structures.
3. Section 050519 "Post Installed Anchors and Reinforcing Bars” for anchoring new concrete to existing concrete.

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.

B. W/C Ratio: The ratio by weight of water to cementitious materials.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:

a. Contractor's superintendent.
b. Independent testing agency responsible for concrete design mixtures.
c. Ready-mix concrete manufacturer.
d. Concrete Subcontractor.

2. Review special inspection and testing, and Contractor’s inspecting agency procedures for field quality control; concrete finishes and finishing; cold- and hot-weather concreting

procedures; curing procedures, construction, contraction and isolation joints, and joint-filler strips; forms and form removal limitations; shoring and reshoring procedures; anchor rod and anchorage device installation tolerances; steel reinforcement installation, concrete repair procedures, and concrete protection.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Design Mixtures: For each formulation of concrete proposed for use, submit constituent quantities per cubic yard (cubic meter), water cementitious ratio, air content, concrete slump, type and manufacturer of cement and type and manufacturer of fly ash or ground granulated blast furnace slag. For each concrete mixture, submit alternate design mixtures when characteristics of materials change, source of cement or aggregate change or test results do not meet specification requirements, or other circumstances warrant adjustments.

1. Indicate amounts of mixing water to be withheld for later addition at Project site.

C. Steel Reinforcement Shop Drawings: Placing Drawings that detail fabrication, bending, and placement. Include bar sizes, spacing, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement. Reference bars to be the same identification marks shown on the bar bending details.

D. Construction Joint Layout: As shown on the Drawings.

E. Samples: For waterstops.

F. Welding certificates.

G. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.
2. Admixtures.
3. Form materials and form-release agents.
4. Steel reinforcement and accessories.
5. Waterstops.
6. Curing compounds.
7. Bonding agents.
8. Adhesives.
9. Repair materials.

H. Material Test Reports: For the following, from a qualified testing agency:

1. Aggregates: Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.
2. Mill Test Reports:

a. Cementitious materials.
b. Steel Reinforcing.

c. Reinforcing Splicing Devices.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer.

B. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer, detailing fabrication, assembly, and support of formwork. Formwork shop drawings shall be stamped and sealed by a professional engineer registered in the State of New York.

1. Shoring and Reshoring: Indicate proposed schedule and sequence of stripping formwork, shoring removal, and reshoring installation and removal.

C. Certifications:

1. Certify that admixtures used in the same concrete mix are compatible with each other and the aggregates.
2. Certify admixtures are made for use in concrete in contact with potable water after 30 days of concrete curing.
3. Certify waterstops are made for use in concrete in contact with potable water after 30 days of concrete curing.

D. Field quality-control reports.

E. Minutes of preinstallation conference.

F. PE Certification form for the design of formwork and shoring.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

B. Product Certificates: Certified copy of test results for compliance for all galvanized reinforcement and accessories. Indicate the weight of the nickel-zinc and the applicable ASTM Standard in test reports.

C. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician, Grade I. Testing agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician, Grade II.

D. Welding Qualifications: Qualify procedures and personnel according to AWS D1.4/D 1.4M.

1.8 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on concrete mixtures.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Provide reinforcement free from mill scale, rust, mud, dirt, grease, oil, ice, or other foreign matter that will reduce or destroy bond. Deliver, store, and handle steel reinforcement to prevent bending and damage. Store reinforcement off the ground, protect from moisture, and keep out of standing water, and free from rust, mud, dirt, grease, oil, ice, or other contaminants and deleterious films that will reduce or destroy bond.

B. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

1.10 FIELD CONDITIONS

A. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When average high and low temperature is expected to fall below 40 degrees F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

B. Hot-Weather Placement: Comply with ACI 301 and ACI 305.1, and as follows:

1. Maintain concrete temperature below 90 degrees F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301.
2. ACI 117.

2.2 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

1. Plywood, metal, or other approved panel materials.
2. Overlaid Finnish birch plywood.

B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

C. Pan-Type Forms: Glass-fiber-reinforced plastic or formed steel, stiffened to resist plastic concrete loads without detrimental deformation.

D. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.

E. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.

F. Form-Release Agent: Commercially formulated form-release agent that does not bond with, stain, or adversely affect concrete surfaces and does not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

G. Form Ties: Factory-fabricated, removable or snap-off glass-fiber-reinforced plastic or metal form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
2. Furnish ties that, when removed, leave holes no larger than 1 inch in diameter in concrete surface.
3. Furnish ties with integral water-barrier plates to below grade walls.

2.3 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

B. Reinforcing bars to be welded or field bent: Low-Alloy-Steel Reinforcing Bars, ASTM A 706/A 706M, deformed.

C. Plain-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, plain, fabricated from as-drawn steel wire into flat sheets.

2.4 REINFORCEMENT ACCESSORIES

A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.

B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

1. For concrete surfaces exposed to view, where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.

C. Reinforcing Splicing Devices:

D. Type: Mechanical; full tension and compression.

1. Use only where indicated. Meet all ACI 318 requirements. Provide threaded type with cap on female end to exclude dirt, debris and wet concrete. Torque couplers to manufacturer's recommended value.
2. Unless otherwise indicated, mechanical reinforcing splicing devices shall produce a splice strength in tension or compression of not less than 125 percent of the ASTM specified minimum yield strength of the reinforcing bar. Base yield strength on Grade 60 reinforcing unless otherwise indicated or specified.
3. Compression type mechanical splices shall provide concentric bearing from one bar to the other bar.
4. Size: To fit joined reinforcing.

E. Tie wires for reinforcement: 16 gauge or heavier black annealed wire to tie uncoated reinforcing. Use zinc coated wire to tie galvanized reinforcing. Use epoxy coated wire to tie epoxy coated reinforcing.

2.5 CONCRETE MATERIALS

A. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.

B. Cementitious Materials:

1. Portland Cement: ASTM C 150/C 150M, Type II.
2. Fly Ash: ASTM C 618, Class F.
3. Slag Cement: ASTM C 989/C 989M, Grade 100 or 120.
4. Blended Hydraulic Cement: ASTM C 595/C 595M, Type IL, portland-limestone cement.

C. Normal-Weight Aggregates: ASTM C 33/C 33M, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source.

1. Maximum Coarse-Aggregate Size: ASTM C33 Size Number 67 nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

D. Air-Entraining Admixture: ASTM C 260/C 260M.

E. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.

F. Water: ASTM C 94/C 94M and potable.

2.6 WATERSTOPS

A. Flexible PVC Waterstops: CE CRD-C 572, for embedding in concrete to prevent passage of fluids through joints. Incorporate an integral fastening system or provide with grommets or prepunched holes between outermost ribs at a spacing of 12 inches on center. Factory fabricate corners, intersections, and directional changes.

1. Profile: Ribbed without center bulb.
2. Dimensions: 6 inches by 3/8 inch thick; nontapered.
3. Acceptable Manufacturers: Provide products manufactured by one of the following or equal:

    a. Greenstreak Plastic Products: Style 679.
    b. Paul Murphy Plastics Co.: Style FR-6380.
    c. Vinylex Corp.: Style R6-38.

4. Provide waterstops certified by NSF/ANSI Standard 61

B. Self-Expanding Rubber Strip Waterstops: Manufactured rectangular or trapezoidal strip, bentonite-free hydrophilic polymer-modified chloroprene rubber, for adhesive bonding to concrete, 3/8 by 3/4 inch.

1. Acceptable Manufactures: Provide products manufactured by one of the following or equal:

    a. Sika: Hydrotite CJ-1020-2K.
    b. OCM: Adeka Ultraseal MC-2010MN.
    c. GCP: Adcor 500S.

2.7 CURING MATERIALS

A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.

B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

D. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.

2.8 RELATED MATERIALS

A. Bonding Agent: ASTM C 1059/C 1059M, Type II, nonredispersible, acrylic emulsion or styrene butadiene.

B. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:

1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

2.9 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.

1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

B. Cementitious Materials: Use fly ash, pozzolan, slag cement, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 40 percent. Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:

1. Fly Ash: 25 percent.
2. Combined Fly Ash and Pozzolan: 25 percent.
3. Slag Cement: 50 percent.
4. Combined Fly Ash or Pozzolan and Slag Cement: 50 percent portland cement minimum, with fly ash or pozzolan not exceeding 25 percent.

C. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

D. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing admixture in concrete, for placement and workability.

2. High-range water-reducing admixture in concrete, may be used, for placement and workability.

2.10 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Normal-weight concrete. Provide Minimum Compressive Strength, Maximum W/C Ratio, Slump Limit, Air Content and Minimum Cementitious Content as indicated in Table 1.

Table 1

Class	Design Strength (1)	Cement ASTM C150	Cementitious Content (2)(5)	Coarse Aggregate (3)	WC (4)	WR (5)	Slump Range (inches)
A	2500	Type II	440	0.62 max	0.62 max	Yes	1 – 4
E2	4500	Type II	610	0.42 max	0.42 max	Yes	1 – 3
E3	4500	Type II	610	0.42 max	0.42 max	Yes	6 – 8

All concrete classes shall have 3.5 to 5 percent air entrainment.

Notes:

(1) Minimum compressive strength in psi at 28 days.

(2) Minimum cementitious content in lbs. per cubic yard (where fly ash is used, cementitious content is defined as cement content plus fly ash content).

(3) Size Number in ASTM C33.

(4) W/C is Maximum Water Cementitious ratio by weight.

(5) WR is water reducing mixture.

(6) Fly ash content in the range of 20-25 percent of the total cement content plus fly ash content, by weight.

2.11 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.12 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information.

1. When air temperature is between 85 and 90 degrees F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 degrees F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK INSTALLATION

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:

1. Class A, 1/8 inch for smooth-formed finished surfaces.
2. Class B, 1/4 inch for rough-formed finished surfaces.

D. Construct forms tight to prevent loss of concrete mortar.

E. Construct forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

1. Install reglets, recesses, and the like, for easy removal.
2. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Chamfer exterior corners and edges of permanently exposed concrete.

I. Form openings, chases, offsets, sinkages, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, ice, snow and other debris just before placing concrete.

K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEM INSTALLATION

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303.

3.3 REMOVING AND REUSING FORMS

A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 degrees F for 24 hours after placing concrete. Concrete has to be hard enough to not be

damaged by form-removal operations and curing and protection operations need to be maintained.

1. Leave formwork for beam soffits, joists, slabs, and other structural elements that support weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.
2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material are not acceptable for exposed surfaces. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Engineer.

3.4 SHORING AND RESHORING INSTALLATION

A. Comply with ACI 318 and ACI 301 for design, installation, and removal of shoring and reshoring.

1. Do not remove shoring or reshoring until measurement of slab tolerances is complete.

B. Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

3.5 STEEL REINFORCEMENT INSTALLATION

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

B. Clean reinforcement of loose mill scale, rust, mud, dirt, grease, oil, ice, and other foreign materials that reduce or destroy the bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

1. Weld reinforcing bars according to AWS D1.4/D 1.4M, only where indicated.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Install welded-wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing, 1.3 times the development length, or 8 inches, whichever is greater. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

F. Splicing:

1. Lap splices in welded wire fabric in accordance with the requirements of ACI 318 but not less than 12 inches. Tie the spliced fabrics together with wire ties spaced not more than 24 inches on center and lace with wire of the same diameter as the welded wire fabric. Offset splices in adjacent widths to prevent continuous splices.

2. Reinforcing Splicing Devices: Use only where indicated. Offset splices in adjacent bars by at least 30 bar diameters. Use only for special splice and dowel conditions indicated or approved by the Engineer.
3. If not indicated on Drawings, locate reinforcement splices at point of minimum stress.

3.6 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Engineer.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated.
2. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
3. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
4. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
5. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces. Intentionally roughen concrete surface and remove laitance prior to applying bonding agent.
6. At construction joints and at concrete joints indicated on Drawings to be "roughened", uniformly roughen the surface of concrete to a full amplitude (distance between high and low points and side to side) of 1/4 inch with chipping tools to expose a fresh face. Thoroughly clean joint surfaces of loose or weakened materials by waterblasting or sandblasting and prepare for bonding. At least two hours before and again shortly before the new concrete is deposited, saturate joints with water. After glistening water disappears, coat joints with neat cement slurry mixed to consistency of very heavy paste. Coat surfaces to a depth of at least 1/8 inch thick, scrubbed-in by means of stiff bristle brushes. Deposit new concrete before the neat cement dries.
7. Do not use keyways in construction joints unless specifically shown on the Drawings or approved by the Engineer.

3.7 WATERSTOP INSTALLATION

A. GENERAL

1. Install waterstops for joints indicated and according to manufacturer’s published installation instructions and approved submittals.
2. Include waterstops continuous around corners and intersections to provide a continuous seal.

3. Provide a minimum number of connections or splices. Replace connections or splices that do not meet specified requirements at no additional cost to Owner.
4. Secure waterstops in joints before concrete is placed.
5. Install plastic waterstops so that half of width is embedded on each side of joint. Provide waterstops completely embedded in void-free concrete.
6. Protect waterstops from damage in intervals between placing waterstops and subsequent placing of concrete. Replace damaged or punctured waterstops at no additional cost to Owner.
7. Protect plastic waterstops from sunlight when exposed more than 30 days between concrete placements.
8. Provide waterstops free from form release agent, bond breaker, dirt, concrete splatter, ice, mortar, paint, or other deleterious material that could reduce or destroy bond between waterstop and adjacent concrete.

B. PLASTIC WATERSTOPS

1. Field Splices: Make only straight butt joints. Fabricate splices on a bench.

    a. Use a power saw and guide to cut straight ends to be spliced.
    b. Heat fuse weld splices using a Teflon coated thermostatically controlled waterstop splicing iron following manufacturer's recommendations.
    c. Provide finished splices having a cross-section that is dense and free of porosity. Engineer may conduct destructive tests of splices by cutting along one-half of splice length and by cutting perpendicular to splice at several locations on remaining half of splice length.
    d. Completed Splices: Exhibit a continuous and uniform bead of excess melted material with welded material looking similar to parent material.
    e. Show no misalignment of ribs greater than 1/16 inch (1.6 mm), lack of fusion, porosity, pinholes, cracks, charred or burnt material, bubbles, or separation of cooled splice when bent by hand. If a splice displays any of these defects, reject the splice, recut back at least 1 inch (25 mm) from rejected splice on each side, and reweld.
2. Secure waterstops in wall joints before concrete is placed. If waterstop does not incorporate an integral fastening system, grommets, or prepunched holes, drill holes in waterstops between outermost ribs at each edge. Center waterstop in the joint. Tie both edges of waterstop to reinforcing steel with tie wire as specified for tying reinforcing steel. Secure waterstop centered on and perpendicular to joint and to maintain its position during concrete placement.
3. Space waterstop ties to match spacing of adjacent reinforcing, but ties need not be spaced closer than 12 inches (305 mm) on center.
4. Clamp horizontal waterstops in slabs in position with form bulkhead, unless previously set in concrete. Lift waterstop edge while placing concrete below the waterstop. Manually force waterstop against and into placed concrete and cover with fresh concrete, to provide complete encasement of waterstop in concrete.

C. Self-Expanding Strip Waterstops

1. Install in construction joints and at other locations, only where indicated. According to manufacturer's written instructions, apply adhesive bonding, or mechanical fasteners, and firmly press waterstop into place.

2. Clean and prepare joint surfaces, install primers or adhesives, and install waterstops on dry surfaces in accordance with manufacturer's instructions, including concrete cure, temperature conditions, and splices.
3. Install in longest lengths practicable.

3.8 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.

B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Engineer.

1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

C. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.

1. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid “cold” joints.
2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

D. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
2. Maintain reinforcement in position on chairs during concrete placement.
3. Screed slab surfaces with a straightedge and strike off to correct elevations.
4. Slope surfaces uniformly to drains where required.
5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

3.9 FINISHING FORMED SURFACES

A. Finish concrete surfaces according to ACI 301 and ACI 318.

B. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces not exposed to view.

C. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces to receive a rubbed finish or to be covered with a coating or covering material applied directly to concrete.

D. Rubbed Finish: Apply the following to smooth-formed-finished as-cast concrete where indicated:

1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.

E. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.10 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.

1. Apply float finish to surfaces to receive trowel finish.

C. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

1. Apply a trowel finish to surfaces exposed to view.

2. Finish and measure surface, so gap at any point between concrete surface and an unleveled, freestanding, 10-ft.- long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/8 inch.

D. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Engineer before application.

3.11 MISCELLANEOUS CONCRETE ITEM INSTALLATION

A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Pads:

1. Coordinate sizes and locations of concrete pads with actual equipment provided.
2. Minimum Compressive Strength: 4500 psi at 28 days.
3. Install reinforcing dowels; to connect concrete pad to concrete floor. Unless otherwise indicated.
4. For supported equipment, install anchor bolts that extend through concrete pad and anchor into structural concrete substrate.
5. Prior to pouring concrete, place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
6. Cast anchor-bolt insert into pads. Install anchor bolts to elevations required for proper attachment to supported equipment.

3.12 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 305.1 for hot-weather protection during curing.

B. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for remainder of curing period.

C. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

D. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

a. Water.
b. Continuous water-fog spray.
c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer.

3.13 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Engineer. Remove and replace concrete that cannot be repaired and patched to Engineer's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part Portland cement to 2-1/2 parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete. Limit sawcut at the perimeter of the area to a depth of 3/4 inch. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar matches surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Engineer.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.
3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
4. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
5. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
6. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Engineer's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Engineer's approval.

3.14 FIELD QUALITY CONTROL

A. Owner will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Notify the Owner when the reinforcing is complete and ready for inspection, at least six working hours prior to the proposed concrete placement. Do not cover reinforcing steel with concrete until the installation of the reinforcement, including the size, spacing and position of the reinforcement has been inspected by the Owner’s inspection agency and the Owner’s inspection agency release to proceed with the concreting has been obtained. Keep forms open until the Owner’s inspection agency has completed inspection of the reinforcement.

C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172/C 172M shall be performed according to the following requirements by the Owner’s testing agency:

1. Testing Frequency: One composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.

a. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests will be performed when concrete consistency appears to change.
3. Air Content: ASTM C 231/C 231M, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 degrees F and below or 80 degrees F and above, and one test for each composite sample.
5. Compression Test Specimens: ASTM C 31/C 31M.

    a. Cast and laboratory cure two sets of two standard 6-inch diameter cylinder specimens for each composite sample.
    b. Cast and field cure two sets of two standard 6-inch diameter cylinder specimens for each composite sample.

6. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.

    a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
    b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

7. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
9. Test results shall be reported in writing to Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
10. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Engineer. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Engineer.
11. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
12. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

3.15 SCHEDULE

A. Following Table 2 are general applications for various concrete classes and design strengths:

Table 2

Class	Design Strength (psi)	Description
A	2,500	Concrete fill, concrete fill for bollards, electrical raceway encasement and pipe encasement.
E2	4,500	Structural concrete greater than 10 inches in thickness.
E3	4,500	Structural concrete 10 inches or less in thickness.

END OF SECTION 033000

SECTION 040120.64 - MASONRY REPOINTING

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. Repointing joints with mortar.
2. Repointing joints with sealant.

1.3 DEFINITIONS

A. Low-Pressure Spray: 100 to 400 psi; 4 to 6 gpm.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to repointing masonry including, but not limited to, the following:

a. Verify masonry repointing specialist's personnel, equipment, and facilities needed to make progress and avoid delays.
b. Materials, material application, sequencing, tolerances, and required clearances.
c. Quality-control program.
d. Coordination with building occupants.

1.5 SEQUENCING AND SCHEDULING

A. Order sand and gray portland cement for pointing mortar immediately after approval of Samples and mockups. Take delivery of and store at Project site enough quantity to complete Project.

B. Work Sequence: Perform masonry repointing work in the following sequence, which includes work specified in this and other Sections:

1. Remove plant growth.
2. Inspect masonry for open mortar joints and permanently or temporarily point them before cleaning to prevent the intrusion of water and other cleaning materials into the wall.
3. Remove paint.

4. Clean masonry.
5. Rake out mortar from joints surrounding masonry to be replaced and from joints adjacent to masonry repairs along joints.
6. Repair masonry, including replacing existing masonry with new masonry materials.
7. Rake out mortar from joints to be repointed.
8. Point mortar and sealant joints.
9. After repairs and repointing have been completed and cured, perform a final cleaning to remove residues from this work.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. Include recommendations for product application and use.
3. Include test data substantiating that products comply with requirements.

B. Shop Drawings:

1. Include plans, elevations, sections, and locations of repointing work on the structure.
2. Show provisions for expansion joints or other sealant joints.
3. Show locations of scaffolding and points of scaffolding in contact with masonry. Include details of each point of contact or anchorage.

C. Samples for Initial Selection: For the following:

1. Pointing Mortar: Submit sets of mortar for pointing in the form of sample mortar strips, 6 inches long by 1/4 inch wide, set in aluminum or plastic channels.

    a. Have each set contain a close color range of at least three Samples of different mixes of colored sands and cements that produce a mortar matching existing, cleaned mortar when cured and dry.
    b. Submit with precise measurements on ingredients, proportions, gradations, and source of colored sands from which each Sample was made.

2. Sand Type Used for Pointing Mortar: Minimum 8 oz. of each in plastic screw-top jars.
3. Sealant materials.
4. Include similar Samples of accessories involving color selection.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For masonry repointing specialist.

B. Quality-control program.

1.8 QUALITY ASSURANCE

A. Masonry Repointing Specialist Qualifications: Engage an experienced masonry repointing firm to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance. Experience in only installing masonry is insufficient experience for masonry repointing work.

1. Field Supervision: masonry repointing specialist firms shall maintain experienced full-time supervisors on Project site during times that masonry repointing work is in progress.

B. Quality-Control Program: Prepare a written quality-control program for this Project to systematically demonstrate the ability of personnel to properly follow methods and use materials and tools without damaging masonry. Include provisions for supervising performance and preventing damage.

C. Mockups: Prepare mockups of masonry repointing to demonstrate aesthetic effects and to set quality standards for materials and execution.

1. Repointing: Rake out joints in two separate areas, each approximately 36 inches high by 48 inches wide for each type of repointing required, and repoint one of the areas.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Engineer specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver packaged materials to Project site in manufacturer's original and unopened containers, labeled with manufacturer's name and type of products.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store hydrated lime in manufacturer's original and unopened containers. Discard lime if containers have been damaged or have been opened for more than two days.

D. Store sand where grading and other required characteristics can be maintained and contamination avoided.

1.10 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit repointing work to be performed according to product manufacturers' written instructions and specified requirements.

B. Temperature Limits: Repoint mortar joints only when air temperature is between 40 and 90 deg F and is predicted to remain so for at least seven days after completion of the Work unless otherwise indicated.

C. Cold-Weather Requirements: Comply with the following procedures for mortar-joint pointing unless otherwise indicated:

1. When air temperature is below 40 deg F, heat mortar ingredients and existing masonry walls to produce temperatures between 40 and 120 deg F.
2. When mean daily air temperature is below 40 deg F, provide enclosure and heat to maintain temperatures above 32 deg F within the enclosure for seven days after pointing.

D. Hot-Weather Requirements: Protect mortar-joint pointing when temperature and humidity conditions produce excessive evaporation of water from mortar materials. Provide artificial shade and wind breaks, and use cooled materials as required to minimize evaporation. Do not apply mortar to substrates with temperatures of 90 deg F and above unless otherwise indicated.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Source Limitations: Obtain each type of material for repointing masonry (cement, sand, etc.) from single source with resources to provide materials of consistent quality in appearance and physical properties.

2.2 MORTAR MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I or Type II, except Type III may be used for cold-weather construction; white or gray, or both where required for color matching of mortar.

1. Provide cement containing not more than 0.60 percent total alkali when tested according to ASTM C114.

B. Hydrated Lime: ASTM C207, Type S.

C. Masonry Cement: ASTM C91/C91M.

D. Mortar Cement: ASTM C1329/C1329M.

E. Mortar Sand: ASTM C144.

1. Match size, texture, and gradation of existing mortar sand as closely as possible. Blend several sands if necessary to achieve suitable match.
2. Color: Natural sand or ground marble, granite, or other sound stone of color necessary to produce required mortar color.

F. Water: Potable.

2.3 ACCESSORY MATERIALS

A. Sealant Materials:

1. Sealant manufacturer's standard elastomeric sealant(s) of base polymer and characteristics indicated below.

    a. Type: Single-component, nonsag urethane sealant.

2. Colors: Provide colors of exposed sealants to match colors of mortar adjoining installed sealant unless otherwise indicated.
3. Ground-Mortar Aggregate: Custom crushed and ground pointing mortar sand or existing mortar retrieved from joints. Grind to a particle size that matches the adjacent mortar aggregate and color. Remove all fines passing the No. 100 sieve.

B. Joint-Sealant Backing:

1. Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin) or Type B (bicellular material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
2. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended in writing by sealant manufacturer for preventing sealant from adhering to rigid, inflexible, joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

C. Masking Tape: Nonstaining, nonabsorbent material; compatible with mortar, joint primers, sealants, and surfaces adjacent to joints; and that easily comes off entirely, including adhesive.

D. Other Products: Select materials and methods of use based on the following, subject to approval of a mockup:

1. Previous effectiveness in performing the work involved.
2. Minimal possibility of damaging exposed surfaces.
3. Consistency of each application.
4. Uniformity of the resulting overall appearance.
5. Do not use products or tools that could leave residue on surfaces.

2.4 MORTAR MIXES

A. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer.

1. Mixing Pointing Mortar: Thoroughly mix cementitious materials and sand together before adding any water. Then mix again, adding only enough water to produce a damp, unworkable mix that retains its form when pressed into a ball. Maintain mortar in this dampened condition for 15 to 30 minutes. Add remaining water in small portions until mortar reaches desired consistency. Use mortar within one hour of final mixing; do not retemper or use partially hardened material.

B. Do not use admixtures in mortar unless otherwise indicated.

C. Mixes: Mix mortar materials in the following proportions:

1. Pointing Mortar by Volume: ASTM C270, Proportion Specification, 1 part portland cement and 3 parts sand.
2. Pointing Mortar by Type: ASTM C270, Proportion Specification, Type S unless otherwise indicated; with cementitious material limited to portland cement, masonry cement, or mortar cement.
3. Pointing Mortar by Property: ASTM C270, Property Specification, Type S unless otherwise indicated; with cementitious material limited to portland cement, masonry cement, or mortar cement.

PART 3 - EXECUTION

3.1 PROTECTION

A. Prevent mortar from staining face of surrounding masonry and other surfaces.

1. Cover sills, ledges, and other projecting items to protect them from mortar droppings.
2. Keep wall area wet below pointing work to discourage mortar from adhering.
3. Immediately remove mortar splatters in contact with exposed masonry and other surfaces.

3.2 MASONRY REPOINTING, GENERAL

A. Appearance Standard: Repointed surfaces are to have a uniform appearance as viewed from 20 feet away by Engineer.

3.3 REPOINTING

A. Rake out and repoint joints to the following extent:

1. All joints in areas indicated.
2. Joints indicated as sealant-filled joints.
3. Joints at locations of the following defects:

a. Holes and missing mortar.
b. Cracks that can be penetrated 1/4 inch or more by a knife blade 0.027 inch thick.
c. Cracks 1/8 inch or more in width and of any depth.
d. Hollow-sounding joints when tapped by metal object.
e. Eroded surfaces 1/4 inch or more deep.
f. Deterioration to point that mortar can be easily removed by hand, without tools.
g. Joints filled with substances other than mortar.

B. Do not rake out and repoint joints where not required.

C. Rake out joints as follows, according to procedures demonstrated in approved mockup:

1. Remove mortar from joints to depth of joint width plus 1/8 inch and not less than that required to expose sound, unweathered mortar. Do not remove unsound mortar more than 2 inches deep; consult Engineer for direction.
2. Remove mortar from masonry surfaces within raked-out joints to provide reveals with square backs and to expose masonry for contact with pointing mortar. Brush, vacuum, or flush joints to remove dirt and loose debris.
3. Do not spall edges of masonry units or widen joints. Replace or patch damaged masonry units as directed by Engineer.

D. Notify Engineer of unforeseen detrimental conditions including voids in mortar joints, cracks, loose masonry units, rotted wood, rusted metal, and other deteriorated items.

E. Pointing with Mortar:

1. Rinse joint surfaces with water to remove dust and mortar particles. Time rinsing application so, at time of pointing, joint surfaces are damp but free of standing water. If rinse water dries, dampen joint surfaces before pointing.
2. Apply pointing mortar first to areas where existing mortar was removed to depths greater than surrounding areas. Apply in layers not greater than 3/8 inch until a uniform depth is formed. Fully compact each layer and allow it to become thumbprint hard before applying next layer.
3. After deep areas have been filled to same depth as remaining joints, point joints by placing mortar in layers not greater than 3/8 inch. Fully compact each layer and allow to become thumbprint hard before applying next layer. Where existing masonry units have worn or rounded edges, slightly recess finished mortar surface below face of masonry to avoid widened joint faces. Take care not to spread mortar beyond joint edges onto exposed masonry surfaces or to featheredge the mortar.
4. When mortar is thumbprint hard, tool joints to match original appearance of joints as demonstrated in approved mockup. Remove excess mortar from edge of joint by brushing.
5. Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours, including weekends and holidays.
6. Hairline cracking within mortar or mortar separation at edge of a joint is unacceptable. Completely remove such mortar and repoint.

F. Pointing with Sealant:

1. After raking out, keep joints dry and free of mortar and debris.
2. Clean and prepare joint surfaces. Prime joint surfaces unless sealant manufacturer recommends against priming. Do not allow primer to spill or migrate onto adjoining surfaces.
3. Fill sealant joints with specified joint sealant.

    a. Install cylindrical sealant backing beneath the sealant. Where space is insufficient for cylindrical sealant backing, install bond-breaker tape.
    b. Install sealant using only proven installation techniques that ensure that sealant is deposited in a uniform, continuous ribbon, without gaps or air pockets, and with complete wetting of the joint bond surfaces equally on both sides. Fill joint flush with surrounding masonry and matching the contour of adjoining mortar joints.
    c. Install sealant as recommended in writing by sealant manufacturer but within the following general limitations, measured at the center (thin) section of the bead:

1) Fill joints to a depth equal to joint width, but not more than 1/2 inch deep or less than 1/4 inch deep.

d. Tool sealant to form smooth, uniform beads, slightly concave. Remove excess sealant from surfaces adjacent to joint.

e. Sanded Joints: Immediately after first tooling, apply ground-mortar aggregate to sealant, gently pushing aggregate into the surface of sealant. Lightly retool sealant to form smooth, uniform beads, slightly concave. Remove excess sealant and aggregate from surfaces adjacent to joint.

f. Do not allow sealant to overflow or spill onto adjoining surfaces, or to migrate into the voids of adjoining surfaces, particularly rough textures. Remove excess and spillage of sealant promptly as the work progresses. Clean adjoining surfaces by the means necessary to eliminate evidence of spillage, without damage to adjoining surfaces or finishes, as demonstrated in an approved mockup.

3.4 FINAL CLEANING

A. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter; use wood scrapers, stiff-nylon or -fiber brushes, and clean water applied by low-pressure spray.

1. Do not use metal scrapers or brushes.
2. Do not use acidic or alkaline cleaners.

B. Clean adjacent nonmasonry surfaces. Use detergent and soft brushes or cloths.

C. Clean mortar and debris from roof; remove debris from gutters and downspouts. Rinse off roof and flush gutters and downspouts.

D. Remove masking materials, leaving no residues that could trap dirt.

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage qualified testing agency to perform tests and inspections. Allow inspectors use of lift devices and scaffolding, as needed, to perform inspections.

B. Engineer's Project Representatives: Engineer will assign Project representatives to help carry out Engineer's responsibilities at the site, including observing progress and quality of portion of the Work completed. Allow Engineer's Project representatives use of lift devices and scaffolding, as needed, to observe progress and quality of portion of the Work completed.

C. Notify inspectors and Engineer's Project representatives in advance of times when lift devices and scaffolding will be relocated. Do not relocate lift devices and scaffolding until inspectors and Engineer's Project representatives have had reasonable opportunity to make inspections and observations of work areas at lift device or scaffold location.

END OF SECTION 040120.64

SECTION 050519 - POST-INSTALLED ANCHORS AND REINFORCING BARS

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. Post-installed adhesive and expansion anchors for concrete substrates.
2. Post-installed reinforcing bar dowels using adhesive anchoring system.
3. Proof testing of post-installed adhesive anchoring system for anchors and reinforcing bar dowels.

B. Related Requirements:

1. Section 033000 “Cast-In-Place Concrete” and related Sections for concrete, reinforcement, and accessories.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to post-installed anchors including, but not limited to, the following:

a. Verify specialist's personnel, equipment, and facilities needed to make progress and avoid delays.
b. Materials, material application, sequencing, tolerances, and required clearances.
c. Temperature, humidity & moisture limitations for adhesive anchoring system.
d. Manufacturer’s instructions for installation of expansion anchors and adhesive anchoring system.
e. Quality-control program.
f. Coordination with building occupants.

2. Attendees:

a. Resident Engineer.
b. Contractor.
c. Engineer.
d. Manufacturer Representative.
e. Testing Agency

1.4 ACTION SUBMITTALS

A. Post-Installed Expansion Anchors:

1. Design Data: Submit manufacturer’s specifications and data including recommended design values and physical characteristics for expansion anchors.
2. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, materials and finishes for post-installed expansion anchors installed into cracked concrete.
3. Installation Procedures: Submit procedures stating product proposed for use, and complete installation method.

B. Post-Installed Adhesive Anchoring System:

1. Design Data: Submit manufacturer’s specifications and data including recommended design values and physical characteristics, including temperature, humidity, and moisture limitations for adhesive anchoring system.
2. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, materials and finishes for post-installed adhesive anchoring system installed into cracked concrete.
3. Installation Procedures: Submit procedures stating method of drilling, product proposed for use, and complete installation method.

C. Post-Installed Adhesive Anchoring System Testing:

1. Equipment Data: Manufacturer's information for equipment to be used to conduct proof tests on adhesive anchoring system. Submit diagrams showing geometry of proof test equipment relative to the anchors and reinforcing bar dowels to be tested and calibration data for system of jacks and gauges, including:

    a. Calibration: Conducted by a certified testing laboratory, of the complete proof test assembly, together as a unit. Conduct assembly calibration within one month prior to conducting first test and present in the form of a plot of gauge pressure versus actual jack force.
    b. Project Specific Diagram: Laboratory's proposed test equipment setups for monitoring elongation of anchors and reinforcing bar dowels during proof tests. Meet the requirements of ASTM E488. Have proposed test equipment completely independent of the jack and include a micrometer dial gauge capable of measuring anchor extension to nearest 0.001 inch having 3 inches of travel and be mounted on an adjustable tripod or other device with flexible extension arms or a goose neck to permit rapid alignment of the dial gauge axis with the axis of the anchor.

1.5 INFORMATIONAL SUBMITTALS

A. Installation procedure: Submit installation procedure for post-installed adhesive anchoring system; including method of drilling.

B. Certificates:

1. Installer Qualifications for Adhesive Anchoring System: Submit installer and testing agency qualifications as stated in following Paragraph of this Article.
2. Submit current International Code Council (ICC) Evaluation Service Reports (ESR) for expansion anchors and adhesive anchoring system, for installation into cracked concrete, as applicable, indicating conformance with current ICC Evaluation Service (ICC-ES) Acceptance Criteria.

3. Seismic Qualification Certificates for Post-installed Concrete Anchors. Indicate whether certification is based on actual test of assembled components or on calculations.

C. Qualification Data:

1. Installer: Indicate manufacturer's training date and a list of personnel trained on installation of adhesive anchoring system.
2. Testing Agency:

a. Laboratory: Meet requirements of ASTM E329. Prior to testing, submit qualifications of proposed testing laboratory for approval that includes:

1) Name and address.
2) Names and positions of principal officers and name, position, and qualifications of responsible registered professional engineer in charge.
3) List technical services provided, indicating external technical services to be provided by other organizations.
4) Names and qualifications of the supervising laboratory technicians.
5) Provide report prepared by laboratory evaluations authority when requested by The Engineer.
6) Submit as required above for other organizations that will provide external technical services.

b. Include in submittal a list of five projects in which the laboratory has performed testing in accordance with ASTM E488. Include following information for each project:

1) Project name and location.
2) Project Owner.
3) Owner's representative including address and phone number.
4) Brief description of work.

3. Submit qualifications of other laboratory or laboratories until approved.

D. Proof Test Reports of Adhesive Anchoring System – Each Procedure: For each diameter of post-installed anchors and reinforcing bar dowels , for tests performed by a qualified testing agency. Submit a report stamped and sealed by a Professional Engineer registered in State of New York for each test procedure, including whether additional tests or design modifications are required. Based on the results of the reports, The Engineer will determine if any additional tests or modifications to the design are required. Prepare each inspection report complying with ASTM E488 and ASTM E575 that includes:

1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing laboratory.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making the inspection or test.
6. Designation of the work and test method.
7. Complete inspection or test data.
8. Test results and an interpretation of test results.
9. Ambient conditions at time of testing.
10. Comments or professional opinion on whether inspected or tested work complies with Contract Document requirements.
11. Name and signature of laboratory inspector.
12. Recommendations on retesting.
13. Design data.
14. Test reports.
15. Field reports.

E. Evaluation Reports: From ICC-ES for expansion anchors and adhesive anchoring system, for installation of post-installed anchors into cracked concrete or concrete masonry unit, as applicable, indicating conformance with current ICC ES Acceptance Criteria.

1.6 QUALITY ASSURANCE

A. General: Coordinate with the work of other Sections, field verifying dimensions and work of other trades adjoining items of work before installing items specified in this Section.

B. Representatives of post-installed anchor system manufacturer:

1. Proof Testing: Be on site periodically for assistance during installation and testing/inspection of their respective products system, subsystem, or component. Observe, guide and provide instruction on Contractor's assembly, erection, installation or application procedures during the drilling, placement, injection and testing. Inspect, check, and make adjustments as required for the product to function as warranted by the manufacturer and as necessary to furnish the Manufacturer's Certification of Proper Installation.

C. Adhesive Anchoring System:

1. Installer Training: Conduct thorough training by the manufacturer or the manufacturer's representative. Training shall consist of the complete installation process for post-installed anchors and reinforcing bar dowels, including but not limited to:

a. Tool selection.
b. Hole drilling procedure.
c. Hole preparation and cleaning techniques.
d. Adhesive injection technique and dispenser training and maintenance.
e. Anchor preparation and installation.
f. Reinforcing bar dowels preparation and installation.
g. Proof loading and torqueing.
h. Temperature, humidity, and moisture limitations.

i. Working time limitations.
j. Setting time.

2. Include training for anchors and reinforcing bar dowels installed horizontally or upwardly inclined to support sustained tension loads. Install horizontally or upwardly inclined anchors and reinforcing bar dowels by personnel certified by an applicable certification program. Certification shall include written and performance tests in accordance with the ACI/CRSI Adhesive Anchor Installer Certification program, or equivalent.
3. Manufacturer's Certificate of Proper Installation: Submit upon completion of work, for the post-installed anchors and reinforcing bar dowels, including non-production and production anchors and reinforcing bar dowels.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver items to be incorporated into the work of other trades in sufficient time to be checked prior to installation.

B. Handle materials with cranes or derricks. Do not dump material off transportation vehicles or handle in ways that will cause damage.

C. Store materials elevated above grade and block up so they will not become bent or otherwise damaged.

D. Repair items that have become damage or corroded to satisfaction of the Engineer prior to incorporating them into the work.

PART 2 - PRODUCTS

2.1 EXPANSION ANCHORS

A. Fastening to Concrete Substrate: Zinc plated carbon steel wedge type anchors, complete with zinc plated nuts and washers, unless otherwise noted.

B. Submerged or Weather Exposed Substrates: ASTM A276 Type 316 stainless steel wedge type anchors, complete with Type 316 stainless steel nuts and washers, unless otherwise noted.

C. Meet ICC ES AC01 or ICC ES AC193.

D. Length: When length or anchor embedment is not indicated, provide length sufficient to place the wedge and expansion cone portion of the anchor at least 1 inch behind concrete reinforcing steel.

E. Basis-of-Design:

1. Anchorage designs indicated are based on Hilti, Kwik-Bolt TZ, unless otherwise noted.
2. Acceptable Anchors: Hilti Kwik-Bolt TZ; Simpson Strong-Tie Strong Bolt 2 Wedge Anchor; DeWalt Power-Stud+ SD1; DeWalt Power-Stud+ SD6 for stainless steel; or equal.

2.2 ADHESIVE ANCHORING SYSTEM

A. Fastening to Concrete Substrate: Manufactured system consisting of post installed threaded rods, nuts, washers, other anchoring hardware, and chemical dispenser for installation in hammer drilled holes.

1. Anchors: Meet ICC ES AC308.
2. Injection Adhesive: Two-component epoxy system consisting of a hardener and a resin, furnished in pre-measured side-by-side cartridges which keep both components separate.
3. Adhesive Cartridge: Side-by-side design to accept a static mixing nozzle which thoroughly blends both components and allows injection directly into a drilled hole.
4. Anchor: Type 316 stainless steel as indicated consisting of an all-thread anchor rod with nut and washer, of matching material to anchor rod.

    a. Basis-of-Design:

        1) Anchorage designs indicated are based on Hilti HIT- RE 500 V3, unless otherwise noted.
        2) Acceptable Manufacturers: Hilti HIT- RE 500 V3; Simpson Strong Tie SET-XP; ITW Ramset Red Head Epcon G5; or equal.

5. Reinforcing Bar Dowels: Reinforcing bar, per Section 033000 “Cast-in-Place Concrete.”

    a. Basis-of-Design:

        1) Anchorage designs indicated are based on Hilti HIT- RE 500 V3, unless otherwise noted.
        2) Acceptable Manufacturers: Hilti HIT- RE 500 V3; Simpson Strong Tie SET-XP; ITW Ramset Red Head Epcon G5; or equal.

2.3 PERFORMANCE REQUIREMENTS

A. Performance: design anchors and reinforcing bar dowel anchorage for all anticipated loads and load combinations per ASCE/SEI 7 including omega-naught (Ωo) factors as applicable..

PART 3 - EXECUTION

3.1 INSTALLATION

A. General:

1. Install anchoring system in strict compliance with manufacturer's published installation instructions and approved Shop Drawings. Comply with recommended surface preparation, temperature, and moisture of substrate and ambient conditions.
2. Coordinate installation with Special Inspector.
3. Use drill bit of correct diameter and drill to required depth using rotary impact type hammer drills with carbide-tipped bits.
4. Drill holes perpendicular to concrete surface, unless otherwise indicated.
5. Use oil free compressed air to blast out loose particles and dust from drilled holes.

B. Expansion anchors:

1. Check expansion anchors for tightness a minimum of 24 hours after initial installation.

C. Adhesive anchoring system:

1. Perform installation only by personnel trained in anchor installation and having certification required in PART 1 - GENERAL.
2. Inject adhesive and install anchors and reinforcing bar dowels that are clean and free of dirt, oil, grease, ice or other deleterious material which would reduce bond.

3.2 TESTING OF ADHESIVE ANCHORING SYSTEM

A. Proof Testing:

1. Perform proof tests in accordance with ASTM E488.
2. During the progress of the work perform periodic proof test of post-installed anchors.

    a. Post-installed Anchors: During progress of the work, randomly chose for Proof Testing 5 percent of each anchor diameter, embedment length, and adhesive bonding material system. Select test anchors at random. Test the anchors for the static tension test to lesser of 50 percent of ultimate bond strength or 80 percent of its yield strength.

3. During progress of the work, perform periodic proof test of post-installed reinforcing bar dowels.

    a. Bar sizes: #4, #5, #6, #7, #8, and #9.
    b. Initial Reinforcing Bar Dowel Test Group: During progress of the work, randomly select five post-installed reinforcing bar dowels, for Proof Testing. Select from first 50 post-installed reinforcing bar dowels installed.
    c. Subsequent Reinforcing Bar Dowel Test Groups: In addition, randomly select and test one post-installed reinforcing bar dowel from every 20 post-installed bars installed of remaining post-installed bars.

4. Post-installed Reinforcing Bar Dowels: Test for static tension only to Allowable Test Load indicated in Table 1.

TABLE 1

Post-installed Reinforcing Bar Dowels Test Loads

Rebar Size	Yield Strength	Allowable Test Load
#4	12,000 lbs.	4,800 lbs.
#5	18,600 lbs.	7,440 lbs.
#6	26,400 lbs.	10,560 lbs.
#7	36,000 lbs.	14,400 lbs.
#8	47,400 lbs.	18,980 lbs.

NOTE: Test loads are based on Hilti. The Engineer may modify Table values based on approved adhesive anchoring system.

3.3 TEST FAILURE - ADHESIVE ANCHORING SYSTEM

A. Failure Defined: Observance of any one or any combination of failure modes in ASTM E488.

B. Proof Testing of Anchors: If any of the tested anchors failed, perform two additional tests on adjacent untested anchors, one each side. Continue additional tests until no more tests fail, or all anchors installed that day are tested. The Engineer may require greater embedment, changes in installation technique, or require the use of another adhesive anchoring system, at no additional cost to Owner.

C. Proof Testing of Reinforcing Bar Dowels: If the bond strength of a post-installed reinforcing bar dowel falls below the Allowable Test Load indicated in Table 1, the Engineer may require greater embedment, changes in installation technique, or require the use of another adhesive anchoring system, at no additional cost to Owner.

D. If installations fail to produce the required strength performance, the Engineer will require additional post-installed anchors and require modified or enlarged base plates or additional metal connecting pieces or reinforcing bar dowels and additional reinforced concrete to meet the required design strength. Perform this additional work and additional tests to correct deficient installations, at no additional cost to Owner.

3.4 REPAIRS

A. At testing completion, repair damaged concrete, post-installed anchors, reinforcing bar dowels and other damaged construction as required to match conditions prior to testing.

B. Repair in accordance with provisions of Section 030130.71 “Modifications to Existing Concrete,” including:

1. Saw cutting and removal of damaged, loose, or unsound concrete.
2. Removal of damaged anchors and reinforcing bar dowels.
3. Cleaning and preparing concrete surface and reinforcing bar dowels.
4. Place new repair material.

5. Install new anchors and reinforcing bar dowels to replace anchors and reinforcing bar dowels that are found to be unacceptable or deficient.
6. Perform repairs at no additional cost to Owner.

END OF SECTION 050519

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SECTION 055000 - METAL FABRICATIONS

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. Steel framing and supports for mechanical and electrical equipment.
2. Steel framing and supports for applications where framing and supports are not specified in other Sections.
3. Steel angles.
4. Steel support brackets.
5. Steel base plates for other than structural steel or equipment.
6. Miscellaneous items fabricated from steel, aluminum, or stainless steel.
7. Aluminum diamond plate and floor plate.
8. Loose bearing and leveling plates for applications where they are not specified in other Sections.
9. Delegated design.

B. Products furnished, but not installed, under this Section include the following:

1. Anchor bolts, steel pipe sleeves, slotted-channel inserts, and wedge-type inserts indicated to be cast into concrete or built into unit masonry.
2. Steel weld plates and angles for casting into concrete for applications where they are not specified in other Sections.

C. Related Requirements:

1. Section 033000 "Cast-in-Place Concrete" for installing anchor bolts, steel pipe sleeves, slotted-channel inserts, wedge-type inserts, and other items cast into concrete.
2. Section 050519 “Post-Installed Anchors and Reinforcing Bars” for anchors in various substrates.
3. Section 055313 “Bar Gratings” for various types of bar grating assemblies.
4. Various Sections in Divisions 40 - 46 for process mechanical work scopes.

1.3 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of metal fabrications that are anchored to or that receive other work. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.4 ACTION SUBMITTALS

A. Product Data: For the following:

1. Paint products.

B. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide Shop Drawings for the following:

1. Steel framing and supports for mechanical and electrical equipment.
2. Steel framing and supports for applications where framing and supports are not specified in other Sections.
3. Metal floor plate and supports.
4. Loose steel lintels.
5. Miscellaneous steel items.
6. Miscellaneous aluminum items.
7. Miscellaneous stainless-steel items.

1.5 INFORMATIONAL SUBMITTALS

A. Mill Certificates: Signed by aluminum, steel, and stainless-steel manufacturers, certifying that products furnished comply with requirements.

B. Welding certificates.

1. Certify that welders have been qualified under AWS, within previous 12 months, to perform welds required under this Section.

C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

1.6 QUALITY ASSURANCE

A. Delegated Design Engineer: Licensed professional engineer experienced in design of specified Work and licensed in the State of Project location.

B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

C. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."

3. AWS D1.6/D1.6M, "Structural Welding Code - Stainless steel."

D. Evaluation Reports: Post-installed concrete anchors, from ICC-ES for expansion anchors and adhesive anchor system, for installation into cracked concrete or unit masonry, as applicable, indicating conformance with current ICC ES Acceptance Criteria.

1.7 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 METALS

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Steel Wide Flange Shapes: ASTM A992.

C. Steel Other Shapes, Plates, Shapes, and Bars: ASTM A36/A36M.

D. Stainless steel Sheet, Strip, and Plate: ASTM A240/A240M or ASTM A666, Type 316.

E. Stainless steel Bars and Shapes: ASTM A276, Type 316.

F. Steel Tubing: ASTM A500/A500M, Grade B cold-formed steel tubing.

G. Steel Pipe: ASTM A53/A53M, Type S Grade B Standard Weight (Schedule 40) unless otherwise indicated.

H. Zinc-Coated Steel Wire Rope: ASTM A741.

1. Wire-Rope Fittings: Hot-dip galvanized-steel connectors with capability to sustain, without failure, a load equal to minimum breaking strength of wire rope with which they are used.

I. Slotted Channel Framing: Cold-formed metal box channels (struts) complying with MFMA-4.

1. Size of Channels: 1-5/8 by 1-5/8 inches.
2. Material: Galvanized steel, ASTM A653/A653M, commercial steel, Type B, with G90 coating; 0.108-inch nominal thickness.

J. Cast Iron: Either gray iron, ASTM A48/A48M, or malleable iron, ASTM A47/A47M, unless otherwise indicated.

K. Aluminum Extruded Pipe: ASTM B429, Alloy 6063 T6 and Alloy 6061 T6 as indicated.

L. Aluminum Plate and Sheet: ASTM B209, Alloy 6061-T6.

M. Aluminum Extrusions: ASTM B221, Alloy 6061 T6.

N. Aluminum-Alloy Rolled Tread Plate: ASTM B632/B632M, Alloy 6061-T6.

O. Aluminum Castings: ASTM B26/B26M, Alloy 443.0-F.

P. Bronze Extrusions: ASTM B455, Alloy UNS No. C38500 (extruded architectural bronze).

Q. Bronze Castings: ASTM B584, Alloy UNS No. C83600 (leaded red brass) or No. C84400 (leaded semired brass).

R. Nickel Silver Extrusions: ASTM B151/B151M, Alloy UNS No. C74500.

S. Nickel Silver Castings: ASTM B584, Alloy UNS No. C97600 (20 percent leaded nickel bronze).

T. Gray Iron Castings: ASTM A48, Class 35.

U. Ductile Iron Castings: ASTM A536, Grade 65-45-12.

V. Stainless steel Bolts: ASTM F593, Type 316.

W. Stainless steel Nuts: ASTM F594, Type 316.

X. Carbon Steel Bolts and Studs: ASTM A307, Grade A (hot dip galvanized nuts and washers where noted)

Y. High Strength Steel Bolts, Nuts, and washers: ASTM F3125, Grade A325 (mechanically galvanized per ASTM B695, Class 50, where noted).

1. Elevated Temperature Exposure: Type I.
2. General Application: Type I or Type II.

Z. Galvanizing: ASTM A123, Zn w/0.05 percent minimum Ni.

AA. Galvanizing, hardware: ASTM A153, Zn w/0.05 percent minimum Ni.

BB. Galvanizing, anchor bolts: ASTM F2329, Zn w/0.05 percent minimum Ni.

CC. Welding electrodes, steel: AWS A5.1 E70xx.

2.2 FASTENERS

A. Unless otherwise noted, provide steel machine bolts for the connection of carbon steel or iron; galvanized steel or stainless-steel machine bolts for the connection of galvanized steel or iron; and stainless steel machine bolts for the connection of aluminum or stainless-steel.

B. General: Unless otherwise indicated, provide Type 316 stainless steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F1941, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.

1. Provide stainless steel fasteners for fastening aluminum.
2. Provide stainless steel fasteners for fastening stainless steel.
3. Provide stainless steel fasteners for fastening nickel silver.
4. Provide bronze fasteners for fastening bronze.

C. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A; with hex nuts, ASTM A563; and, where indicated, flat washers.

D. Mechanically Galvanized Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM F3125, Grade A325, Type 3; with hex nuts, ASTM A563, Grade C3; and, where indicated, flat washers.

E. Stainless steel Bolts and Nuts: Regular hexagon-head annealed stainless steel bolts, ASTM F593; with hex nuts, ASTM F594; and, where indicated, flat washers; Alloy Group 2.

F. Anchor Bolts: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A563; and, where indicated, flat washers.

1. Provide standard headed bolts with heavy hex nuts and Grade A washers.
2. Where galvanized anchor bolts are indicated or specified, provide standard headed bolts with heavy hex nuts and Grade A washers, galvanize in accordance with ASTM F2329.

G. Machine bolts and nuts conforming to Federal Specification FF-B-575C. Bolts and nuts shall be hexagon type. Bolts, nuts, screws, washers, and related appurtenances shall be Type 316 stainless steel.

H. Toggle Bolts: shall be Hilti, Toggler Bolt or equal.

I. Cast-in-Place Anchors in Concrete: Either threaded type or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A47 malleable iron or ASTM A27 cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F 2329.

J. Slotted-Channel Inserts: Cold-formed, hot-dip galvanized-steel box channels (struts) complying with MFMA-4, 1-5/8 by 7/8 inches by length indicated with anchor straps or studs not less than 3 inches long at not more than 8 inches o.c. Provide with temporary filler and tee-head bolts, complete with washers and nuts, all zinc-plated to comply with ASTM B 633, Class Fe/Zn 5, as needed for fastening to inserts

2.3 MISCELLANEOUS ALUMINUM

A. Miscellaneous Aluminum: Formed true to detail, with clean, straight, sharply defined profiles and smooth surfaces of uniform color and texture and free from defects impairing strength or durability. Drill or punch holes. Smooth edges without burrs. Fabricate supplementary pieces necessary to complete each item though such pieces are not definitely shown or specified.

B. Connections and Accessories: Sufficient strength to safely withstand the stresses and strains to which they will be subjected. Close fitting exposed joints and jointed where least conspicuous. Conceal threads on threaded connections where practical. Provide continuous welds or intermittent welds on welded connections as specified or shown. Dress face of welds flush and smooth. Weld on unexposed side as much as possible in order to prevent pitting or discoloration of the aluminum exposed surface. Grind smooth continuous welds that will be exposed. Provide holes for temporary field connections and for attachment of the work of other trades.

C. Miscellaneous Aluminum Items: Beams, angles, closure angles, grates, floor plates, stop plates, stair nosings, and other miscellaneous aluminum indicated and not otherwise specified.

D. Angle Frames for Roof Hatches, Beams, Grates, and Similar Items: Complete with welded strap anchors attached.

E. Aluminum Finishes:

1. Mill Finish: Have a cleaned and degreased mill finish on other aluminum items.

2.4 MISCELLANEOUS STEEL

A. Miscellaneous Steel Work: Formed true to detail, with clean, straight, sharply defined profiles and smooth surfaces of uniform color and texture and free from defects impairing strength or durability. Drill or punch holes. Smooth edges without burrs. Fabricate supplementary pieces necessary to complete each item though such pieces are not definitely shown or specified.

B. Connections and Accessories: Sufficient strength to safely withstand the stresses and strains to which they will be subjected. Close fitting exposed joints and jointed where least conspicuous. Conceal thread on threaded connections where practical. Provide continuous welds or intermittent welds on welded connections as specified or shown. Dress face of welds flush and smooth. Grind smooth continuous welds that will be exposed. Provide holes for temporary field connections and for attachment of the work of other trades.

C. Miscellaneous Steel Items: Beams, angles, lintels, metal stairs detailed on the Drawings, support brackets, base plates for other than structural steel or equipment, closure angles, bridge crane rails, monorail hoist beams, holddown straps and lugs, door frames, splice plates, subframing at roof openings and any other miscellaneous steel indicated and not otherwise specified.

D. Structural steel angle and channel door frames: Galvanized. Fabricated with not less than three anchors on each jamb.

E. Steel Finish Work: Thoroughly cleaned, by effective means, of loose mill scale, rust, and foreign matter. Provide one shop coat of primer compatible with finish coat after fabrication but before shipment. Omit paint within 3 inches of proposed field welds. Apply paint to dry surfaces and be thoroughly and evenly spread and well worked into joints and other open spaces.

F. Galvanizing, where required: Use hot-dip zinc process after fabrication, coating not less than 2 oz/sq. ft. of surface.

2.5 MISCELLANEOUS STAINLESS-STEEL

A. Miscellaneous Stainless-Steel Work: Formed true to detail, with clean, straight, sharply defined profiles and smooth surfaces of uniform color and texture and free from defects impairing strength or durability. Drill or punch holes. Smooth edges without burrs. Fabricate supplementary pieces necessary to complete each item though such pieces are not definitely shown or specified.

B. Connections and accessories: Sufficient strength to safely withstand the stresses and strains to which they will be subjected. Close fitting exposed joints, jointed where least conspicuous. Conceal threads on threaded connections where practical. Provide continuous welds or intermittent welds on welded connections as specified or shown. Dress face of welds flush and smooth. Grind smooth continuous welds that will be exposed. Provide holes for temporary field connections and for attachment of the work of other trades.

C. Beams, angles, bar racks, and other miscellaneous stainless steel.

2.6 MISCELLANEOUS MATERIALS

A. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.

1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

B. Water-Based Primer: Emulsion type, anticorrosive primer for mildly corrosive environments that is resistant to flash rusting when applied to cleaned steel, complying with MPI#107 and compatible with topcoat.

C. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.

D. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.

E. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

F. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187.

2.7 CASTINGS:

A. General: Good quality, strong, tough, even-grained, smooth, free from scale, lumps, blisters, sand holes, and other defects. Thoroughly clean castings to remove foreign matter, and deleterious films. Castings will be subjected to a hammer inspection in the field by the Engineer. Damaged castings may be rejected and replaced at no cost to the Owner.

B. Matching Surfaces: Machine to a true plane surface allowing contact surfaces to seat without rocking. Provide allowances in patterns so specified thickness is not reduced to obtain finished surfaces. Castings will not be acceptable if actual weight is less than 95 percent of theoretical weight computed from dimensions. Provide facilities for weighing castings in the presence of the Engineer.

2.8 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

J. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/4 by 1 inch, with a minimum 6 inch embedment and 1 1/2-inch hook, not less than 8 inches from ends and corners of units and 24 inches o.c., unless otherwise indicated.

2.9 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.

1. Fabricate units from slotted channel framing where indicated.
2. Furnish inserts for units installed after concrete is placed.

C. Galvanize miscellaneous framing and supports where indicated.

D. Prime miscellaneous framing and supports with zinc-rich primer where indicated.

2.10 COVER PLATE

A. Fabricate aluminum diamond plate and floor plate having a minimum thickness of as indicated. Fabricate frames and supports of aluminum construction. Fastening devices and hardware shall be Type 316 stainless-steel. Plates shall have a mill finish.

B. Provide aluminum angle supports as indicated.

C. Include aluminum angle stiffeners, and fixed and removable sections as indicated.

D. Provide flush stainless-steel bar drop handles for lifting removable sections, one at each end of each section.

2.11 MISCELLANEOUS STEEL TRIM

A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.

B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work.

1. Provide with integrally welded steel strap anchors for embedding in concrete or masonry construction.

C. Galvanize and prime exterior miscellaneous steel trim.

D. Prime exterior miscellaneous steel trim with zinc-rich primer.

2.12 LOOSE BEARING AND LEVELING PLATES

A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Drill plates to receive anchor bolts and for grouting.

B. Galvanize plates.

C. Prime plates with zinc-rich primer.

2.13 LOOSE STEEL LINTELS

A. Fabricate loose steel lintels from steel angles and or shapes and plates of size indicated for openings and recesses in masonry walls and partitions at locations indicated. Fabricate in single lengths for each opening unless otherwise indicated. Weld adjoining members together to form a single unit where indicated.

B. Size loose lintels to provide bearing length at each side of openings of 8 inches unless otherwise indicated.

C. Galvanize and prime loose steel lintels located in exterior walls.

D. Prime loose steel lintels located in exterior walls with zinc-rich primer.

2.14 STEEL WELD PLATES AND ANGLES

A. Provide steel weld plates and angles not specified in other Sections, for items supported from concrete construction as needed to complete the Work. Provide each unit with no fewer than two integrally welded steel strap anchors for embedding in concrete.

2.15 FINISHES, GENERAL

A. Finish metal fabrications after assembly.

B. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

2.16 STEEL AND IRON FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products. Limit maximum nickel (Ni) content of galvanizing zinc to 0.05%.

1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.

B. Preparation for Shop Priming Galvanized Items: After galvanizing, thoroughly clean of grease, dirt, oil, flux, and other foreign matter, and treat with metallic phosphate process.

C. Shop prime iron and steel items not indicated to be galvanized unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.

1. Shop prime with universal shop primer unless zinc-rich primer is indicated.

D. Preparation for Shop Priming: Prepare surfaces to comply with requirements indicated below:

1. Exterior Items: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
2. Items Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."

3. Items Indicated to Receive Primers Specified in Section 099600 "High-Performance Coatings": SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
4. Other Items: SSPC-SP 3, "Power Tool Cleaning."

E. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

2.17 ALUMINUM FINISHES

A. As-Fabricated Finish: AA-M12.

B. Clear Anodic Finish: AAMA 611, Class I, AA-M12C22A41.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Install all items except those to be embedded in concrete or other masonry which shall be installed under Division 03 and Division 04, respectively. Install items to be attached to concrete or masonry after such work is completed in accordance with the details shown. Fastening to wood plugs in masonry will not be permitted.

1. Touch up abrasions in the shop primer immediately after erection. Paint areas left unprimed for welding after welding.
2. Clean and repair, after installation, zinc coating which has been burned by welding, abraded, or otherwise damaged. Thoroughly clean damaged area and remove all traces of welding flux and loose or cracked zinc coating prior to painting. Paint the cleaned area per the requirements of ASTM A780.
3. Install specialty products in accordance with the manufacturer's recommendations.
4. Weld headed anchor studs in accordance with manufacturer's recommendations.
5. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
6. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
7. Field Welding: Comply with the following requirements:
8. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
9. Obtain fusion without undercut or overlap.
10. Remove welding flux immediately.
11. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

12. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.
13. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.
14. Corrosion Protection: Coat concealed surfaces of aluminum and steel that come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:

    a. Aluminum Contacting a Dissimilar Metal: Apply a heavy brush coat of zinc-chromate primer followed by two coats of aluminum metal and masonry paint to the dissimilar metal.
    b. Aluminum Contacting Masonry or Concrete: Apply a heavy coat of approved alkali resistant paint to the masonry or concrete.
    c. Aluminum Contacting Wood: Apply two coats of aluminum metal and masonry paint to the wood.
    d. Steel Contacting Exposed Concrete or Masonry: Apply heavy bitumastic troweling mastic.
    e. Between aluminum stair treads, and steel supports, insert 1/4 inch thick neoprene isolator pads, 85 plus or minus 5 Shore A durometer, sized for full width and length of bracket or support.

3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

B. Support steel girders on solid grouted masonry, concrete, or steel pipe columns. Secure girders with anchor bolts embedded in grouted masonry or concrete or with bolts through top plates of pipe columns.

    1. Where grout space under bearing plates is indicated for girders supported on concrete or masonry, install as specified in "Installing Bearing and Leveling Plates" Article.

C. Install pipe columns on concrete footings with grouted baseplates. Position and grout column baseplates as specified in "Installing Bearing and Leveling Plates" Article.

    1. Grout baseplates of columns supporting steel girders after girders are installed and leveled.

3.3 INSTALLING BEARING AND LEVELING PLATES

A. Clean concrete and masonry bearing surfaces of bond-reducing materials and roughen to improve bond to surfaces. Clean bottom surface of plates.

B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with nonshrink grout. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.4 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780.

END OF SECTION 055000

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SECTION 055200 - METAL RAILINGS

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. Steel tube guardrails and fittings.

B. Related Requirements:

1. Section 033000 “Cast-In-Place Concrete” for execution requirements for placement of anchors, as specified in this Section, in concrete.

1.3 ACTION SUBMITTALS

A. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.

1.4 DELEGATED-DESIGN SUBMITTAL

A. For railings, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

A. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

B. Test Reports: Certified copy of mill test reports on each steel proposed for use showing physical properties and chemical analysis.

C. Certificates: Certify that welders have been qualified under AWS within previous 12 months to perform required welds.

D. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

E. Qualifications Statements:

1. Submit qualifications for fabricator and erector.

2. Submit manufacturer's approval of fabricator and erector.

1.6 QUALITY ASSURANCE

A. Perform Work for structural aluminum according to AA ADM 1.

B. Finish welded joints according to NOMMA Guideline 1, Finish #1.

C. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."

1.7 QUALIFICATIONS

A. Fabricator: Company specializing in fabricating products specified in this Section with minimum three years' experience.

B. Erector: Company specializing in performing Work of this Section with minimum three years' experience.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

1.9 EXISTING CONDITIONS

A. Field Measurements: Verify field measurements prior to fabrication. Indicate field measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENT

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design railings, including attachment to building construction.

B. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Handrails and Top Rails of Guards:

a. Uniform load of 50 lbf/ ft. applied in any direction.
b. Concentrated load of 200 lbf applied in any direction.
c. Uniform and concentrated loads need not be assumed to act concurrently.

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 degrees F, ambient; 180 degrees F, material surfaces.

2.2 GENERAL

A. Provide 2-rail, welded pipe railing systems as indicated, fabricated with 1-1/2 inch nominal diameter pipe. Provide Schedule 80 pipe posts, minimum and rails and handrail of Schedule 40 pipe, minimum. Provide continuous posts and top rails. Spacing of posts not to exceed 5 feet 0 inches on center and shall be uniformly spaced except as otherwise indicated. Include posts on each side of structure expansion joints. Install railing posts in vertical position.

1. Welding: Provide circumferential welds ground smooth and even to produce a railing that is neat in appearance and structurally sound. Weld in conformity with AWS standards for materials being joined. Cope and fasten rail to post connections with continuous welds. Provide handrail system free of burrs, sharp edges or protrusions on welds. Clean and hand buff welds after fabrication so welds and surrounding area blend with the adjacent finish.

    a. For welding aluminum, use a weld filler alloy that is compatible with alloys to be joined, that will not discolor the pieces to be joined, and that will not be discolored by anodizing.

2. Mechanical Fasteners: Locate unobtrusively in countersunk holes with the top, flush with rail surface.
3. Bending: Form bends in railings as indicated. No distortion of circular railing shape will be allowed. Make bends and terminal sections without use of fittings. Provide corner bends formed with a zero inside radius and a plus or minus 1-1/2 inch outside radius.

B. Assemble railing in sections as long as practical, but not greater than 24 feet in length. Provide field splice when an assembled section is to be attached to another section. Provide field splices in railing panels that cross over structure expansion joints.

1. Field Splices: Use internal splice sleeves located within 8 inches of railing posts. Weld sleeves to rails on one side and fasten with set screws to rails on other side. Detail field splice to take differential expansion between railing system and the supporting structure.

C. Provide bases or supports for railing posts and handrail as indicated.

1. Where non-removable railing is set in concrete, place posts in 3 inches diameter formed concrete openings and firmly caulk with cement grout. Place collars around post bases and fasten in place with set screws on side of the post away from the walkway. Place posts with centerline 4 inches from edge of concrete; set posts in centerline of concrete curbs.
2. Railing posts which may collect condensation shall have a 3/16 inch drain hole drilled immediately above concrete encased area, the base flange, or supporting socket on side away from walking area. Fill bottom of rail post between drain hole and bottom of the post with an inert material, such as a compressed closed cell neoprene rod.

3. Where guardrail and handrail is to be fastened to walls, provide screwed wall flanges fastened to walls with three 3/8 inch stainless-steel expansion anchors. The horizontal projection of handrail support off the wall shall provide 2-1/4 inch minimum clearance around the handrail.

D. For railing openings, fabricate safety gates of matching pipe and rail material and configuration. Provide self-closing gates with approved stop, latch, and stainless-steel closure spring and hinges.

E. Provide toe boards on railings adjacent to a drop elevation of 4 feet or more. Toeboards are not required on inclined portion of stairway railings or where concrete or steel curbs exist at 4 inches or more in height. Provide toeboards fabricated of 4 inch high channels of same material as railing, having a minimum thickness of 1/8 inch and flanges of not less than 3/4 inch or more than 1-1/2 inch in width. Position toeboards with a maximum clearance of 1/4 inch from floor and fasten to railing posts with 1/4 inch stainless-steel U-bolts, with J-bolts at corner posts, and with clip angles and two 1/4 inch stainless-steel expansion bolts at walls.

F. Protect railings by paper, an approved coating, or both against scratching, splashes of mortar, paint, or other defacements during transportation, erection, and until adjacent work is complete. Remove protective materials and make surfaces clean and free from stains, marks, or defects.

2.3 MATERIALS

A. Steel Railing System:

1. Post, Rails, and Fittings: ASTM A 53, Type S, Grade B.
2. Splice and Expansion Sleeves: ASTM A 500, Grade B.
3. Brackets, Shapes, and Plates: ASTM A 36.
4. Fastening Hardware: ASTM A 307, Type 304 stainless-steel.
5. Seal steel railing, including posts and rails, by welding closure plates in all openings.
6. Galvanizing: According to ASTM A 123; hot-dip galvanized after fabrication.
7. Touchup Primer for Galvanized Surfaces: SSPC Paint 20, Type I - Inorganic, zinc-rich.

2.4 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

C. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.

2.5 FABRICATION

A. Fit and shop-assemble components in largest practical sizes for delivery to Site, but not to exceed 24 feet in length.

B. Fabricate components with joints tightly fitted and secured. Furnish sleeves to accommodate site assembly and installation.

C. Form simple and compound curves by bending pipe in jigs to produce uniform curvature for each repetitive configuration required. Maintain cylindrical cross section of pipe throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces.

D. Exposed Mechanical Fastenings: Flush countersunk screws or bolts, unobtrusively located, and consistent with design of component, except where otherwise noted.

E. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where otherwise noted.

F. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

G. Accurately form components to each other, and to building structure.

H. Accommodate expansion and contraction of members and building movement without damage to connections or members.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive Work.

3.2 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Supply items required to be cast into concrete with setting templates to appropriate Sections in other Divisions.

3.3 INSTALLATION

A. Install items, except those to be embedded in concrete under Division 03 or installed in masonry under Division 04. Install items to be attached to concrete or masonry after such work is completed in accordance with indicated details. Do not fasten to wood plugs in masonry.

B. Install components plumb, level, and square, accurately fitted, and free from distortion or defects.

C. Anchor railings to structure with anchors, plates and angles.

D. Field-weld anchors as indicated on Shop Drawings. Clean and repair zinc coating which has been burned by welding, abraded, or otherwise damaged. Grind welds smooth. Thoroughly clean damaged area by wire brushing with traces of welding flux and loose or cracked zinc

coating removed prior to painting. Touch up damaged galvanizing and coat ends of galvanized railing in the field using the brush-on method to a dry film thickness of not less than 6 mils in accordance with ASTM A 780.

E. Conceal bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.

F. Assemble with spigots and sleeves to accommodate tight joints and secure installation.

G. Protect steel surfaces that come into contact with exposed concrete or masonry with a protective coating of an approved heavy bituminous troweling mastic applied in accordance with manufacturer's instructions prior to installation.

3.4 CLEANING AND PROTECTION

A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

END OF SECTION 055200

SECTION 055313 - BAR GRATINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Metal bar gratings.
2. Grating frames and supports.

B. Related Requirements:

1. Section 055200 "Metal Railings" for metal railings.

1.2 ACTION SUBMITTALS

A. Product Data:

1. Clips and anchorage devices for gratings.
2. Paint products.

B. Shop Drawings:

1. Include plans, sections, and attachment details.
2. Signed and sealed by the qualified professional engineer responsible for their preparation.

C. Delegated Design Submittals: For gratings, including manufacturers' published load tables.

1.3 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, which are to be embedded in concrete or masonry.

B. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers certifying that shop primers are compatible with topcoats.

C. Welding certificates.

1.4 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel in accordance with the following welding codes:

1. AWS D1.2/D1.2M.

1.5 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with gratings by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Performance: Gratings to withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Floors for Light Manufacturing: Uniform load of 125 lbf/sq. ft. or concentrated load of 2000 lbf, whichever produces the greater stress.
2. Limit deflection to L/360 or 1/4 inch, whichever is less.

2.2 METAL BAR GRATINGS

A. Metal Bar Grating Standards: Comply with NAAMM MBG 531.

B. Pressure-Locked, Rectangular-Bar Aluminum Grating: ANSI/NAAMM MBG 531 Type P-19-4. Fabricated by pressing rectangular flush-top crossbars into slotted bearing bars.

1. Grating Mark P-19-4 (2 x 3/16) ALUMINUM: 2-by-3/16-inch bearing bars at 1-3/16 inches o.c., and crossbars at 4 inches o.c.
2. Traffic Surface: Applied abrasive finish consisting of aluminum-oxide aggregate in an epoxy-resin adhesive.
3. Aluminum Finish: Mill finish.

2.3 GRATING FRAMES AND SUPPORTS

A. Fabricate from metal shapes, plates, and bars of welded construction to sizes, shapes, and profiles indicated and as necessary to receive gratings. Miter and weld connections for perimeter angle frames. Cut, drill, and tap units to receive hardware and similar items.

1. Unless otherwise indicated, fabricate from same basic metal as gratings.
2. Equip units indicated to be cast into concrete or built into masonry with integrally welded anchors. Unless otherwise indicated, space anchors 24 inches o.c. and provide minimum anchor units in the form of steel straps 1-1/4 inches wide by 1/4 inch thick by 8 inches long.

B. Galvanize steel frames and supports in the following locations:

1. Exterior.
2. Interior.

2.4 FASTENERS

A. General: Unless otherwise indicated, provide Type 316 stainless steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.

1. Provide stainless steel fasteners for fastening aluminum.

B. Stainless Steel Bolts and Nuts: Regular hexagon-head annealed stainless steel bolts, nuts, and, where indicated, flat washers; ASTM F593 for bolts and ASTM F594 for nuts, Alloy Group 2.

2.5 MISCELLANEOUS MATERIALS

A. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.

1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

B. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

C. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

2.6 FERROUS METALS

A. Stainless Steel Sheet, Strip, Plate, and Flat Bars: ASTM A240/A240M, Type 316.

B. Stainless Steel Bars and Shapes: ASTM A276/A276M, Type 316.

2.7 ALUMINUM

A. General: Provide alloy and temper recommended by aluminum producer for type of use indicated, with not less than the strength and durability properties of alloy, and temper designated below for each aluminum form required.

B. Extruded Bars and Shapes: ASTM B221, alloys as follows:

1. Alloy 6061-T6 or 6063-T6, for bearing bars of gratings and shapes.
2. Alloy 6061-T1, for grating crossbars.

C. Aluminum Sheet: ASTM B209, Alloy 5052-H32.

2.8 FABRICATION

A. Shop Assembly: Fabricate grating sections in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch material cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form from materials of size, thickness, and shapes indicated, but not less than that needed to support indicated loads.

D. Fit exposed connections accurately together to form hairline joints.

E. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space the anchoring devices to secure gratings, frames, and supports rigidly in place and to support indicated loads.

F. Removable Grating Sections: Fabricate with banding bars attached by welding to entire perimeter of each section. Include anchors and fasteners of type indicated or, if not indicated, as recommended by manufacturer for attaching to supports.

1. Provide no fewer than four saddle clips for each grating section containing rectangular bearing bars 3/16 inch or less in thickness and spaced 15/16 inch or more o.c., with each clip designed and fabricated to fit over two bearing bars.
2. Furnish self-drilling fasteners with washers for securing grating to supports.

G. Fabricate cutouts in grating sections for penetrations indicated. Arrange cutouts to permit grating removal without disturbing items penetrating gratings.

1. Edge-band openings in grating that interrupt four or more bearing bars with bars of same size and material as bearing bars.

H. Do not notch bearing bars at supports to maintain elevation.

2.9 ALUMINUM FINISHES

A. Mill finish.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing gratings to in-place construction. Include threaded fasteners for concrete and masonry inserts, through-bolts, lag bolts, and other connectors.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing gratings. Set units accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.

C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete or masonry.

D. Fit exposed connections accurately together to form hairline joints.

E. Corrosion Protection: With a heavy coat of bituminous paint, coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals.

3.2 INSTALLATION OF METAL BAR GRATINGS

A. Install gratings to comply with recommendations of referenced metal bar grating standards that apply to grating types and bar sizes indicated, including installation clearances and standard anchoring details.

B. Attach removable units to supporting members with type and size of clips and fasteners indicated or, if not indicated, as recommended by grating manufacturer for type of installation conditions shown.

C. Attach nonremovable units to supporting members by welding where both materials are same; otherwise, fasten by bolting as indicated above.

END OF SECTION 055313

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SECTION 071326 – GEOCOMPOSITE SUBDRAINAGE

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. Molded-Sheet Drainage Panels.

B. Related Requirements:

1. Section 055000 "Metal Fabrications" for steel drainage outlet devices.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review waterproofing requirements including surface preparation, substrate condition and pretreatment, minimum curing period, forecasted weather conditions, special details and sheet flashings, installation procedures, testing and inspection procedures, and protection and repairs.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, and tested physical and performance properties of waterproofing.
2. Include manufacturer's written instructions for evaluating, preparing, and treating substrate.

B. Shop Drawings: Show locations and extent of waterproofing and details of substrate joints and cracks, expansion joints, sheet flashings, penetrations, inside and outside corners, tie-ins with adjoining waterproofing, and other termination conditions.

1. Include setting drawings showing layout, sizes, sections, profiles, and joint details of pedestal-supported concrete pavers.

C. Samples: For each exposed product and for each color and texture specified, including the following products:

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by waterproofing manufacturer.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Install drainage board and accessories within the range of ambient and substrate temperatures recommended in writing by the manufacturer. Do not apply adhesives to a damp or wet substrate.

1. Do not install in snow, rain, fog, or mist.

PART 2 - PRODUCTS

2.1 MOLDED-SHEET DRAINAGE PANELS

A. Nonwoven-Geotextile-Faced, Molded-Sheet Drainage Panel without Polymeric Film: Composite subsurface drainage panel acceptable to waterproofing manufacturer and consisting of a studded, nonbiodegradable, molded-plastic-sheet drainage core; with a nonwoven, needle-punched geotextile facing with an apparent opening size not exceeding No. 40 sieve laminated to one side of the core, without a polymeric film bonded to the other side; and with a vertical flow rate through the core of 9 to 21 gpm per foot.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. Carlisle Coatings & Waterproofing Inc.

2.2 AUXILIARY MATERIALS

A. Furnish auxiliary materials recommended by drainage board manufacturer for intended use and compatible with sheet waterproofing.

B. Tape: Self-adhering flashing consisting of a heavy-duty aluminum foil facer completely coated with an asphalt-free butyl adhesive recommended by manufacturer for adhering to substrate.

C. Adhesive: Latex-based or mastic adhesives recommended by the manufacturer to for adhering to substrate.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of waterproofing.

1. Verify that concrete has cured and aged for minimum time period recommended in writing by manufacturer.
2. Verify that substrate is visibly dry and within the moisture limits recommended in writing by manufacturer. Test for capillary moisture by plastic sheet method according to ASTM D4263.
3. Verify that compacted subgrade is dry, smooth, sound, and ready to receive waterproofing sheet.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean, prepare, and treat substrates according to manufacturer's written instructions. Provide clean, dust-free, and dry substrates for application.

B. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.

C. Remove fins, ridges, mortar, and other projections.

D. Fill form tie holes, honeycomb, aggregate pockets, holes, and other voids.

E. Prepare, treat, and seal surfaces at edges, terminations and drains.

3.3 INSTALLATION OF MOLDED-SHEET DRAINAGE PANELS

A. Place and secure molded-sheet drainage panels, with geotextile facing towards substrate, according to manufacturer's written instructions. Use adhesive or another method to secure geotextile to substrate. Lap edges and ends of geotextile to maintain continuity. Protect installed molded-sheet drainage panels during subsequent construction.

3.4 PROTECTION, REPAIR, AND CLEANING

A. Correct deficiencies in or remove drainage panels that does not comply with requirements; repair substrates, reapply panels.

END OF SECTION 071326

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SECTION 092400 - CEMENT PLASTERING

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 vertical plasterwork.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Show locations and installation of control and expansion joints, including plans, elevations, sections, details of components, and attachments to other work.

C. Samples for Verification: For each type of factory-prepared finish coat and for each color and texture specified, 12 by 12 inches, and prepared on rigid backing.

1.5 QUALITY ASSURANCE

A. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Build mockups for each substrate and finish texture indicated for cement plastering, including accessories.

a. Size: 36 sq. ft. in surface area.

2. For interior plasterwork, simulate finished lighting conditions for review of mockups.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Engineer specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 FIELD CONDITIONS

A. Comply with ASTM C926 requirements.

B. Interior Plasterwork: Maintain room temperatures at greater than 40 deg F for at least 48 hours before plaster application, and continuously during and after application.

1. Avoid conditions that result in plaster drying out during curing period. Distribute heat evenly; prevent concentrated or uneven heat on plaster.
2. Ventilate building spaces as required to remove water in excess of that required for hydrating plaster in a manner that prevents drafts of air from contacting surfaces during plaster application and until plaster is dry.

C. Factory-Prepared Finishes: Comply with manufacturer's written recommendations for environmental conditions for applying finishes.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance Ratings: Where indicated, provide cement plaster assemblies identical to those of assemblies tested for fire resistance according to ASTM E119 by a qualified testing agency.

2.2 METAL LATH

A. Expanded-Metal Lath: ASTM C847, cold-rolled carbon-steel sheet with ASTM A653/A653M, G60, hot-dip galvanized-zinc coating.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. CEMCO; California Expanded Metal Products Co.
b. ClarkDietrich.
c. Marino\WARE.

2. Diamond-Mesh Lath: Self-furring, 2.5 lb./sq. yd.

B. General: Comply with ASTM C1063, and coordinate depth of trim and accessories with thicknesses and number of plaster coats required.

1. Cornerite: Fabricated from metal lath with ASTM A653/A653M, G60, hot-dip galvanized-zinc coating.
2. Cornerbeads: Fabricated from zinc or zinc-coated (galvanized) steel.

a. Smallnose cornerbead with expanded flanges; use unless otherwise indicated.

3. Casing Beads: Fabricated from zinc or zinc-coated (galvanized) steel; square-edged style; with expanded flanges.

4. Control Joints: Fabricated from zinc or zinc-coated (galvanized) steel; one-piece-type, folded pair of unperforated screeds in M-shaped configuration; with perforated flanges and removable protective tape on plaster face of control joint.
5. Expansion Joints: Fabricated from zinc or zinc-coated (galvanized) steel; folded pair of unperforated screeds in M-shaped configuration; with expanded flanges.
6. Two-Piece Expansion Joints: Fabricated from zinc or zinc-coated (galvanized) steel; formed to produce slip-joint and square-edged reveal that is adjustable from 1/4 to 5/8 inch wide; with perforated flanges.

C. Plastic Accessories: Manufactured from high-impact PVC.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

   a. AMICO, a Gibraltar Industries company.
   b. ClarkDietrich.
   c. Plastic Components, Inc.

2. Cornerbeads: With perforated flanges.

   a. Smallnose cornerbead; use unless otherwise indicated.
   b. Bullnose cornerbead, radius 3/4-inch minimum; use at locations indicated on Drawings.

3. Casing Beads: With perforated flanges in depth required to suit plaster bases indicated and flange length required to suit applications indicated.

   a. Square-edge style; use unless otherwise indicated.
   b. Bullnose style, radius 3/4-inch minimum; use at locations indicated on Drawings.

4. Control Joints: One-piece-type, folded pair of unperforated screeds in M-shaped configuration; with perforated flanges and removable protective tape on plaster face of control joint.
5. Expansion Joints: Two-piece type, formed to produce slip-joint and square-edged 1/2-inch- wide reveal; with perforated concealed flanges.

2.3 MISCELLANEOUS MATERIALS

A. Water for Mixing and Finishing Plaster: Potable and free of substances capable of affecting plaster set or of damaging plaster, lath, or accessories.

B. Fiber for Base Coat: Alkaline-resistant glass or polypropylene fibers, 1/2 inch long, free of contaminants, manufactured for use in cement plaster.

C. Bonding Compound: ASTM C932.

D. Fasteners for Attaching Metal Lath to Substrates: ASTM C1063.

E. Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper, not less than 0.0475-inch diameter unless otherwise indicated.

2.4 PLASTER MATERIALS

A. Portland Cement: ASTM C150/C150M, Type II.

1. Color for Finish Coats: Gray.

B. Colorants for Job-Mixed Finish Coats: Colorfast mineral pigments that produce finish plaster color to match Engineer's sample.

C. Lime: ASTM C206, Type S; or ASTM C207, Type S.

D. Sand Aggregate: ASTM C897.

1. Color for Job-Mixed Finish Coats: In color matching Engineer's sample.

E. Perlite Aggregate: ASTM C35.

F. Exposed Aggregates for Finish Coats: For marblecrete finish, clean, sound, crushed marble matching color and size gradation of Engineer's sample.

G. Ready-Mixed Finish-Coat Plaster: Mill-mixed portland cement, aggregates, coloring agents, and proprietary ingredients.

1. Color: Match Engineer's sample.

2.5 PLASTER MIXES

A. General: Comply with ASTM C926 for applications indicated.

1. Fiber Content: Add fiber to base-coat mixes after ingredients have mixed at least two minutes. Comply with fiber manufacturer's written instructions for fiber quantities in mixes, but do not exceed 1 lb of fiber/cu. yd. of cementitious materials.

B. Base-Coat Mixes for Use over Metal Lath: Scratch and brown coats for three-coat plasterwork as follows:

1. Portland Cement Mixes:

a. Scratch Coat: For cementitious material, mix 1 part portland cement and 3/4 to 1-1/2 parts lime. Use 2-1/2 to 4 parts aggregate per part of cementitious material.
b. Brown Coat: For cementitious material, mix 1 part portland cement and 3/4 to 1-1/2 parts lime. Use 3 to 5 parts aggregate per part of cementitious material, but not less than volume of aggregate used in scratch coat.

C. Base-Coat Mixes for Use over Concrete: Single base (scratch) coat for two-coat plasterwork on low-absorption plaster bases as follows:

1. Portland Cement Mix: For cementitious material, mix 1 part portland cement and 0 to 3/4 part lime. Use 2-1/2 to 4 parts aggregate per part of cementitious material.

2. Portland and Masonry Cement Mix: For cementitious material, mix 1 part portland cement and 1 part masonry cement. Use 2-1/2 to 4 parts aggregate per part of cementitious material.
3. Plastic Cement Mix: Use 1 part plastic cement and 2-1/2 to 4 parts aggregate.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protect adjacent work from soiling, spattering, moisture deterioration, and other harmful effects caused by plastering.

B. Prepare smooth, solid substrates for plaster according to ASTM C926.

3.3 INSTALLATION, GENERAL

A. Fire-Resistance-Rated Assemblies: Install components according to requirements for design designations from listing organization and publication indicated on Drawings.

3.4 INSTALLING METAL LATH

A. Metal Lath: Install according to ASTM C1063.

1. Partition Framing and Vertical Furring: Install flat-diamond-mesh lath.
2. On Solid Surfaces, Not Otherwise Furred: Install self-furring, diamond-mesh lath.

3.5 INSTALLING ACCESSORIES

A. Install according to ASTM C1063 and at locations indicated on Drawings.

B. Control Joints: Locate as approved by Engineer for visual effect and as follows:

1. As required to delineate plasterwork into areas (panels) of the following maximum sizes:

    a. Vertical Surfaces: 144 sq. ft.
    b. Horizontal and Other Nonvertical Surfaces: 100 sq. ft.

2. At distances between control joints of not greater than 18 feet o.c.
3. As required to delineate plasterwork into areas (panels) with length-to-width ratios of not greater than 2-1/2:1.
4. Where control joints occur in surface of construction directly behind plaster.

5. Where plasterwork areas change dimensions, to delineate rectangular-shaped areas (panels) and to relieve the stress that occurs at the corner formed by the dimension change.

3.6 PLASTER APPLICATION

A. General: Comply with ASTM C926.

1. Do not deviate more than plus or minus 1/4 inch in 10 feet from a true plane in finished plaster surfaces when measured by a 10-foot straightedge placed on surface.
2. Finish plaster flush with metal frames and other built-in metal items or accessories that act as a plaster ground unless otherwise indicated. Where casing bead does not terminate plaster at metal frame, cut base coat free from metal frame before plaster sets and groove finish coat at junctures with metal.
3. Provide plaster surfaces that are ready to receive field-applied finishes indicated.

B. Bonding Compound: Apply on concrete substrates for direct application of plaster.

C. Walls; Base-Coat Mixes for Use over Metal Lath: For scratch and brown coats, for three-coat plasterwork with 3/4-inch total thickness, as follows:

1. Portland cement mixes.

3.7 PLASTER REPAIRS

A. Repair or replace work to eliminate cracks, dents, blisters, buckles, crazing and check cracking, dry outs, efflorescence, sweat outs, and similar defects and where bond to substrate has failed.

3.8 CLEANING AND PROTECTION

A. Remove temporary protection and enclosure of other work after plastering is complete. Promptly remove plaster from door frames, windows, and other surfaces not indicated to be plastered. Repair floors, walls, and other surfaces stained, marred, or otherwise damaged during plastering.

END OF SECTION 092400

SECTION 099679 – ATMOSPHERIC PROTECTION AND PLANT SERVICE AREAS COATINGS

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 surface preparation and application of high-performance coating systems on the following substrates:

1. Exterior Substrates:

    a. Existing masonry units.
    b. Existing steel window security bars.
    c. Existing and new railing.
    d. Canopy support columns and beams.

2. Interior Substrates:

    a. Ceiling surfaces.
    b. Existing and new plaster.

1.3 DEFINITIONS

A. MPI Gloss Levels: Following define gloss levels according to ASTM D 523:

1. MPI Gloss Level 1 - Traditional Matte or Flat Finish: Maximum five units at 60 degrees and 10 units at 85 degrees.
2. MPI Gloss Level 3 - Traditional Eggshell-Like Finish: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees.
3. MPI Gloss Level 5 - Traditional Semi-Gloss Finish: 35 to 70 units at 60 degrees.
4. MPI Gloss Level 6 - Traditional Gloss: 70 to 85 units at 60 degrees.

B. Mild Exposure: Normal outdoor weathering and standard industrial exposures are considered mild environments. A normal industrial setting is one with low to moderate levels of humidity and condensation and little development of mold and mildew. A mild environment has only limited exposure to chemical fumes or mist, and occasional occurrences of chemical spills or splash. Regular cleaning with standard commercial chemical cleaning agents, with only occasional use of stronger chemical cleaning agents, is also characteristics of a mild environment. Metal corrosion will occur in a mild environment, but it is minimal. These are generally dry areas with little to no Hydrogen Sulfide (H2S), Chlorine, or other corrosive chemicals, or the area is damp.

C. Moderate Exposure: An atmosphere that can be characterized as corrosive, within reasonable limits, is considered a moderate environment. In an industrial setting, a moderate environment indicates intermittent exposure to high humidity and condensation with occasional development of mold and mildew. Exposure to heavy concentrations of chemical fumes or mist and accidental chemical spills or splash occurs occasionally in a moderate environment. Regular use of strong chemicals rather than standard commercial cleaning agent also changes a mild environment into a moderate one. Metal corrosion is common in a moderate environment.

D. Severe Exposure: An aggressively corrosive industrial or predominantly chemical environment with regular exposure to strong chemical fumes, mists, and dust is considered a severe environment. In an industrial setting, a severe environment is one with sustained exposure to high humidity and condensation that results in heavy development of mold and mildew. Frequent spilling and splashing of strong chemicals (acids, alkalis, oxidizers, and solvents) are also characteristic of a severe environment. Metal corrosion can be expected in a severe environment. Immersion conditions, marine environment with sustained exposure to saltwater spray, and arctic environment with long periods of extremely low temperature are considered severe environments. These are areas where if no high-performance coatings are applied on steel or concrete, very early failure and structural damage will be evident.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

1. Indicate VOC content.

B. Samples for Initial Selection: For each type of topcoat product indicated.

C. Samples for Verification: For each type of coating system and each color and gloss of topcoat indicated.

1. Submit Samples on actual substrate material to be coated, 8 inches square.
2. Apply coats on Samples in steps to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

D. Product List: Use same designations indicated on Drawings and in Atmospheric Protection Coating Schedule and Plant Service Areas Coating Schedule. Include color designations and product runs (batch numbers).

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Coatings: 5 percent, but not less than 1 gal. of each material and color applied.

1.6 QUALITY ASSURANCE

A. Mockups: Apply mockups of each coating system indicated to verify preliminary selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Engineer will select one surface to represent surfaces and conditions for application of each coating system.

    a. Wall and Ceiling Surfaces: Provide samples of at least 100 sq. ft.
    b. Other Items: Engineer will designate items or areas required.

2. Final approval of color selections will be based on mockups.

    a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Engineer at no added cost to Owner.

3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Engineer specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.
3. Deliver materials on site in factory sealed containers from the manufacturer. Do not use materials from previous jobs.

1.8 FIELD CONDITIONS

A. Apply coatings only when temperature of surfaces to be coated and ambient air temperatures are within the coatings manufacturer’s recommendations.

B. Do not apply coatings when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point and rising; or to damp or wet surfaces.

C. Lead Paint: It is not expected that lead paint will be encountered in the Work.

1. If suspected lead paint is encountered, do not disturb; immediately notify Engineer and Owner.

D. Do not apply exterior coatings in snow, rain, fog, mist, and in conditions that do not meet the manufacturer’s recommendations.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Carboline Company (CAR).
2. PPG Paints (PPG).
3. The Sherwin-Williams Company (SWC).
4. Tnemec Company, Inc. (TNE).

2.2 HIGH-PERFORMANCE COATINGS

A. Material Compatibility:

1. Each coating system within indicated substrates uses compatible material with one another, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. Topcoat manufacturer recommends products in writing for use in each coating system coat and on indicated substrate.
3. Use products from same manufacturer for each coat in coating system.

B. Colors: As selected by Engineer from manufacturer's full range.

2.3 SOURCE QUALITY CONTROL

A. Testing of Coating Materials: Owner reserves the right to invoke the following procedure:

1. Owner will engage services of a qualified testing agency to sample coating materials. Contractor will be notified in advance and may be present when samples are taken. If coating materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
2. Testing agency will perform tests for compliance with product requirements.
3. Owner may direct Contractor to stop applying coatings if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying coating materials from Project site, pay for testing, and recoat surfaces coated with rejected materials. Contractor will be required to remove rejected materials from previously coated surfaces if, on recoating with complying materials, both coatings are incompatible.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Masonry: 12 percent.
2. Plaster: 12 percent.

C. Plaster Substrates: Verify that plaster is fully cured.

D. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.

1. Application of coating indicates acceptance of surfaces and conditions.
2. Recoating of Previously Coated Surfaces: Verify conditions and compatibility between new and existing high-performance coating products.

E. Proceed with coating application only after unsatisfactory conditions have been corrected. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions applicable to substrates and coating systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be coated.

1. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and coating.
2. After completing coating operations, use workers skilled in the trades involved to reinstall items that were removed.
3. Remove surface-applied protection if any.

C. Clean substrates of substances that could impair bond of coatings, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce coating systems indicated.

D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

1. Abrasive blast clean surfaces to comply with SSPC-SP-13/NACE 6.
2. Prepare substrate with manufacturer’s recommended Concrete Surface Profile (CSP) based on coating system to be applied:

a. High-build coatings, 10 to 40 mils: CSP 3 to CSP 5.
b. Self-leveling toppings, 50 mils to 1/8-inch: CSP 4 to CSP 6.

E. Masonry Substrates: Remove efflorescence and chalk.

1. Do not coat surfaces if moisture content, alkalinity of surfaces, or alkalinity of mortar joints exceeds that permitted in manufacturer's written instructions.

F. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by manufacturer but not less than the following:

1. SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning."

3.3 APPLICATION

A. Apply high-performance coatings in accordance with manufacturer's written instructions.

1. Use applicators and techniques suited for coating and substrate indicated.
2. Coat surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, coat surfaces behind permanently fixed equipment or furniture with prime coat only.
3. Coat backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
4. Do not apply coatings over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

B. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance.

C. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks.

D. Film Thickness: Apply paint in wet film thickness (WFT) recommended by high-performance manufacturer to achieve specified dry film thickness (DFT) for each coat of paint. Since DFT varies among manufacturers, this reference is not included in Article "Atmospheric Protection Coating Schedule and Plant Service Areas Coating Schedule."

3.4 FIELD QUALITY CONTROL FOR MASONRY SUBSTRATES

A. General: Field quality control referenced in this Article includes testing of both pre-application quality assurance and post-application quality control of high-performance coatings. Employ approved testing and inspecting agency to perform quality assurance and quality control.

1. Perform Quality Control Testing in the order identified in the following subparagraph.

a. Testing Order: pH Testing, Surface Profile Testing, and Moisture Testing, followed by Dry Film Thickness Testing, Adhesion Testing, and Holiday Testing.
b. Repair substrate, touch up, and restore coated surfaces damaged by testing.
c. If test results show that dry film thickness, holiday, and pull-off strength of applied coating does not comply with coating manufacturer's written instructions, pay for testing, and apply additional coats as needed to provide dry film thickness, pull-off strength that complies with coating manufacturer's written instructions.

B. Quality Assurance Testing:

1. Surface Preparation Testing:

a. Inspect and test condition of substrate for compliance with coating manufacturer's requirements.
b. Measure surface profile using International Concrete Repair Institute (ICRI) 310.2 Comparator Coupons.
c. Test concrete cleanliness by measuring the pH of the moisture in the concrete capillaries.

1) pH of New Concrete: 12 to 13.
2) pH of Concrete Subjected to Acid Attack: 9.0 minimum.

C. Quality Control Testing:

1. Dry Film Thickness Testing:

a. Inspect and test coatings for dry film thickness per ASTM D6132.

2. Adhesion Testing:

a. Field test pull-off strength of coatings on concrete using portable pull-off adhesion testers. Comply with ASTM D7234. Minimum adhesion of 200 psi with failure in the concrete substrate (concrete over 90 percent of the load fixture surface).

3. Holiday Testing:

a. Field test continuity verification of coatings applied to concrete substrates. Discontinuities include pinholes, internal voids, holidays, cracks, and conductive inclusions. Comply with ASTM D4787.

3.5 FIELD QUALITY CONTROL FOR STEEL SUBSTRATE

A. General: Field quality control referenced in this Article includes testing of both pre-application quality assurance and post-application quality control of high-performance coatings. Employ approved testing and inspecting agency to perform quality assurance and quality control.

1. Perform Quality Control Testing in the order identified in the following subparagraph.

a. Testing Order: Dry Film Thickness Testing, Adhesion Testing, then Holiday Testing.

2. Repair substrate, touch up, and restore coated surfaces damaged by testing.
3. If test results show that dry film thickness, holiday, and pull-off strength of applied coating does not comply with coating manufacturer's written instructions, pay for testing, and apply additional coats as needed to provide dry film thickness and pull-off strength that complies with coating manufacturer's written instructions.
4. Owner or Owner's representative will conduct random independent inspections and tests for the final acceptance or rejection of pipe coating.

B. Quality Assurance Testing:

1. Surface Preparation Testing:

a. Test surface profile of abrasive blasted surfaces with “Press-O-Film” tester tape or equivalent in accordance with NACE RP0287.
b. Provide tester tape suitable for the intended profile height.
c. Measure profile to a minimum tolerance of 0.1 mils, maximum.
d. Use electronic surface profilometers necessary to verify tester tape measurements.

C. Quality Control Testing:

1. Dry Film Thickness Testing:

a. Inspect and test coatings for dry film thickness per ASTM D7091 or ASTM D6132.

2. Adhesion Testing:

a. General:

1) Test a minimum of two pipes for adhesion from each lot of pipes to be coated up to 3,000 square feet of pipe. Conduct an additional adhesion test on every increment up to 2,000 square feet of pipe coated in excess of the first 3,000 square feet of pipe (i.e., if one workday of production is 7,000 square feet of pipe, four adhesion tests will be conducted on the pipe lot.). Conduct adhesion testing on not less than 50 percent of each pipe produced within a lot.
2) A pipe lot is defined as the quantity of pipe that is coated by a single crew within a work shift, but not exceeding 12 hours.
3) Perform adhesion tests not less than 24 hours after coating application. Tests conducted prior to 24 hours will be acceptable only if test meets or exceeds adhesion criteria specified and the test was requested by Owner.
4) Randomly select pipe for adhesion testing. Owner reserves the right to perform adhesion testing at any time or location.

b. Rejection of Coating:

1) If any coatings within a lot fails to meet test criteria specified for coating type, those coatings are considered rejected along with all other coatings within the lot. Each coating within the rejected pipe lot will then be individually tested and rejected on a pipe-by-pipe basis in conformance with test procedures and criteria specific for the coating type.
2) Rejected coatings shall have all coating removed from full pipe length, pipe abrasive blasted, and recoated.

3. Holiday Testing:

a. Conduct holiday tests on completed coatings after cure or 24-hours, whichever is less. Provide a high voltage testing equipment and test in accordance with NACE SP0274 and the Specifications.

b. Use actual coating thickness for holiday testing.
c. Provide holiday detector with an audible signal when contact is made between pipeline and electrode at coating holidays (defects). Provide a good ground and a low electrical resistance between pipeline and detector. Make only direct connections to uncoated areas or to pipe ends at holdback areas.
d. Clean and dry pipe surface when testing. Always keep electrode in motion and in firm contact with coated surface while test voltage is being applied. Move electrode evenly over the surface at approximately 0.5 to 1 fps. Do not exceed 1 fps of travel time.
e. Mark location of detected holidays for repair. Retest after making necessary repairs.

3.6 CLEANING AND PROTECTION

A. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

B. Protect work of other trades against damage from coating operation. Correct damage to work of other trades by cleaning, repairing, replacing, and recoating, as approved by Engineer, and leave in an undamaged condition.

C. At completion of construction activities of other trades, touch up and restore damaged or defaced coated surfaces.

3.7 ATMOSPHERIC PROTECTION COATING SCHEDULE

A. Exterior/Interior Weathering and Protection

1. Masonry Substrates: Mild to Moderate Exposure.

a. Acrylic Polyurethane over Epoxy System:

1) Prime Coat:

a) CAR: Sanitile 500.
b) PPG: 4-100XI.
c) SWC: Loxon Block Surfacer.
d) TNE: Series 130.

2) Intermediate Coat:

a) CAR: Carboguard 60.
b) PPG: Amerlock 2/2 VOC/400/600.
c) SWC: Macropoxy 646 FC.
d) TNE: Series 66.

3) Topcoat: (MPI Gloss Level 5 or 6).

a) CAR: Carbothane 134 series.
b) PPG: Pitthane Ultra.

c) SWC: Acrolon Ultra.
d) TNE: Series 1094.

2. Steel Substrates: Moderate to Severe Exposure.

a. Pigmented Polyurethane over Self-Priming Epoxy System:

1) Prime Coat:

a) CAR: Carboguard 60/Carboguard 635VOC.
b) PPG: Amerlock 2/2 VOC/400/600.
c) SWC: Macropoxy 646 PW.
d) TNE: Series 66.

2) Intermediate Coat:

a) CAR: Carboguard 60/Carboguard 635VOC.
b) PPG: Amerlock 2/2 VOC/400/600.
c) SWC: Macropoxy 646 PW.
d) TNE: Series 66.

3) Topcoat: (MPI Gloss Level 6).

a) CAR: Carbothane 134 UV Ultra.
b) PPG: Pitthane Ultra.
c) SWC: Acrolon 218.
d) TNE: Series 1094.

3. Plaster Substrates:

a. Latex over Alkali Resistant Primer System - Plaster Only:

1) Prime Coat: Primer sealer, alkali-resistant, interior:

a) SWC: Loxon Concrete & Masonry Primer, LX02-50 series.
b) PPG: Seal Grip Interior/Exterior Acrylic Universal Primer/Sealer 17-921XI.
c) BMC: Fresh Start All Purpose Primer 023.

b. Intermediate Coat: Matching topcoat.

c. Topcoat: Latex, interior, eggshell finish (MPI Gloss Level 3):

1) SWC: ProMar 200 Zero VOC Interior Latex Eg-shel, B20-12650 Series.
2) PPG: Speedhide Zero Interior Zero VOC Latex Satin 6-4410XI Series.
3) BMC: Ultra Spec 500 Interior Eggshell, N538.

END OF SECTION 099679

SECTION 260010 - SUPPLEMENTAL REQUIREMENTS FOR ELECTRICAL

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. Supplemental requirements generally applicable to the Work specified in Division 26. This Section is also referenced by related Work specified in other Divisions.

1.3 REFERENCES

A. Abbreviations and Acronyms for Electrical Terms and Units of Measure:

1. 8P8C: An 8-position 8-contact modular jack.
2. A: Ampere, unit of electrical current.
3. AC or ac: Alternating current.
4. AFCI: Arc-fault circuit interrupter.
5. AIC: Ampere interrupting capacity.
6. AL, Al, or ALUM: Aluminum.
7. ASD: Adjustable-speed drive.
8. ATS: Automatic transfer switch.
9. AWG: American wire gauge; see ASTM B258.
10. BAS: Building automation system.
11. BIL: Basic impulse insulation level.
12. BIM: Building information modeling.
13. CAD: Computer-aided design or drafting.
14. CATV: Community antenna television.
15. CB: Circuit breaker.
16. cd: Candela, the SI fundamental unit of luminous intensity.
17. CO/ALR: Copper-aluminum, revised.
18. COPS: Critical operations power system.
19. CU or Cu: Copper.
20. CU-AL or AL-CU: Copper-aluminum.
21. dB: Decibel, a unitless logarithmic ratio of two electrical, acoustical, or optical power values.
22. dB(A-weighted) or dB(A): Decibel acoustical sound pressure level with A-weighting applied in accordance with IEC 61672-1.
23. dB(adjusted) or dBa: Decibel weighted absolute noise power with respect to 3.16 pW (minus 85 dBm).
24. dBm: Decibel absolute power with respect to 1 mW.

25. DC or dc: Direct current.
26. DCOA: Designated critical operations area.
27. DDC: Direct digital control (HVAC).
28. EGC: Equipment grounding conductor.
29. ELV: Extra-low voltage.
30. EMF: Electromotive force.
31. EMI: Electromagnetic interference.
32. EPM: Electrical preventive maintenance.
33. EPS: Emergency power supply.
34. EPSS: Emergency power supply system.
35. ESS: Energy storage system.
36. EV: Electric vehicle.
37. EVPE: Electric vehicle power export equipment.
38. EVSE: Electric vehicle supply equipment.
39. fc: Footcandle, an internationally recognized unit of illuminance equal to one lumen per square foot or 10.76 lx. The simplified conversion 1 fc = 10 lx in the Specifications is common practice and considered adequate precision for building construction activities. When there are conflicts, lux is the primary unit; footcandle is specified for convenience.
40. FLC: Full-load current.
41. ft: Foot.
42. ft-cd: Foot-candle, the antiquated U.S. Standard unit of illuminance, equal to one international candle measured at a distance of one foot, that was superseded in 1948 by the unit "footcandle" after the SI unit candela (cd) replaced the international candle; see "fc,"
43. GEC: Grounding electrode conductor.
44. GFCI: Ground-fault circuit interrupter.
45. GFPE: Ground-fault protection of equipment.
46. GND: Ground.
47. HACR: Heating, air conditioning, and refrigeration.
48. HDPE: High-density polyethylene.
49. HID: High-intensity discharge.
50. HP or hp: Horsepower.
51. HVAC: Heating, ventilating, and air conditioning.
52. Hz: Hertz.
53. IBT: Intersystem bonding termination.
54. inch: Inch. To avoid confusion, the abbreviation "in." is not used.
55. IP: Ingress protection rating (enclosures); Internet protocol (communications).
56. IR: Infrared.
57. IS: Intrinsically safe.
58. IT&R: Inspecting, testing, and repair.
59. ITE: Information technology equipment.
60. kAIC: Kiloampere interrupting capacity.
61. kcmil or MCM: One thousand circular mils.
62. kV: Kilovolt.
63. kVA: Kilovolt-ampere.
64. kVAr or kVAR: Kilovolt-ampere reactive.
65. kW: Kilowatt.
66. kWh: Kilowatt-hour.
67. LAN: Local area network.
68. lb: Pound (weight).
69. lbf: Pound (force).

70. LCD: Liquid-crystal display.
71. LCDI: Leakage-current detector-interrupter.
72. LED: Light-emitting diode.
73. Li-ion: Lithium-ion.
74. lm: Lumen, the SI derived unit of luminous flux.
75. LNG: Liquefied natural gas.
76. LP-Gas: Liquefied petroleum gas.
77. LRC: Locked-rotor current.
78. LV: Low voltage.
79. lx: Lux, the SI derived unit of illuminance equal to one lumen per square meter.
80. m: Meter.
81. MCC: Motor-control center.
82. MDC: Modular data center.
83. MG set: Motor-generator set.
84. MIDI: Musical instrument digital interface.
85. MLO: Main lugs only.
86. MV: Medium voltage.
87. MVA: Megavolt-ampere.
88. mW: Milliwatt.
89. MW: Megawatt.
90. MWh: Megawatt-hour.
91. NC: Normally closed.
92. Ni-Cd: Nickel-cadmium.
93. Ni-MH: Nickel-metal hydride.
94. NIU: Network interface unit.
95. NO: Normally open.
96. NPT: National (American) standard pipe taper.
97. OCPD: Overcurrent protective device.
98. ONT: Optical network terminal.
99. PC: Personal computer.
100. PCS: Power conversion system.
101. PCU: Power-conditioning unit.
102. PF or pf: Power factor.
103. PHEV: Plug-in hybrid electric vehicle.
104. PLC: Programmable logic controller.
105. PLFA: Power-limited fire alarm.
106. PoE: Power over Ethernet.
107. PV: Photovoltaic.
108. PVC: Polyvinyl chloride.
109. pW: Picowatt.
110. RFI: (electrical) Radio-frequency interference; (contract) Request for interpretation.
111. RMS or rms: Root-mean-square.
112. RPM or rpm: Revolutions per minute.
113. SCADA: Supervisory control and data acquisition.
114. SCR: Silicon-controlled rectifier.
115. SPD: Surge protective device.
116. sq.: Square.
117. SWD: Switching duty.
118. TCP/IP: Transmission control protocol/Internet protocol.
119. TEFC: Totally enclosed fan-cooled.
120. TR: Tamper resistant.

121. TVSS: Transient voltage surge suppressor.
122. UL: (standards) Underwriters Laboratories, Inc.; (product categories) UL, LLC.
123. UL CCN: UL Category Control Number.
124. UPS: Uninterruptible power supply.
125. USB: Universal serial bus.
126. UV: Ultraviolet.
127. V: Volt, unit of electromotive force.
128. V(ac): Volt, alternating current.
129. V(dc): Volt, direct current.
130. VA: Volt-ampere, unit of complex electrical power.
131. VAR: Volt-ampere reactive, unit of reactive electrical power.
132. VFC: Variable-frequency controller.
133. VFD: Variable-frequency drive. See VFC.
134. VOM: Volt-ohm-multimeter.
135. VPN: Virtual private network.
136. VRLA: Valve regulated lead acid; also called "sealed lead acid (SLA)" or "valve regulated sealed lead acid."
137. W: Watt, unit of real electrical power.
138. Wh: Watt-hour, unit of electrical energy usage.
139. WPT: Wireless power transfer.
140. WPTE: Wireless power transfer equipment.
141. WR: Weather resistant.

B. Abbreviations and Acronyms for Electrical Raceway Types:

1. EMT: Electrical metallic tubing.
2. EMT-A: Aluminum electrical metallic tubing.
3. EMT-S: Steel electrical metallic tubing.
4. EMT-SS: Stainless steel electrical metallic tubing.
5. ENT: Electrical nonmetallic tubing.
6. EPEC: Electrical HDPE underground conduit (thin wall).
7. EPEC-A: Type A electrical HDPE underground conduit.
8. EPEC-B: Type B electrical HDPE underground conduit.
9. ERMC: Electrical rigid metal conduit.
10. ERMC-A: Aluminum electrical rigid metal conduit.
11. ERMC-S: Steel electrical rigid metal conduit.
12. ERMC-S-G: Galvanized-steel electrical rigid metal conduit.
13. ERMC-S-PVC: PVC-coated-steel electrical rigid metal conduit.
14. ERMC-SS: Stainless steel electrical rigid metal conduit.
15. FMC: Flexible metal conduit.
16. FMC-A: Aluminum flexible metal conduit.
17. FMC-S: Steel flexible metal conduit.
18. FMT: Steel flexible metallic tubing.
19. FNMC: Flexible nonmetallic conduit. See "LFNC."
20. GRS: Galvanized rigid steel conduit. See ERMC-S-G.
21. HDPE: HDPE underground conduit (thick wall).
22. HDPE-40: Schedule 40 HDPE underground conduit.
23. HDPE-80: Schedule 80 HDPE underground conduit.
24. IMC: Steel electrical intermediate metal conduit.
25. LFMC: Liquidtight flexible metal conduit.
26. LFMC-A: Aluminum liquidtight flexible metal conduit.

27. LFMC-S: Steel liquidtight flexible metal conduit.
28. LFMC-SS: Stainless steel liquidtight flexible metal conduit.
29. LFNC: Liquidtight flexible nonmetallic conduit.
30. LFNC-A: Layered (Type A) liquidtight flexible nonmetallic conduit.
31. LFNC-B: Integral (Type B) liquidtight flexible nonmetallic conduit.
32. LFNC-C: Corrugated (Type C) liquidtight flexible nonmetallic conduit.
33. PVC: Rigid PVC conduit.
34. PVC-40: Schedule 40 rigid PVC conduit.
35. PVC-80: Schedule 80 rigid PVC Conduit.
36. PVC-A: Type A rigid PVC concrete-encased conduit.
37. PVC-EB: Type EB rigid PVC concrete-encased underground conduit.
38. RAC: Rigid aluminum conduit. See ERMC-A.
39. RGS: Rigid galvanized steel conduit. See ERMC-S-G.
40. RMC: Rigid metal conduit. See ERMC.
41. RTRC: Reinforced thermosetting resin conduit.
42. RTRC-AG: Low-halogen, aboveground reinforced thermosetting resin conduit.
43. RTRC-AG-HW: Heavy wall, low-halogen, aboveground reinforced thermosetting resin conduit.
44. RTRC-AG-SW: Standard wall, low-halogen, aboveground reinforced thermosetting resin conduit.
45. RTRC-AG-XW: Extra heavy wall, low-halogen, aboveground reinforced thermosetting resin conduit.
46. RTRC-BG: Low-halogen, belowground reinforced thermosetting resin conduit.

C. Abbreviations and Acronyms for Electrical Single-Conductor and Multiple-Conductor Cable Types:

1. AC: Armored cable.
2. CATV: Coaxial general-purpose cable.
3. CATVP: Coaxial plenum cable.
4. CATVR: Coaxial riser cable.
5. CI: Circuit integrity cable.
6. CL2: Class 2 cable.
7. CL2P: Class 2 plenum cable.
8. CL2R: Class 2 riser cable.
9. CL2X: Class 2 cable, limited use.
10. CL3: Class 3 cable.
11. CL3P: Class 3 plenum cable.
12. CL3R: Class 3 riser cable.
13. CL3X: Class 3 cable, limited use.
14. CM: Communications general-purpose cable.
15. CMG: Communications general-purpose cable.
16. CMP: Communications plenum cable.
17. CMR: Communications riser cable.
18. CMUC: Under-carpet communications wire and cable.
19. CMX: Communications cable, limited use.
20. DG: Distributed generation cable.
21. FC: Flat cable.
22. FCC: Flat conductor cable.
23. FPL: Power-limited fire-alarm cable.
24. FPLP: Power-limited fire-alarm plenum cable.

25. FPLR: Power-limited fire-alarm riser cable.
26. IGS: Integrated gas spacer cable.
27. ITC: Instrumentation tray cable.
28. ITC-ER: Instrumentation tray cable, exposed run.
29. MC: Metal-clad cable.
30. MC-HL: Metal-clad cable, hazardous location.
31. MI: Mineral-insulated, metal-sheathed cable.
32. MTW: (machine tool wiring) Moisture-, heat-, and oil-resistant thermoplastic cable.
33. MV: Medium-voltage cable.
34. NM: Nonmetallic sheathed cable.
35. NMC: Nonmetallic sheathed cable with corrosion-resistant nonmetallic jacket.
36. NMS: Nonmetallic sheathed cable with signaling, data, and communications conductors, plus power or control conductors.
37. NPLF: Non-power-limited fire-alarm circuit cable.
38. NPLFP: Non-power-limited fire-alarm circuit cable for environmental air spaces.
39. NPLFR: Non-power-limited fire-alarm circuit riser cable.
40. NUCC: Nonmetallic underground conduit with conductors.
41. OFC: Conductive optical fiber general-purpose cable.
42. OFCG: Conductive optical fiber general-purpose cable.
43. OFCP: Conductive optical fiber plenum cable.
44. OFCR: Conductive optical fiber riser cable.
45. OFN: Nonconductive optical fiber general-purpose cable.
46. OFNG: Nonconductive optical fiber general-purpose cable.
47. OFNP: Nonconductive optical fiber plenum cable.
48. OFNR: Nonconductive optical fiber riser cable.
49. P: Marine shipboard cable.
50. PLTC: Power-limited tray cable.
51. PLTC-ER: Power-limited tray cable, exposed run.
52. PV: Photovoltaic cable.
53. RHH: (high heat) Thermoset rubber, heat-resistant cable.
54. RHW: Thermoset rubber, moisture-resistant cable.
55. SA: Silicone rubber cable.
56. SE: Service-entrance cable.
57. SER: Service-entrance cable, round.
58. SEU: Service-entrance cable, flat.
59. SIS: Thermoset cable for switchboard and switchgear wiring.
60. TBS: Thermoplastic cable with outer braid.
61. TC: Tray cable.
62. TC-ER: Tray cable, exposed run.
63. TC-ER-HL: Tray cable, exposed run, hazardous location.
64. THW: Thermoplastic, heat- and moisture-resistant cable.
65. THHN: Thermoplastic, heat-resistant cable with nylon jacket outer sheath.
66. THHW: Thermoplastic, heat- and moisture-resistant cable.
67. THWN: Thermoplastic, moisture- and heat-resistant cable with nylon jacket outer sheath.
68. TW: Thermoplastic, moisture-resistant cable.
69. UF: Underground feeder and branch-circuit cable.
70. USE: Underground service-entrance cable.
71. XHH: Cross-linked polyethylene, heat-resistant cable.
72. XHHW: Cross-linked polyethylene, heat- and moisture-resistant cable.

D. Definitions:

1. 8-Position 8-Contact (8P8C) Modular Jack: An unkeyed jack with up to eight contacts commonly used to terminate twisted-pair and multiconductor Ethernet cable. Also called a "TIA-1096 miniature 8-position series jack" (8PSJ), or an "IEC 8877 8-pole jack."

    a. Be careful when suppliers use "RJ45" generically. Obsolete RJ45 jacks used for analog telephone cables have rejection keys. 8P8C jacks used for digital telephone cables and Ethernet cables do not have rejection keys.

2. Basic Impulse Insulation Level (BIL): Reference insulation level expressed in impulse crest voltage with a standard wave not longer than 1.5 times 50 microseconds and 1.5 times 40 microseconds.
3. Cable: In accordance with NIST NBS Circular 37 and IEEE standards, in the United States for the purpose of interstate commerce, the definition of "cable" is (1) a conductor with insulation, or a stranded conductor with or without insulation (single-conductor cable); or (2) a combination of conductors insulated from one another (multiple-conductor cable).
4. Communications Jack: A fixed connecting device designed for insertion of a communications cable plug.
5. Communications Outlet: One or more communications jacks, or cables and plugs, mounted in a box or ring, with a suitable protective cover.
6. Conductor: In accordance with NIST NBS Circular 37 and IEEE standards, in the United States for the purpose of interstate commerce, the definition of "conductor" is (1) a wire or combination of wires not insulated from one another, suitable for carrying an electric current; (2) (National Electrical Safety Code) a material, usually in the form of wire, cable, or bar, suitable for carrying an electric current; or (3) (general) a substance or body that allows a current of electricity to pass continuously along it.
7. Designated Seismic System: A system component that requires design in accordance with Ch. 13 of ASCE/SEI 7 and for which the Component Importance Factor is greater than 1.0.
8. Direct Buried: Installed underground without encasement in concrete or other protective material.
9. Enclosure: The case or housing of an apparatus, or the fence or wall(s) surrounding an installation, to prevent personnel from accidentally contacting energized parts or to protect the equipment from physical damage. Types of enclosures and enclosure covers include the following:

    a. Cabinet: An enclosure that is designed for either surface mounting or flush mounting and is provided with a frame, mat, or trim in which a swinging door or doors are or can be hung.
    b. Concrete Box: A box intended for use in poured concrete.
    c. Conduit Body: A means for providing access to the interior of a conduit or tubing system through one or more removable covers at a junction or terminal point. In the United States, conduit bodies are listed in accordance with outlet box requirements.
    d. Conduit Box: A box having threaded openings or knockouts for conduit, EMT, or fittings.
    e. Cutout Box: An enclosure designed for surface mounting that has swinging doors or covers secured directly to and telescoping with the walls of the enclosure.

f. Device Box: A box with provisions for mounting a wiring device directly to the box.
g. Extension Ring: A ring intended to extend the sides of an outlet box or device box to increase the box depth, volume, or both.
h. Floor Box: A box mounted in the floor intended for use with a floor box cover and other components to complete the floor box enclosure.
i. Floor-Mounted Enclosure: A floor box and floor box cover assembly with means to mount in the floor that is sealed against the entrance of scrub water at the floor level.
j. Floor Nozzle: An enclosure used on a wiring system, intended primarily as a housing for a receptacle, provided with a means, such as a collar, for surface-mounting on a floor, which may or may not include a stem to support it above the floor level, and is sealed against the entrance of scrub water at the floor level.
k. Junction Box: A box with a blank cover that joins different runs of raceway or cable and provides space for connection and branching of the enclosed conductors.
l. Outlet Box: A box that provides access to a wiring system having pryout openings, knockouts, threaded entries, or hubs in either the sides or the back, or both, for the entrance of conduit, conduit or cable fittings, or cables, with provisions for mounting an outlet box cover, but without provisions for mounting a wiring device directly to the box.
m. Pedestal Floor Box Cover: A floor box cover that, when installed as intended, provides a means for typically vertical or near-vertical mounting of receptacle outlets above the floor's finished surface.
n. Pull Box: A box with a blank cover that joins different runs of raceway and provides access for pulling or replacing the enclosed cables or conductors.
o. Raised-Floor Box: A floor box intended for use in raised floors.
p. Recessed Access Floor Box: A floor box with provisions for mounting wiring devices below the floor surface.
q. Recessed Access Floor Box Cover: A floor box cover with provisions for passage of cords to recessed wiring devices mounted within a recessed floor box.
r. Ring: A sleeve, which is not necessarily round, used for positioning a recessed wiring device flush with the plaster, concrete, drywall, or other wall surface.
s. Ring Cover: A box cover, with raised center portion to accommodate a specific wall or ceiling thickness, for mounting wiring devices or luminaires flush with the surface.
t. Termination Box: An enclosure designed for installation of termination base assemblies consisting of bus bars, terminal strips, or terminal blocks with provision for wire connectors to accommodate incoming or outgoing conductors, or both.

10. Emergency Systems: Those systems legally required and classed as emergency by municipal, state, federal, or other codes, or by any governmental agency having jurisdiction that are designed to ensure continuity of lighting, electrical power, or both, to designated areas and equipment in the event of failure of the normal supply for safety to human life.
11. Fault Limited: Providing or being served by a source of electrical power that is limited to not more than 100 W when tested in accordance with UL 62368-1.

    a. The term "fault limited" is intended to encompass most Class 1, 2, and 3 power-limited sources complying with Article 725 of NFPA 70; Class ES1 and ES2 electrical energy sources that are Class PS1 electrical power sources (e.g., USB); and Class ES3 electrical energy sources that are Class PS1 and PS2 electrical

power sources (e.g., PoE). See UL 62368-1 for discussion of classes of electrical energy sources and classes of electrical power sources.

12. Jacket: A continuous nonmetallic outer covering for conductors or cables.
13. Luminaire: A complete lighting unit consisting of a light source such as a lamp, together with the parts designed to position the light source and connect it to the power supply. It may also include parts to protect the light source or the ballast or to distribute the light.
14. Mode: The terms "Active Mode," "Off Mode," and "Standby Mode" are used as defined in the Energy Independence and Security Act (EISA) of 2007.
15. Multi-Outlet Assembly: A type of surface, flush, or freestanding raceway designed to hold conductors, receptacles, and switches, assembled in the field or at the factory.
16. Plenum: A compartment or chamber to which one or more air ducts are connected and that forms part of the air distribution system.
17. Receptacle: A fixed connecting device arranged for insertion of a power cord plug. Also called a power jack.
18. Receptacle Outlet: One or more receptacles mounted in a box with a suitable protective cover.
19. Sheath: A continuous metallic covering for conductors or cables.
20. UL Category Control Number (CCN): An alphabetic or alphanumeric code used to identify product categories covered by UL's Listing, Classification, and Recognition Services.
21. Voltage Class: For specified circuits and equipment, voltage classes are defined as follows:

    a. Control Voltage: Having electromotive force between any two conductors, or between a single conductor and ground, that is supplied from a battery or other Class 2 or Class 3 power-limited source.
    b. Line Voltage: (1) (controls) Designed to operate using the supplied low-voltage power without transformation. (2) (transmission lines, transformers, SPDs) The line-to-line voltage of the supplying power system.
    c. Extra-Low Voltage (ELV): Not having electromotive force between any two conductors, or between a single conductor and ground, exceeding 30 V(ac rms), 42 V(ac peak), or 60 V(dc).
    d. Low Voltage (LV): Having electromotive force between any two conductors, or between a single conductor and ground, that is rated above 30 V but not exceeding 1000 V.
    e. Medium Voltage (MV): Having electromotive force between any two conductors, or between a single conductor and ground, that is rated about 1 kV but not exceeding 69 kV.
    f. High Voltage: (1) (circuits) Having electromotive force between any two conductors, or between a single conductor and ground, that is rated above 69 kV but not exceeding 230 kV. (2) (safety) Having sufficient electromotive force to inflict bodily harm or injury.

22. Wire: In accordance with NIST NBS Circular 37 and IEEE standards, in the United States for the purpose of interstate commerce, the definition of "wire" is a slender rod or filament of drawn metal. A group of small wires used as a single wire is properly called a "stranded wire." A wire or stranded wire covered with insulation is properly called an "insulated wire" or a "single-conductor cable." Nevertheless, when the context indicates that the wire is insulated, the term "wire" will be understood to include the insulation.

1.4 INTERPRETATION OF CONTRACT DOCUMENTS

A. If during performance of work, there is a conflict, error, or discrepancy between or among Contract Documents and laws and regulations, provide the higher performance standard unless otherwise directed by Engineer.

B. Priority of Documents: Figured dimensions govern over scaled dimensions, detailed drawings govern over general drawing, larger scale drawings take precedence over smaller scale drawings, change order drawings supersede original contract drawings, and contract drawings govern shop drawings.

C. In general, Drawings do not show conduit routing. Plan and route conduits in compliance with specifications and drawing details. Coordinate installation with other trades and actual supplied equipment.

D. Ductbank routing shown on electrical site plans is diagrammatic in nature and may not include interferences that may be present.

1.5 COORDINATION

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

1. Notify Owner no fewer than seven days in advance of proposed interruption of electrical service.
2. Do not proceed with interruption of electrical service without Owner's written permission.

B. Arrange to provide temporary electrical service or power in accordance with requirements specified in Division 01.

1.6 PREINSTALLATION MEETINGS

A. Schedule Preconstruction Meeting and other Preinstallation Meetings in accordance with “Project Meetings” Article of Section 013100 “Project Management and Coordination.”

1.7 SEQUENCING

A. Coordinate installation work with other trades.

1.8 ACTION SUBMITTALS

A. Submit Division 26 equipment and materials as specified in each Section at one time and not piecemeal. For example, all low voltage motor control centers on a project are to be submitted under one submittal number. Submittals that do not comply will be returned disapproved.

B. Subject to Engineer's approval, related items may be submitted together under one submittal. Contractor shall identify the multiple Sections included. For example, multiple Sections specify lighting fixtures and poles. A single submittal for lighting could be acceptable.

C. Electrical Installation Drawings:

1. Drawings in general do not show conduit routing other than major conduit and ductbank routes. Submit conduit layouts for exposed, concealed, and buried conduits.
2. Submit electrical room layouts using approved shop drawing dimensions for equipment.
3. Submit layouts at an appropriate scale for clarity.
4. Include type written conduit schedules for easy cross check.
5. Installation submittal drawing must be approved before concrete pours are made that will conceal conduits.

D. Training Plans: Submit instructional program outline for Engineer's review and approval, where demonstration and/or training is specified.

1.9 INFORMATIONAL SUBMITTALS

A. Electrical Installation Schedule: At preconstruction meeting, and periodically thereafter as dates change, provide schedule for electrical installation Work to Owner and Engineer including, but not limited to, milestone dates for the following activities:

1. Submission of power system studies.
2. Submission of specified coordination drawings.
3. Submission of action submittals specified in Division 26.
4. Orders placed for major electrical equipment.
5. Arrival of major electrical equipment on-site.
6. Preinstallation meetings specified in Division 26.
7. Utility service outages.
8. Utility service inspection and activation.
9. Closing of walls and ceilings containing electrical Work.
10. System startup, testing, and commissioning activities for major electrical equipment.
11. System startup, testing, and commissioning activities for emergency lighting.
12. System startup, testing, and commissioning activities for automation systems (SCADA, BMS, lighting, HVAC, fire alarm, fire pump, etc.).
13. Pouring of concrete housekeeping pads for electrical equipment and testing of concrete samples.
14. Requests for special inspections.
15. Requests for inspections by authorities having jurisdiction.

B. Qualification Statements: In accordance with individual Division 26 Sections.

1.10 CLOSEOUT SUBMITTALS

A. Record Documents: Submit documentation to accurately show completed installation. Include modifications to Contract Documents (one line power diagrams, equipment elevations, panel schedules, elementary control diagrams, riser diagrams, plans, conduit and ductbank routing, etc.) along with additional drawings or sketches created to convey completed installation.

B. Operation and Maintenance Data:

1. Provide emergency operation, normal operation, and preventive maintenance manuals for each system, equipment, and device as specified in each Division 26 Section.

1.11 QUALIFICATIONS

A. Comply with Quality Assurance Articles within each Division 26 Section.

B. Electrical Contractor Minimum Requirements: Regularly engaged in the installation of industrial medium voltage systems for a minimum period of 10 years.

C. On Site Field Superintendent:

1. Minimum of 10 years of experience of industrial low and medium voltage projects of comparable size and complexity.
2. Be present (or designated substitute with minimum experience as above) during medium voltage cable pulling and testing, during medium voltage switching activity, and during medium voltage equipment change over or start-up activities.

1.12 MATERIALS AND EQUIPMENT

A. Provide new materials and equipment unless specifically noted otherwise.

B. NEMA enclosure types are listed on the Drawings and/or the specifications.

C. Electrical materials and equipment must be listed by Underwriter's Laboratories, Inc. (UL**)** or other National Recognized Testing Laboratory (NRTL) and bear the appropriate listing or classification marking. Equipment not bearing a UL certification shall be field or factor UL certified prior to acceptance and use.

D. Provide major electrical equipment by a single manufacturer, i.e. unit substations, switchgear, motor control centers, disconnect switches, transformers, panelboards, etc.

E. Variable frequency controllers, when provided as a stand-alone package with the driven equipment and therefore not included in a motor control center are to be required to be by a single manufacturer.

1.13 EQUIPMENT SIZE, HANDLING, AND STORAGE

A. Coordinate with equipment manufacturer shipping splits to permit safe handling and passage of equipment to final installation location.

B. Comply with manufacturer's instructions for upright equipment orientation during transportation.

C. Protect equipment from mechanical injury, or exposure to moisture, chemicals, or corrosive gases. Do not store indoor rated electrical equipment outdoors.

D. Provide and energize temporary space heaters if required to control moisture during storage.

1.14 SERVICE AND METERING

A. Electric power company serving this project is National Grid. Power company contact is Richard Alfonseca with the following contact information:

1. Email: Richard.Alfonseca@nationalgrid.com; Phone number: (315)744-8609.
2. National Grid has created Work Request # 30815828 for City of Rome's upgrade of Commercial Service from 125A to 400A 1Ph 120/240 located at 0 Fish Creek Dam Taberg, NY 13471. Comply with power company standards.

B. Pay fees and charges as required for temporary / construction power for Contractor's use.

C. Pay fees and charges as required for permanent service via a bid allowance and submit power company invoices to owner for substantiation.

D. Power Company Work:

1. Provide utility transformer grounding.
2. Provide utility transformer(s).
3. Terminate overhead secondary cables at the utility transformer(s).
4. Provide metering current transformers (CT's), meter(s) and meter wiring.

E. Contractor Work:

1. Make arrangements with power company to obtain service, pay power company fees, and provide labor and materials required for electrical service.
2. Provide secondary overhead cable from utility transformer(s) to service entrance equipment.
3. Terminate secondary cables at the service entrance equipment.
4. Provide power company approved metering current transformer (CT) enclosure.
5. Install meter base enclosure.
6. Provide empty conduit with pull line from the metering CT enclosure to the meter base enclosure.

1.15 FIELD CONDITIONS

A. Modeling, analysis, product selection, installation, and quality control for Work specified in Division 26 must comply with requirements specified.

B. Service Conditions for Electrical Power Equipment: Specified electrical power equipment must be suitable for operation under service conditions specified as usual service conditions in applicable NEMA PB series, IEEE C37 series, and IEEE C57 series standards.

C. Delete the unusual service conditions paragraph if no unusual service conditions are present. If present, edit for project.

1.16 ELECTRICAL SYSTEM TESTING AND SETTINGS

A. Include commissioning section reference if included on project. Smaller projects may not need a commissioning spec. There are other sections that require electrical testing that may not be included in Division 26. For example, motors are included in the driven equipment Section and electric vehicle charging is now in Division 11.

B. Test electrical systems and equipment in accordance with individual sections. This includes motors or other electrical equipment which are not specified in Division 26.

C. Set and adjust controls, timers, relays, adjustable trip units, protective devices, and other electrical components in accordance with manufacturer's instructions. Do not energize equipment without correctly setting adjustable components.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 SLEEVES AND FORMS FOR OPENINGS

A. Provide and place sleeves for conduits and slots for electrical work prior to concrete pour.

B. Use approved Shop Drawings and equipment vendor templates to determine exact locations for stub-ups and terminating concealed conduit and place before floor slab pour.

3.2 CUTTING AND PATCHING

A. Cut and patch in a workmanlike manner as required to install electrical work.

B. Modify concrete in accordance with Division 3 "Concrete."

C. Do not cut joists, beams, girders, columns, or other structural members.

D. Patch surfaces to restore to original integrity (waterproof or fireproof as required) and appearance.

E. Core drill holes in concrete floors and walls as required. Prior to coring concrete, scan slab or wall using radar to locate and identify rebar and/or conduit and wiring. Locate cores to avoid cutting or drilling through rebar and/or conduits. Space conduits to not weaken structural integrity. Notify Engineer immediately if rebar is cut or upon becoming aware of discrepancies within area of work.

3.3 DEMOLITION AND DISPOSITION OF EQUIPMENT

A. Drawings showing removal of major mechanical and electrical equipment is not intended to show all components to be demolished. Not all piping, conduits, ducts, equipment, ancillary devices, etc. are shown. Field verify existing conditions prior to bid.

B. Unless otherwise specifically noted, remove unused exposed conduit and support systems back to source and/or point of concealment including above accessible ceiling finishes. Wiring shall be removed.

C. Cut flush with slab, ceiling, or wall abandoned concealed conduit. Suitably plug conduits.

D. Repair and restore adjacent construction and finishes after demolition is complete.

E. Material and equipment indicated for removal or demolition is to become the Contractor's property upon removal, unless noted otherwise. Removed material to be properly handled and disposed.

3.4 INSTALLATION OF ELECTRICAL WORK

A. Unless more stringent requirements are specified in the Contract Documents or manufacturers' written instructions, comply with NFPA 70 and NECA NEIS 1 for installation of Work specified in Division 26. Consult Engineer for resolution of conflicting requirements.

3.5 FIELD QUALITY CONTROL

A. Field testing, startup services, and system functional testing may be provided by the Contractor, and/or the manufacturer's factory-authorized service representative, and/or an independent testing agency. Provide testing and/or startup service as specified in the relevant section.

B. Submit Field Quality-Control Report as informational submittal within 14 days of each completed test or startup. Include within the report adjustments / as left settings.

3.6 CLEANING

A. Remove rubbish and debris from inside and around electrical equipment and enclosures.

B. Remove dirt, dust or concrete spatter from interior and exterior of equipment using brushes, vacuum cleaner, or clean lint-free rags. Do not use compressed air.

3.7 CLOSEOUT ACTIVITIES

A. Provide demonstration and training as specified in each section.

END OF SECTION 260010

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SECTION 260510 – LIMITED ELECTRICAL FOR SMALL PROJECTS

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. Panelboards.
2. Copper power and control wire rated 600V or less.
3. Low-voltage instrumentation cable.
4. Connectors, splices, and terminations.
5. Grounding and bonding components.
6. Support systems for raceways, boxes, and electrical equipment.
7. Metal conduits and fittings.
8. Nonmetallic conduit and fittings.
9. Boxes, enclosures, and cabinets.
10. Identification requirements.

B. Related Requirements:

1. Section 260010 “Supplemental Requirements for Electrical” for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.

1.3 DEFINITIONS

A. ARC: Aluminum rigid conduit. See also RAC.

B. Direct Buried: Duct or a duct bank that is buried in the ground, without any additional casing materials such as concrete.

C. Duct: A single duct or multiple ducts. Duct may be installed singly or as a component of a duct bank.

D. Duct Bank:

1. Two or more ducts installed in parallel, with or without additional casing materials.
2. Multiple duct banks.

E. EMI: Electromagnetic interference.

F. Low Voltage: As defined in NFPA 70 for circuits and equipment operating at less than 50V or for remote-control and signaling power-limited circuits.

G. RAC: Rigid aluminum conduit. See also ARC.

H. RoHS: Restriction of Hazardous Substances.

I. Trafficways: Locations where vehicular or pedestrian traffic is a normal course of events.

J. National Electrical Code (NEC) / NFPA conduit types:

1. RMC – rigid metal conduit.
2. FMC – flexible metal conduit.
3. LFMC – liquidtight flexible metal conduit.
4. PVC – rigid polyvinyl chloride conduit.
5. LFNC – liquidtight flexible nonmetallic conduit.
6. RNC – rigid nonmetallic conduit.
7. EMT – Electrical metallic tubing.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product used on this project.

B. Installation Working Drawings: For underground conduit routing.

1.5 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

PART 2 - PRODUCTS

2.1 ELECTRICAL MATERIALS

A. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with associated UL Standards as applicable and listed in this specification.

2.2 PANELBOARDS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Eaton.
2. GE by ABB.
3. Square D by Schneider Electric.

B. Source Limitations:

1. Obtain new panelboards from single source from single manufacturer.
2. Obtain retrofit disconnecting and overcurrent protective devices from existing panelboard manufacturer or subsequent responsible manufacturer, to maintain overall UL listing of panelboard.

C. Electrical Components, Devices, and Accessories: Listed and labeled in accordance with NFPA 70, by qualified electrical testing agency recognized by authorities having jurisdiction, and marked for intended location and application.

D. Comply with the following standards as applicable:

1. NEMA PB 1, Panelboards.
2. UL 50, Enclosures for Electrical Equipment, Non-Environmental Considerations.
3. UL 50E, Enclosures for Electrical Equipment, Environmental Considerations.
4. UL 67, Standard for Panelboards, CCN QEUY.
5. UL 489, Standard for Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures.
6. UL 1449, Surge Protective Devices.

E. Ratings:

1. Ratings are indicated on the Drawings.
2. Series rated panelboards are prohibited. Circuit breakers must be fully rated for the short circuit rating listed for the panelboard.

F. Construction:

1. NEMA 4X enclosure, unless noted otherwise on Drawings.
2. Copper equipment grounding bar, separate and distinct from neutral bar.
3. Conductor Lugs:

a. Mechanical type.
b. Size suitable for indicated conductor sizes.
c. Neutral (when present) and ground lug quantity equal to each pole in panelboard.

4. Where Drawings indicate space for future circuit breaker, equip panelboard with bus bars, blank covers, and mounting hardware so only the future breaker need be provided.

G. Doors Hinged cover or door-in-door trim when available. Secure door with flush keyed lock and catch, except doors over 36 inches in height to use a vault-type latch with tumbler lock and 3-point catch. All locks keyed alike.

2.3 WIRE

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Alpha Wire Company.

2. Encore Wire Corporations.
3. General Cable Technologies Corporation.
4. Okonite Company (The).
5. Service Wire Co.
6. Southwire Company.

B. Description: Flexible, insulated and uninsulated, drawn copper current-carrying conductor with an overall insulation layer or jacket, or both, rated 600 V.

C. Standards:

1. RoHS compliant.
2. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."

D. Conductors: Copper, complying with ASTM B3 for bare annealed copper and with ASTM B8 for stranded conductors.

E. Size: Minimum No. 12 AWG for power circuits, minimum No. 14 AWG for control circuits.

F. Stranding: Refer to PART 3 “Conductor Applications” Article.

G. Conductor Insulation: Refer to PART 3 “Conductor Applications” Article.

1. Type RHW-2: Comply with UL 44.
2. Type TC-ER: Comply with NEMA WC 70/ICEA S-95-658 and UL 1277.
3. Type THHN and Type THWN-2: Comply with UL 83.
4. Type XHHW-2: Comply with UL 44.

2.4 INSTRUMENTATION CABLE

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Belden.
2. Rockbestos.

B. Single of Multiple Paired Cable: NEC type ITC (Instrumentation Tray Cable), UL Type TC for 4-20 mA process instrumentation signals and use under NEC Article 72.

1. One or Multi-pair, twisted, shielded, No. 16 AWG, stranded (19x29) tinned-copper conductors.
2. XLPE insulation, 600V.
3. Shield: 100 percent aluminum/polyester foil with drain wire. Pairs individually shielded.
4. PVC jacket with manufacturer’s identification.
5. Standards: UL 1277 Type TC, UL 1581.

2.5 CONNECTORS, SPLICES, AND TERMINATIONS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. 3M Electrical Products.
2. Ideal Industries, Inc.
3. TE Connectivity Ltd.
4. Thomas & Betts Corporation; A Member of the ABB Group.

B. Description: Factory-fabricated connectors, splices, and lugs of size, ampacity rating, material, type, and class for application and service indicated; listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.

C. Lugs: One piece, seamless, designed to terminate conductors specified in this Section.

1. Material: Tin-plated copper.
2. Type:

a. Locking spade with insulated sleeve for No. 10 AWG and smaller.
b. One hole with long barrels for No. 8 AWG to No. 4/0 AWG.
c. Two holes with long barrels for 250 kcmil and larger.

3. Termination: Compression for No. 8 AWG and larger.

D. Connectors:

1. Solderless pressure type (wirenuts) for No. 10 AWG and smaller.
2. Pre-filled with silicone-based sealant for exterior, wet, or corrosive locations.
3. Split bolt type for No. 8 AWG and larger splices.

E. Motor Terminations: Mechanical compression ring type, secured with bolt, nut, and spring washer. Insulated with Raychem type RVC, roll-on stub insulator or equal.

F. Industrial Ethernet Cable Terminations: Match conductor count, RJ45 type, intended for shielded cable. Rockwell Automation Bulletin 1585J or equal.

2.6 GROUNDING AND BONDING MATERIALS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. ERICO; a brand of nVent.
2. Hubbell Incorporated (Construction and Energy Group).
3. O-Z/Gedney; a brand of Emerson Industrial Automation.
4. Thomas & Betts Corporation; A Member of the ABB Group.

B. Standard: Comply with UL 467 for grounding and bonding materials and equipment.

C. Grounding Conductors:

1. Insulated conductors to match corresponding 600V phase conductor insulation requirements.
2. Bare copper conductors: tin-plated.

D. Ground rods: Copper-clad steel, sectional type; 3/4-inch diameter by 10-foot; minimum copper thickness 0.25 mm (10 mil).

E. Grounding conduit hubs: Malleable iron type, mechanical type, terminal with threaded hub, sized for the associated conduit.

F. Waterpipe ground clamps: cast bronze saddle type, sized for the associated water pipe.

G. Exothermic weld: CADWELD process, or equal. Molds and powder furnished by same manufacturer and selected for specific combination of conductors and connected items. Use low emission type, CADWELD EXOLON or equal for welds used indoors in occupied buildings or confined spaces.

2.7 SUPPORT SYSTEMS

A. Aluminum Channel:

1. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
2. Channel Material: 6063-T5 aluminum alloy.
3. Fittings and Accessories Material: 5052-H32 aluminum alloy.

B. Stainless Steel Channel:

1. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
2. Material for Channel, Fittings, and Accessories: Stainless steel, Type 316.

C. Hot-dipped Galvanized Steel Channel:

1. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
2. Material for Channel, Fittings, and Accessories: Hot-dipped galvanized steel.

D. Nonmetallic Channel:

1. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
2. Channel Material: Ultraviolet resistant FRP.
3. Fittings and Accessories Material: Stainless steel, Type 316 or compatible non-metallic.

E. Accessories: conduit clamps, straps, hangers, rods, backplates, anchors, nuts, washers, etc. shall match channel material as listed in the SUPPORT MATERIALS APPLICATION Article. Use of galvanized steel components is only allowed with galvanized steel channel.

F. Threaded rod: 3/8-inch minimum diameter.

G. Expansion anchors: 3/8-inch minimum diameter.

2.8 METAL CONDUITS AND FITTINGS

A. Rigid Aluminum Conduit: Comply with ANSI C80.5 and UL 6A.

B. Rigid Metal Conduit: Comply with ANSI C80.1 and UL 6.

C. EMT: Comply with ANSI C80.3 and UL 797.

D. LFMC: Sealtite®, Type UA, continuously interlocked flexible steel conduit with sunlight and chemical resistant PVC jacket and complying with UL 360.

E. FMC: Comply with UL 1; zinc-coated steel.

F. Metallic Fittings: Comply with NEMA FB 1 and UL 514B.

1. Use cast aluminum fittings with RAC.
2. Use malleable iron, three-piece screw in type with LMFC.
3. Use Myers Electric Products, Inc. or equal, grounding type for conduit hubs.
4. Use die cast compression type fittings with EMT, no set-screw type.

2.9 NONMETALLIC CONDUIT AND FITTINGS

A. RNC: Schedule 40 or Schedule 80 PVC based on application; comply with NEMA TC 2 and UL 651.

B. LFNC-B: Comply with UL 1660, Type B.

C. Nonmetallic Fittings:

1. RNC: Comply with NEMA TC 3; match conduit type and material.
2. LFNC: Comply with UL 514B; dust-tight, liquid-tight, chemical resistant thermoplastic/nylon construction with tapered thread hub and neoprene O-ring gasket. Push-on fittings are prohibited.

D. Solvents and Adhesives: As recommended by conduit manufacturer.

2.10 BOXES, ENCLOSURES, AND CABINETS

A. Sheet Metal Outlet and Device Boxes: Pressed steel. Comply with NEMA OS 1 and UL 514A.

B. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, aluminum, Type FD, with gasketed cover.

C. Nonmetallic Outlet and Device Boxes: Comply with NEMA OS 2 and UL 514C.

D. NEMA 1 and NEMA 12 Pull and Junction Boxes:

1. Material: Sheet steel, minimum 14 gauge, without knockouts.
2. Construction: flanged box, galvanized with continuous weld seams that are ground smooth.

3. Cover: Gasketed, hanged, fastened with quick connect door clamp.

E. NEMA 4X Pull and Junction Boxes:

1. Material: Type 316 stainless steel, minimum 14 gauge, without knockouts.
2. Construction: flanged box, continuous weld seams that are ground smooth.
3. Cover: Gasketed, hanged, fastened with quick connect door clamp.

2.11 IDENTIFICATION

A. Factory applied insulation color for No. 8 AWG conductors and smaller. Factory applied insulation color or field applied colored electrical tape for No. 6 AWG conductors and larger:
1. Color for 240/120V Circuits (Single Phase):

a. Phase A: Black.
b. Phase B: Red.
c. Neutral: White.

2. Color for Equipment Grounds: Green.
3. Color of Individual Control Conductors:

a. AC: Red.
b. DC: Blue.

B. Nameplates and Labels:

1. Equipment Identification and Source Nameplates:

a. Black letters on a white field.
b. Engraved, laminated plastic, 3/16-inch-high lettering.
c. Provide for all electrical equipment. Match Drawing designation.
d. Include power source information, i.e., “FED FROM MCC-2” or provide separate nameplate.

2. Device Identification Labels:

a. Black letters on a white field.
b. Machine generated, self-adhesive, 1/4-inch-high lettering.
c. Provide for all receptacles, wall switching, lighting fixtures, photocells, exit lights, instruments, etc.
d. Include power source and branch circuit information, i.e., “LP-2/15” indicates panelboard LP-2, branch circuit 15.

3. Wire and Cable Labels:

a. Black letters on a white field.
b. Wraparound or sleeve type.

PART 3 - EXECUTION

3.1 GENERAL

A. Comply with the applicable National Electrical Contractors Association (NECA) documents for installation requirements except where requirement on Drawings or in this specification are stricter.

1. NECA 1: Standard for Good Workmanship in Electrical Construction.
2. NECA 101: Standard for Installing Steel Conduits.
3. NECA 102: Standard for Installing Aluminum Rigid Metal Conduit.
4. NECA 111: Standard for Installing Nonmetallic Raceways.
5. NECA 331: Standard for Installing Building and Service Entrance Grounding and Bonding.
6. NECA / NEMA 605: Recommended Practice for Installing Underground Nonmetallic Utility Duct.

3.2 INSTALLATION

A. Comply with manufacturer's published instructions.

B. Reference Standards for Installation: Unless more stringent requirements are specified in Contract Documents or manufacturer's published instructions, comply with the following:

1. ANSI/NEMA PB 1.1 – General Instructions for Proper Installation, Operation, and Maintenance of Panelboards Rated 600 Volts or Less.
2. NECA NEIS 407 – Standard for Installing and Maintaining Panelboards.

C. Coordinate layout and installation of panelboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, encumbrances to workspace clearance requirements, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

D. Equipment Mounting:

1. Attach panelboard to the vertical finished or structural surface behind panelboard.
2. Mount back box plumb and level, and surface or flush mount as indicated on Drawings.
3. Mount surface-mounted panelboards to supports to allow a minimum of 1/2 inch air space between the box and the mounting surface.
4. Mount flush-mounted panelboards with front cover uniformly flush with wall finish and mating with back box.
5. Mount top of trim 72 inches above finished floor unless otherwise indicated.

E. Install circuit breakers not already factory installed. Rearrange circuit breakers to correspond to panel schedules shown on Drawings.

F. Tighten bolted connections and wiring connections using calibrated torque wrench or torque screwdriver per manufacturer's written instructions.

G. Install filler plates in unused spaces.

H. Plug abandoned or unused entry holes.

I. Do not leave cut off wires at breakers, neutral bar terminal, or ground bar terminal.

J. Identify panelboards in accordance with “Identification” Article.

1. Identify equipment by name designation and fed from source nameplates.
2. Identify pole numbers.
3. Color code wiring.
4. Identify branch circuit phase and neutral wires by circuit number.
5. Provide as built typed panelboard directory.

3.3 CONDUCTOR APPLICATIONS

A. Wires and Cables: Copper, stranded, except for lighting and receptacle wiring which may be solid.

B. Wire for lighting, receptacles, and other circuits not exceeding 150 volts to ground shall be NEC type THWN-2/THHN. Below grade and underground the wire shall be type XHHW-2.

C. Wire for power circuits over 150 volts to ground shall be NEC type XHHW-2 for sizes No. 4/0 AWG and smaller, and shall be NEC type RHW-2 for sizes 250 kcmil and larger.

D. Equipment grounding conductors shall be the same NEC type as the phase conductors described previously, green and sized per NEC Table 250.122.

E. Bare copper ground wire shall be stranded, tinned soft drawn annealed copper wire.

F. Ground grid conductors shall be uninsulated unless shown otherwise on the Drawings.

G. Wire for control, status, and alarm shall be NEC type THWN-2/THHN.

3.4 CONDUCTOR INSTALLATION

A. Conceal cables in finished walls, ceilings, and floors unless otherwise indicated.

B. Complete raceway installation between conductor and cable termination points prior to pulling conductors and cables.

C. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

D. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway. Use of steel fish tapes and/or steel pulling cables in PVC conduit or raceways that terminate into energized enclosures is prohibited.

E. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.

F. Adequately support cables.

G. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.

H. Make splices, terminations, and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors. Do not splice service or feeder cables without prior written approval of Engineer. Instrumentation and Ethernet cables may not be spliced and shall be continuous from terminal to terminal.

I. Wiring at Outlets:

1. Install conductor at each outlet, with at least 6 inches of slack.
2. Form solid wire into loop to fit around device terminal screw. Do not overlap wire.

J. Identify and color-code conductors and cables.

K. Identify each spare conductor at each end with identity number and location of other end of conductor and identify as spare conductor.

L. Identify circuit number associated with lights, receptacles, and other miscellaneous loads to panelboards. Identify phase and neutral conductors with circuit number.

M. Install instrumentation and Ethernet cabling in separate raceway from control or power wiring.

N. Separation from EMI Sources:

1. Separation between open instrumentation cables or cables in non-metallic or non-ferrous raceways and unshielded power conductors and electrical equipment shall be as follows:

a. Equipment or circuits rated less than 2 kVA: Minimum 5 inches.
b. Equipment or circuits rated between 2 and 5 kVA: Minimum 12 inches.
c. Equipment or circuits rated more than 5 kVA: Minimum 24 inches.

3.5 GROUNDING

A. Comply with NEC Article 250.

B. Install insulated green equipment grounding conductor in all power and control raceways.

C. For instrumentation wiring, ground shield at one end only as recommended by instrument manufacturer and in accordance with Owner’s standard.

D. Install grounding conductors in conduit or sleeves when passing through floor slabs.

E. Use exothermic welding process for all underground connections, connections to structural steel, connections to ground rods, or other connections which will become inaccessible at project completion.

3.6 SUPPORT MATERIALS APPLICATON

A. Dry, indoor, conditioned, non-process space: Hot-dipped galvanized steel.

B. Outdoor, process areas, or areas shown on the drawings as “DUST”, “DAMP”, or “WET”: Aluminum and/or stainless-steel channel, depending upon load requirements.

C. Areas shown on the drawings as “CORROSIVE”: Nonmetallic.

3.7 RACEWAY APPLICATIONS

A. Refer to Appendix Table 260510-1 for specific raceway application requirements.

B. Minimum Raceway Size: 3/4-inch trade size.

3.8 BOX APPLICATIONS

A. All boxes shall be metallic unless specified herein or indicated on the Drawings.

B. Use cast malleable iron for boxes and condulet fittings for exposed switch, receptacle, and lighting outlets.

C. Use pressed steel boxes for concealed switch, receptacles, and lighting outlets.

D. Pull boxes, junction boxes, cabinets, etc. shall be suitable for the location and conform to the NEMA enclosure rating and material descriptions as indicated on the Drawings.

E. Where no size is indicated for junction boxes, pull boxes, or terminal cabinets, size in accordance with NEC Article 314.

3.9 RACEWAY INSTALLATIONS

A. Complete raceway installation before starting conductor installation.

B. Tightly plug ends of conduits during construction to exclude dust and moisture.

C. Arrange stub-ups so curved portions of bends are not visible above finished slab.

D. Arrange conduit system to allow liquids such as water, condensation, etc. will drain away from equipment served. If conduit drainage is not possible, plug conduits using conduit seals.

E. Install no more than the equivalent of three 90-degree bends in any conduit run. Support within 12 inches of changes in direction.

F. Make bends in raceway using large-radius preformed ells. Field bending shall be according to NFPA 70 minimum radii requirements. Use only equipment specifically designed for material and size involved.

G. Support conduit within 12 inches of enclosures to which attached.

H. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.

I. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors including conductors smaller than No. 4 AWG.

J. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch trade size and insulated throat metal bushings on 1-1/2-inch trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits. Install Meyers grounding type hubs when conduits terminate at gasketed enclosures.

K. Install raceways square to the enclosure and terminate at enclosures with locknuts. Install locknuts hand tight plus 1/4 turn more.

L. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to assure a continuous ground path.

M. Cut conduit perpendicular to the length. For conduits 2-inch trade size and larger, use roll cutter or a guide to make cut straight and perpendicular to the length.

N. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire. Cap underground raceways designated as spare above grade alongside raceways in use.

O. Install raceway sealing fittings at accessible locations according to NFPA 70 and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings according to NFPA 70.

P. Install devices to seal raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal the interior of all raceways using “Duxseal” or seal fitting at the following points:

1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
2. Where an underground service raceway enters a building or structure.
3. Conduit extending from interior to exterior of building.
4. Conduit extending into pressurized duct and equipment.
5. Conduit extending into pressurized zones that are automatically controlled to maintain different pressure set points.
6. Where otherwise required by NFPA 70.

Q. Comply with manufacturer's written instructions for solvent welding RNC and fittings.

R. Install expansion joint fittings where necessary to compensate for thermal expansion and contraction.

S. Flexible Conduit Connections: Comply with NEMA RV 3. Use a maximum of 72 inches of flexible conduit for equipment subject to vibration, noise transmission or movement; and for transformers and motors.

T. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to center of box unless otherwise indicated.

U. A maximum continuous run of conduit shall not exceed 300 feet and shall be reduced by 75 feet for each 90-degree elbow.

V. Provide a 4-inch concrete housekeeping pad at all slab and grade penetrations. Provide a 45 degree, 3/4-inch chamfer at all exposed edges.

W. Protect metallic finish conduit installed in contact with concrete or below grade with two coats of bitumastic paint, heat shrink tubing, or approved equivalent. Extend protection on riser conduits from 12 inches below slab to 6 inches above slab.

X. Do not install aluminum duct raceways or fittings in contact with concrete or earth.

3.10 ELECTRICAL PENETRATIONS

A. Provide and place all sleeves for conduits penetrating floors, walls, partitions, etc.

B. Locate all slots and concealed conduits and stub-ups for electrical work and place and form as required before concrete is poured.

C. Make weathertight and restore finishes on exterior penetrations.

D. Use conduit wall seals where underground conduits penetrate walls or at other locations indicated on the Drawings.

E. Seal openings where conduits pass through walls or floors to prevent passage of flame and smoke. Maintain fire rating of walls.

F. Patch and paint interior wall penetrations to match original.

3.11 IDENTIFICATION INSTALLATION

A. Self-Adhesive Identification Products: Before applying identification product, prepare and clean attachment surface with manufacturer recommended product to allow for effective bond.

B. Verify and coordinate identification names and other features.

C. Nameplate Attachment:

1. Screw mounted for NEMA 1 enclosures.

2. Epoxy or similar waterproof adhesive for all other enclosure types.

D. Install identification and power source nameplates for electrical equipment. Refer to PART 2 “Identification” Article for requirements.

E. Install circuit identification labels for cables and conductors at each termination location and within pull boxes and handholes. Refer to PART 2 “Identification” Article for color code and additional requirements.

F. Install device identification labels for receptacles, light switches, etc. Refer to PART 2 “Identification” Article for requirements.

G. Install underground warning tape during backfilling of trenches for underground conduits and duct banks in accordance with details on the Drawings.

H. Panelboard Identification

1. Provide equipment and power source nameplates as previously described.
2. Label branch circuit phase and neutral wires with associated pole number.
3. Install typed as built circuit directory giving location and nature of load served.

3.12 FIELD QUALITY CONTROL

A. Perform the following tests and inspections for conductors and cables.

1. Visually inspect for correct installation.
2. Perform continuity test.
3. Perform insulation-resistance test for power and control conductors in accordance with NETA standards.
4. Verify uniform resistance of parallel conductors.

B. Cable will be considered defective if it does not pass tests and inspections.

C. Conduct fall-of-potential grounding electrode system test in accordance with IEEE 81.

D. Prepare test and inspection reports.

3.13 CLEANING / PROTECTION

A. Protect coatings, finishes, and cabinets from damage and deterioration. Repair damage as recommended by manufacturer.

B. Remove all rubbish and construction debris from inside electrical equipment and enclosures.

3.14 APPENDICES

A. Table 260510-1: Raceway Application Guidelines

Table 260510-1 Raceway Application Guidelines	
Raceway Type	Location / Application
Aluminum Rigid Conduit (ARC)	All indoor and outdoor applications, except where other types are listed. All exposed, non-corrosive areas. All concealed, non-corrosive areas. Under slabs in slab on grade construction. Stub-ups through slabs. Use LFMC for flexible connections. When installed underground or in contact with concrete, paint with two coats of bitumastic paint.
Rigid Metal Conduit (RMC)	All indoor and outdoor applications, except where other types are listed. All exposed, non-corrosive areas. All concealed, non-corrosive areas. Under slabs in slab on grade construction. Stub-ups through slabs. Use LFMC for flexible connections. When installed underground or in contact with concrete, paint with two coats of bitumastic paint.
PVC Schedule 40	Concrete encased duct banks. Embedded in concrete slabs or structures. Use ARC elbows.
PVC Schedule 80	Direct buried. Corrosive areas. Protection of grounding electrode conductors. Protection of lightning conductors. Where exposed, use LFNC for flexible connections. Use ARC elbows for underground applications.

END OF SECTION 260510

SECTION 312323.33 - FLOWABLE FILL

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. Flowable fill for:

a. Structure backfill.

B. Related Requirements:

1. Section 312316 "Excavation" for general building excavation.
2. Section 312323 "Fill" for soil and aggregate backfill for structures.
3. Section 329119 "Landscape Grading" for filling of topsoil over backfilled trenches to finish grade elevation.

1.3 DEFINITIONS

A. Utility: Any buried pipe, duct, conduit, manhole, tank, or cable.

B. Excavatable Flowable Fill: Lean cement concrete fill used where future excavation may be required, such as fill for utility trenches, bridge abutments, and culverts.

C. Non-excavatable Flowable Fill: Lean cement concrete fill used where future excavation is not anticipated, such as fill below structure foundations and filling abandoned utilities.

1.4 INFORMATIONAL SUBMITTALS

A. Field Quality-Control Submittals:

1. Mix Design:

a. Furnish flowable fill mix design for each specified strength.
b. Furnish separate mix designs when admixtures are required for the following:

1) Flowable fill Work during hot and cold weather.
2) Air entrained flowable fill Work.

c. Identify design mix ingredients, proportions, properties, admixtures, and tests.
d. Sieve analysis of aggregate.

2. Furnish test results to certify flowable fill mix design properties meet or exceed specified requirements.

B. Delivery Tickets:

1. Furnish duplicate delivery tickets indicating actual materials delivered to Project Site.

C. Qualifications Statements:

1. Submit qualifications for supplier.

1.5 QUALITY ASSURANCE

A. Perform Work according to <_____> standards.

B. All testing and inspection services required, unless otherwise specified, shall be provided and paid for by the **[Contractor] [Owner]**. Testing necessary to establish the mix shall be performed by and at the expense of the Contractor. Methods of testing shall comply with the latest applicable ASTM Methods except as specified herein.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Store or stockpile fly ash, aggregate and cement in conformity with the recommendations of ACI 301.

B. Minimum Conditions: Do not install flowable fill during inclement weather or when ambient temperature is less than 40 degrees F.

1.7 FIELD MEASUREMENTS

A. Verify field measurements before installing flowable fill to establish quantities required to complete the Work.

PART 2 - PRODUCTS

2.1 FLOWABLE FILL

A. Furnish materials according to <_____> standards.

B. Flowable Fill: non-excavatable type.

2.2 MATERIALS

A. Portland Cement: ASTM C150 Type II - Moderate.

B. Fine Aggregates:

1. Inert natural sand conforming to the requirements of ASTM C33.

a. Aggregate sizes not greater than 3/8 inch.
b. Satisfactory flowability, strength and setting time when used in comparable flowable fill mixes.
c. Non-expansive or reactive aggregates.

C. Water: Clean and not detrimental to concrete.

2.3 ADMIXTURES

A. Admixtures manufactured specifically for use in flowable fills will be considered for approval.

1. Free of chlorides and alkalis (except for those attributable to water).
2. Compatible with the mix.
3. Suitable for use in contact with potable water after curing.
4. Admixtures causing retarded or accelerated setting of the mix require written approval from the Engineer.

B. Air Entrainment: ASTM C260.

C. Chemical Admixture: ASTM C494/C494M.

1. Type A - Water Reducing.

D. Fly Ash: ASTM C618 Class C or F obtained from residue of electric generating plant using ground or powdered coal.

E. Plasticizing: ASTM C1017/C1017M Type I, plasticizing.

2.4 MIXES

A. Mix and deliver flowable fill according to ASTM C94/C94M, Option C.

B. Flowable Fill Design Mix:

ITEM	NON-EXCAVATABLE
Cement Content	100 to 150 lb/cu yd
Fly Ash Content	150-600 pcf
Water Content	As specified
Air Entrainment	5 to 15 percent
28-Day Compressive Strength	Minimum 125 psi

ITEM	NON-EXCAVATABLE
Unit Mass (Wet)	100 to 125 pcf
Temperature, Minimum at Point of Delivery	50 degrees F
Permeability Coefficient	0.16in/sec

C. Provide water content in design mix to produce self-leveling, flowable fill material at time of placement.

D. Design mix air entrainment and unit mass are for laboratory design mix and source quality control only.

2.5 SOURCE QUALITY CONTROL

A. Test properties of flowable fill design mix and certify results for the following:

1. Design mix proportions by weight of each material.
2. Aggregate: ASTM C33 for material properties and gradation.
3. Properties of plastic flowable fill design mix including:

    a. Temperature.
    b. Slump.
    c. Air entrainment.
    d. Wet unit mass.
    e. Yield.
    f. Cement factor.

4. Properties of hardened flowable fill design mix including:

    a. Compressive strength at 1 day, 7 days, and 28 days. Report compressive strength of each specimen and average specimen compressive strength.
    b. Unit mass for each specimen and average specimen unit mass at time of compressive strength testing.

B. Prepare delivery tickets containing the following information:

1. Project designation.
2. Date.
3. Time.
4. Class and quantity of flowable fill.
5. Actual batch proportions.
6. Free moisture content of aggregate.
7. Quantity of water withheld.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify is complete.

B. Verify excavation is dry and dewatering system is operating.

3.2 PREPARATION

A. Support and restrain utilities to prevent movement and flotation during installation of flowable fill.

B. Protect structures and utilities from damage caused by hydraulic pressure of flowable fill before fill hardens.

C. Protect utilities and foundation drains to prevent intrusion of flowable fill.

3.3 INSTALLATION - FILL, BEDDING, AND BACKFILL

A. Engineer approval required for the condition of subgrade and method of placement.

B. Remove all debris and foreign matter from the excavation before depositing flowable fill.

C. Do not place flowable fill in water or submerge within 24 hours after placing.

D. When required, place flowable fill under water using tremie procedure.

E. Do not place flowable fill through flowing water.

F. Place flowable fill by chute, pumping or other methods approved by Engineer.

G. Place flowable fill in lifts to prevent lateral pressures from exceeding structural capacity of structures and utilities.

H. Place flowable fill to elevations indicated on Drawings without vibration or other means of compaction.

3.4 FIELD QUALITY CONTROL

A. Perform testing according to ASTM C94/C94M.

1. Take samples for tests for every 150 cu. yd. of flowable fill, or fraction thereof, installed each day.
2. Sample, prepare and test four compressive strength test cylinders per ASTM D4832. Test one specimen at 3 days, one at 7 days, and two at 28 days.
3. Measure temperature at point of delivery when samples are prepared.

B. Defective Flowable Fill: Fill failing to meet the following test requirements or fill delivered without the following documentation.

1. Test Requirements:

a. Minimum temperature at point of delivery.
b. Compressive strength requirements for each type of fill.

2. Documentation: Duplicate delivery tickets.

3.5 CLEANING

A. Remove spilled and excess flowable fill from Project Site.

B. Restore facilities and Site areas damaged or contaminated by flowable fill installation to existing condition before installation.

END OF SECTION 312323.33

SECTION 312500 - EROSION AND SEDIMENTATION CONTROLS

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. Diversion Channels.
2. Rock Energy Dissipator.
3. Sediment Fences.
4. Construction Entrances.
5. Turbidity Curtains.
6. Filter Bags.

B. Related Sections:

1. Section 030100.61 “Concrete Repairs.”
2. Section 030130.71 “Modifications to Existing Concrete.”
3. Section 033000 “Cast-In-Place Concrete.”
4. Section 312323 “Flowable Fill.”
5. Section 313700 “Grouted Riprap.”
6. Section 355100 “Floating Booms.”

1.3 ACTION SUBMITTALS

A. Submit, within 10 days after award of Contract, technical product literature for all commercial products.

1.4 INFORMATIONAL SUBMITTALS

A. Stormwater Pollution Prevention Plan (SWPPP) as specified in “Quality Assurance” article.

B. Copy of SPDES Notice of Intent to Discharge submitted to the NYS DEC as specified in “Quality Assurance” article.

1.5 QUALITY ASSURANCE

A. Adhere to EPA document “Stormwater Management for Construction Activities – Developing Pollution Prevention Plans and Best Management Practices” document number EPA 832-R-92-

005, dated 1992, or most recent edition. State standards can be substituted for the EPA standard if the State standard is equal to, or more detailed than, the EPA standard.

B. Prepare and submit a Stormwater Pollution Prevention Plan (SWPPP) in accordance with the U.S. Environmental Protection Agency (EPA) National Pollution Discharge Elimination System (NPDES) General Permit applicable to this work) document number EPA 832-R-92-005, dated 1992, or most recent edition.

C. Prepare and submit the EPA NPDES Notice of Intent to Discharge to the applicable EPA office in accordance with EPA regulations.

D. Perform Work in accordance with requirements of Sections 030100.16 “Concrete Repairs,” 030130.71 “Modifications to Existing Concrete,” 033000 “Cast-in-Place Concrete,” 313700 “Grouted Riprap,” and 355100 “Floating Booms.”

E. Perform Work according to City of Rome Public Works standards.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Do not place grout when air temperature is below freezing.

B. Do not place concrete when base surface temperature is less than that specified in Division 03, or surface is wet or frozen.

PART 2 - PRODUCTS

2.1 ROCK AND GEOTEXTILE MATERIALS

A. Rock: As specified in Section 313700 “Grouted Riprap.” Furnish according to State of New York Department of Transportation standards.

B. Geotextile Fabric: Furnish according to State of New York DOT standards.

2.2 SILT FENCE

A. Silt fence filter fabric shall be a woven, polypropylene, ultraviolent resistant material meeting minimum requirements below:

Fabric Properties	**Min. Acceptable Value**	**Test Method**
Grab Tensile Strength (lbs)	110	ASTM D4632/ D4632M
Elongation at Failure (%)	20	ASTM D4632/ D4632M
Mullen Burst Strength	300 psi	ASTM D3786/ D3796M
Puncture Strength (lbs)	60	ASTM D4833/ D4833M
Minimum Trapezoidal Tear Strength (lbs)	50	ASTM D4533/ D4533M

Fabric Properties	Min. Acceptable Value	Test Method
Flow through Rate (gal/min/sf)	25	ASTM D4491/ D4491M
Equivalent Opening Size	40 – 80	US Std Sieve ASTM D4751
Minimum UV Residual (%)	70	ASTM D4355/ D4355M

B. Products: Provide one of the following or equal:

1. "Mirafi FW140N," by TenCate Geosynthetics.
2. Or equal.

2.3 TURBIDITY CURTAIN

A. Barrier Material: 10 mil polyethelene sheets or filter fabric.

B. Barrier height shall be 20 percent greater than the depth of water.

C. Manufacturer:

1. ABASCO.
2. ENVIRO-USA.
3. IWT Cargo-Guard.
4. Texas Boom Company.

2.4 FILTER BAGS

A. Filter Bags: Sized with manufacturer recommendations based on pumped discharge rate.

B. Geotextile Material for Bags: Meet the following minimum requirements:

1. Minimum Grab Tensile Strength: 200 lbs.
2. Minimum Grab Tensile Elongation: 50 percent.
3. Minimum Trapezodial Tear Strength: 80 lbs.
4. Mullen Burst Strength: 380 psi.
5. Minimum Puncture Strength: 130 lbs.
6. Apparent Opening Size: 40-80 US Sieve.
7. Minimum Flow Through: 70 gpm persquare foot.

C. Bag shall have opening large enough to accommodate 4 inch diameter discharge hose.

D. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following:

1. Atlantic Screen & Mfg., Inc.
2. Filtrexx.
3. L & M Geo-Fabrics, Inc.
4. Palcon, LLC.

5. The Cary Company.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify compacted subgrade is acceptable and ready to support devices and imposed loads.

B. Verify gradients and elevations of base or foundation for other work are correct.

3.2 ROCK ENERGY DISSIPATOR

A. Excavate to indicated depth of rock lining or nominal placement thickness as follows. Remove loose, unsuitable material below bottom of rock lining, then replace with suitable material. Thoroughly compact and finish entire foundation area to firm, even surface.

1. Nominal Placement Thickness per NCSA Class:

a. R8: 48 Inches.
b. R7: 36 Inches.
c. R6: 30 Inches.
d. R5: 24 Inches.
e. R4: 18 Inches.
f. R3: 12 Inches.

B. Lay and overlay geotextile fabric over substrate. Lay fabric parallel to flow from upstream to downstream. Overlap edges upstream over downstream and upslope over downslope Provide a minimum overlap of **1** feet. Offset adjacent roll ends a minimum of **5**feet when lapped. Cover fabric as soon as possible and in no case leave fabric exposed more than 4 weeks.

C. Carefully place rock on geotextile fabric to produce an even distribution of pieces, with minimum of voids and without tearing geotextile.

D. Unless indicated otherwise, place full course thickness in one operation to prevent segregation and to avoid displacement of underlying material. Arrange individual rocks for uniform distribution.

1. Saturate rock with water. Fill voids between pieces with grout, for at least top 6 inches . Sweep surface with stiff broom to remove excess grout.
2. Moist cure grouted rock for at least 3 days after grouting, using water saturated burlap in accordance with Section 033000 “Cast-in-Place Concrete”.

3.3 SILT FENCE

A. Position sediment fences as indicated on the Drawings and to prevent off site movement of sediment produced by construction activities as directed by the Engineer. Areas beyond limits of silt fence shall be undisturbed or stabilized.

B. Dig trench approximately 6 inches wide and 6 inches deep along proposed fence lines.

C. Drive stakes, 10 feet on center (maximum) at back edge of trenches. Drive stakes 2 feet (minimum) into ground.

D. Hang filter fabric on posts carrying to bottom of trench with about 4 inches of fabric laid across bottom of trench. Stretch fabric fairly taut along fence length and maintain secure both ways.

E. Backfill trench with excavated material and tamp.

F. Install pre-fabricated silt fence according to manufacturer's instructions.

3.4 CONSTRUCTION ENTRANCE

A. Construct entrance with minimum of 6 inch of course aggregate at all points of ingress/egress.

B. Width: Minimum 20 feet, increased as needed for typical construction vehicles.

C. Minimum Length: 50 feet.

D. Install filter fabric below aggregate.

E. Maintain entrance throughout construction, adding more aggregate or increasing length as needed.

3.5 TURBIDITY CURTAIN

A. Install turbidity curtain parallel to bank, extending beyond lateral limits of construction.

B. Install weights at 10 feet intervals, floats at 5 feet intervals.

C. Inspect turbidity curtain daily and repair/replace worn/torn areas as needed.

D. At end of construction, remove accumulated sediment by hand before removing the turbidity curtain.

3.6 FILTER BAG

A. Locate filter bag at least 50 feet from all wetlands, streams or other surface waters.

B. Install bag on a 2 inch gravel bed to allow water to flow in all directions.

C. Bag is full when remaining flow area is reduced by 75%. Replace full bags with new bags.

3.7 SITE STABILIZATION

A. Incorporate erosion control devices indicated on the Drawings into the Project at the earliest practicable time.

B. Construct, stabilize and activate erosion controls before site disturbance within tributary areas of those controls.

C. Stockpile and waste pile heights shall not exceed 35 feet. Slope stockpile sides at 2:1 or flatter.

D. Stabilize any disturbed area of affected erosion control devices on which activity has ceased and which will remain exposed for more than 20 days.

1. During non-germinating periods, apply mulch at recommended rates.
2. Stabilize disturbed areas which are not at finished grade and which will be disturbed within one year with grass seed.
3. Stabilize disturbed areas which are either at finished grade or will not be disturbed within one year in accordance with grass seed.

E. Stabilize diversion channels, sediment traps, and stockpiles immediately.

3.8 FIELD QUALITY CONTROL

A. Inspect erosion control devices on a weekly basis and after each runoff event. Make necessary repairs to ensure erosion and sediment controls are in good working order.

3.9 CLEANING

A. When sediment accumulation in sedimentation structures has reached a point one-third depth of sediment structure or device, remove and dispose of sediment.

B. Do not damage structure or device during cleaning operations.

C. Do not permit sediment to erode into construction or site areas or natural waterways.

D. Clean channels when depth of sediment reaches approximately one-half channel depth.

END OF SECTION 312500

SECTION 313700 – GROUTED RIPRAP

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: Riprap, placed loose and grouted.

1.3 PRE-INSTALLATION MEETINGS

A. Convene minimum one week prior to commencing Work of this Section.

1.4 ACTION SUBMITTALS

A. Product Data: Submit manufacturer information regarding size distribution and types for rock for riprap and bedding stone.

B. Testing: Submit riprap test results as described herein.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Manufacturer Qualifications Statement.

1.5 QUALITY ASSURANCE

A. Furnish each riprap material from single source.

B. Perform Work according to New York State Department of Transportation standards.

1.6 QUALIFICATIONS

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

PART 2 - PRODUCTS

2.1 MATERIALS

A. Riprap:

1. Stone for Riprap shall consist of sound, dense, angular, and durable rock. Rounded stones, boulders, sandstone, or similar soft stone or relatively thin slabs will not be acceptable.

    a. Minimum specific gravity of 2.7.
    b. Not sustain a loss of more than 40 percent after 500 revolutions in an abrasion machine in accordance with ASTM C535. Samples of riprap shall sustain a loss of no more than 10 percent of weight after five cycles in a sodium sulfate soundness test in accordance with ASTM C88.
    c. Greatest Dimension of any Individual Rock Fragment: No greater than three times its least dimension.

2. Process riprap to meet the following gradation limits in accordance with Table 733-22A in Section 700 of the New York State Department of Transportation (NYSDOT) Standard Specifications:

TABLE 733-22A RIP-RAP GRADATION	
Stone Weight	**Gradation Spread**
Heavier than 300 lbs.	50-100 percent of total by weight
100 lbs. $\leq \gamma \leq$ 300 lbs.	Remainder of stones

B. Grout for Riprap:

1. Grout for Riprap: A fine aggregate concrete consisting of a mixture of Portland cement, fine aggregate, and water proportioned and mixed as to provide a pumpable slurry. Admixtures and/or pozzalan may be used with the approval of the Engineer.
2. Portland Cement: Conform to ASTM C150 Type II.
3. Fine Aggregate: Conform to ASTM C33, except as to grading.

    a. Aggregate Grading: Reasonably consistent and well graded from the maximum size which can be conveniently handled with available pumping equipment.

4. Water for Mixing: Clean and free from adverse amounts of oil, acid, salt, alkali, organic matter, or deleterious substances.
5. Pozzolan, if used: Conform to ASTM C618, Type N, F, or C.
6. Admixtures: A water reducer conforming to ASTM C494 to reduce segregation, increase workability and pumpability, improve strength and increase water tightness.

    a. Air Content: 6 to 10 percent.

7. Proportion materials to produce a hardened concrete with a minimum compressive strength of 3,000 psi at 28 days after specimens are made and tested in accordance with ASTM C31 and ASTM C39.

PART 3 - EXECUTION

3.1 DEWATERING

A. Prior to commencing work on riprap placement, install dewatering measures as required to perform work “in-the-dry.”

B. Dewater as necessary. Use temporary cofferdam, sumps with pumps, or other means necessary to maintain level of groundwater below subgrade elevation and to divert surface water away from work area.

3.2 SUBGRADE PREPARATION

A. Place riprap to limits and grades indicated on Drawings.

B. Remove topsoil, brush, trees, stumps, and other objectionable material and grade channel slopes, bottoms, or other areas that are to be protected with riprap to a smooth compacted surface.

C. Excavate soil to rock and clean surface within the limits of riprap placement.

3.3 RIPRAP PLACEMENT

A. Do not compact riprap, but place to grade in a manner to ensure that the larger rock fragments are uniformly distributed and the smaller rock fragments serve to fill the space between the larger rock fragments in such a manner as will result in well-keyed, densely placed, uniform layers of riprap of the specified thickness. Hand-placing will be required only to the extent necessary to secure the results above.

B. Grout riprap in such a manner as to produce a uniformly grouted rock mass in its entire thickness. Grout penetration may be accomplished by rodding, vibrating, or pumping grout into the riprap voids, or other methods approved by the Engineer.

C. Do not permit construction equipment to travel over the grout until the riprap has been placed. Waste grout that has become so stiff that it will not bond or that proper placing without re-tempering cannot be assured.

D. Wash the top or exposed surface of the grouted riprap to expose the natural color of the riprap. The finished surface of the grouted riprap shall be subject to the approval of the Engineer.

E. All surfaces of riprap against which grout will be placed shall be free from dirt or other objectionable material which would prevent a proper bond between the grout and riprap. Wet riprap prior to placement of grout.

F. Create depressions or “seats” beneath the final grade of the riprap to the required depths at plan locations of boulders designed as the energy dissipater baffles, to accept the shape of the actual boulder. Set the boulder into the depression to be in contact with the riprap stones. Pump grout as specified to contact the full surface of the boulder below grade and penetrate the voids of the

riprap layer to the full depth below the boulder. Grout may be required to be pumped into the "seat" prior to the setting of the boulder to ensure that grout has fully penetrated the riprap layer and is in full contact with the area surface of the boulder below the plane of the riprap layer surface.

a. Special procedures may be required to achieve grout penetration through the riprap layer for its entire depth. Establish test sections to test and demonstrate grouting procedures to the satisfaction of the Engineer. Demonstrate construction procedures that achieve full grout penetration.

G. Minimum Installed Thickness: As indicated on Drawings.

END OF SECTION 313700

SECTION 355100 – FLOATING BOOMS

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 floating waterway barriers (booms) for ice protection. The main purpose of this boom is to protect the gatehouse from severe ice flow during typical winter weather for the area.

B. Related Requirements:

1. Section 033000 “Cast-in-Place Concrete for concrete anchorage details.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for floating booms.

B. Shop Drawings:

1. Include plans, elevations, sections, attachment and anchoring details.
2. Include calculations for anchor design sealed by a NYS Professional Engineer.

1.4 DELEGATED DESIGN SUBMITTALS

A. Delegated-Design Submittal: For Floating Ice Boom ; Section 014000 “Quality Requirements” for additional delegated design requirements.

B. Qualifications Statement: Submit qualifications for licensed professional.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer.

B. Sample Warranty: For manufacturer's warranty.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For floating booms to include in operation and maintenance manuals.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1.8 QUALITY ASSURANCE

A. Delegated Design Engineer: Licensed professional engineer experienced in design of specified Work and licensed in the jurisdiction of the project location.

B. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

C. Welding Qualifications: All fusing welding carried out by certified operators trained in full-surface, butt fusion welding.

1.9 WARRANTY

A. Outer Layer Warranty: Manufacturer agrees to repair or replace booms where the outer layer peels, delaminates, or mechanically separates from the base material within the specified warranty period.

1. Warranty Period: 30 years from date of Substantial Completion.

B. Color Stability Warranty: Manufacturer agrees to repair or replace booms that fail to become suitable for outside exposure due to UV degradation within specified warranty period.

1. Warranty Period: 20 years from date of Substantial Completion.

C. Watertightness Warranty: Manufacturer agrees to repair or replace booms that fail in watertightness within specified warranty period.

1. Warranty Period: 10 years from date of Substantial Completion.

1.10 QUALIFICATIONS

A. Manufacturer must have a minimum of 10 years of experience in the fabrication, design and installation of floating booms. The manufacturer must also have at least 5 installations of comparable size, application, and climate.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Worthington ODINBoom® HDPE Series or equal.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design anchoring for the floating boom.

B. Capacities and Characteristics:

1. The boom and the anchor system shall be designed to withstand the forces in the reservoir and to direct ice and debris away from the gatehouse and over the spillway.
2. Flow rates in Fish Creek at Kessinger Dam vary based on season and wet weather events. The boom shall be designed for these variations in flow rate and velocity and ice cover so that it remains intact and undamaged.

    a. Flow rates for various conditions:

        1) 100 year (1 percent annual exceedance probability (AEP)) storm event: 15,400 cfs.
        2) 10 year (10 percent AEP) storm event: 9,500 cfs.
        3) 2 year (50 percent AEP) storm event: 5,700 cfs.
        4) Average daily flow: 305 cfs.
        5) Average of daily peak flow rates: 1,450 cfs
        6) Peak winter (December 1st to March 31st) flow based on 80+ year gauge record: 10,100 cfs.

3. Normal water depth in the area of the gatehouse is between 16 and 18 feet deep.

    a. Unless the reservoir level is lowered for maintenance, the water depth is 16 feet or greater with water normally going over the spillway.
    b. Water depth decreases to approximately 2 to 5 feet when the City lowers the reservoir for annual cleaning and maintenance. The boom must be able to be moved away from the access ramp and gatehouse with a small excavator to allow for dam maintenance.
    c. Water depth is approximately 26 to 27 feet during a 100-year event and approximately 25 feet during a 10-year event.
    d. Water depth is approximately 19 to 20 feet when flow rate is 2,000 cfs.

C. Features:

1. Boom shall have an opening (kayak gate) to allow kayakers to exit before the dam. Gate shall be as close to the rock face and access ramp as feasible.

2. Boom shall have a deflector screen that hangs below the floating boom, extending at least 2 feet below the surface of the water.
3. Boom shall be removable with a small excavator or dozer to allow Owner to maintain the reservoir.
4. Boom shall not get any closer than 10 feet to the gatehouse during any storm event from normal flow to the 100 year storm event.

2.3 MATERIALS

A. HDPE Pipe:

1. Cell Classification: Manufactured in ISO 9002 certified production, in accordance with PE 345444 C/E per ASTM D3350.
2. Nominal Pipe Wall Thickness: 1-1/4 inches.
3. Diameter: 24-inches or greater such that boom will float with at least 12 inches of freeboard in flowing water up to 2.0 feet per second.
4. Outer Color Layer: 3.0-4.0 mm thick with a minimum relative intensity rating of 80 percent and not more than 550 nanometers on the color spectrum.

    a. External color to be Blue Angel Yellow (FS13655).

5. End Fittings and Caps: Match color of HDPE pipe outer layer.
6. Encasement: Smooth, non-stick surface, UV protection, bio-fouling resistance, with lifetime corrosion and rot-resistant warranty.

    a. UV Stabilization of outer layer must be verified using testing in accordance with ASTM G 155 Cycle 1 or similar ISO 4892.2 for 10,000 hours.
    b. Style: 20-foot length booms with welded lug plates, ODINBoom Connection or equal.

B. Deflector Panels: 2-feet high minimum slotted screens.

C. Bolts, Nuts, Washers: ASTM A325.

D. Structural Steel Plate: ASTM A572, Grade 50.

E. Cotter Pins: 316 stainless steel.

F. Zinc-rich Touch-up Paint: ASTM A780.

G. Message Panel Graphics:

1. Color: Black.
2. Typeface: Arial Black or Helvetica font, all caps.
3. Location: Centered on boom.
4. Lettering Height: Viewable from 150 feet away as determined by a heads-on approach in normal light conditions.
5. Graphics: Mold-On® type as manufactured by Mold-In Graphics Corporation or approved equal.

H. Retroreflective Tape: 3M material or equal designed for marine environments.

1. Color, for Daylight Visibility: Red.
2. Color for Low Light and Nighttime Visibility: White or yellow.

I. End Connections:

1. Connections between booms must permit full freedom motion horizontally and vertically.
2. Minimum Yield Strength: 139 kips.
3. Minimum Ultimate Strength: 239 kips.

J. Mooring Anchor:

1. Diameter: 36 inches.
2. Length: 48 inches.
3. Material: HDPE.
4. Chain: Minimum of 100-feet of 1-inch diameter hot-dipped galvanized chain, Dock Fender Chain by Peerless or equal.

K. On-Land Anchor:

1. Contractor to confirm the boom tension at each anchor point with the manufacturer prior to construction of the reservoir anchor.
2. Materials and requirements as shown on Contract Plans.

L. In-Water Anchor:

1. Style: Stockless or Flipper type.
2. Depth: Approximately 20 feet.
3. Anchor slope ratio: 5 to 1.
4. Anchor shackle to be hot dipped galvanized with the same rating of greater than the connected chain.

M. All systems to have a rated service life of at least 50 years.

2.4 FINISHES

A. Steel Galvanizing: ASTM A123. Hot dip galvanize after fabrication.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install in-water anchor and construct reservoir anchor per the Contract Drawings prior to installation of the manufacturer supplied floating boom system.

B. Comply with manufacturer's recommendation for installation of floating booms.

C. Attach floating boom system, supplied by manufacturer, to in-water anchor and reservoir anchor.

D. Boom must have enough chain to rest on the bottom of the reservoir when completely drained without damage.

3.3 ADJUSTING

A. Adjust hardware to function smoothly.

3.4 PROTECTION

A. Remove and replace booms that are damaged.

END OF SECTION 355100

SECTION 400507 - HANGERS AND SUPPORTS FOR PROCESS PIPING

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. Hangers and supports for piping.
2. Delegated design.

B. Related Requirements:

1. Section 033000 “Cast-in-Place Concrete” for placement of concrete housekeeping pads required by this Section.
2. Section 400531 “Thermoplastic Process Pipe.”

1.3 DEFINITIONS

A. Ferrous Metal: Iron, steel, stainless steel, and alloys with iron as principal component.

B. Wetted or submerged: Submerged, less than 1-foot above liquid surface, below top of channel or tank wall, under cover or slab of channel or tank, or in other damp locations.

C. “Pipe” or “Piping”: Piping, piping system(s), hose, tube, fittings, joints, valves, and similar appurtenances.

D. Supports: Wherever the word “supports” or “pipe supports” are used, pipe supports, hangers, structural connections, concrete inserts (if allowed), anchors, guides, bolts, expansion units, restraints and all restraint, hanging, supporting, allowing controlled expansion, or other means of attaching piping along with the necessary appurtenances.

1.4 COORDINATION

A. Coordinate Work of this Section with piping and equipment connections specified in other Sections and indicated on Drawings.

1.5 PREINSTALLATION MEETINGS

A. Convene minimum one week prior to commencing Work of this Section.

1.6 ACTION SUBMITTALS

A. Product Data: Submit manufacturer's catalog data including load capacity.

B. Shop Drawings: Submit scaled piping layouts for each system. Indicate flow stream, pipe size(s) material(s), schedule(s), lining(s), critical dimensions between pipes, equipment and building features. Indicate by schedule pipe hanger/support type and locations. Provide detail of each type of hangers, supports, anchors, and guides.

1.7 DELEGATED DESIGN SUBMITTALS

A. Delegated-Design Submittal: For hangers and supports for piping; Section 014000 “Quality Requirements” for additional delegated design requirements.

1. Where the Drawings show support types and/or locations, analyze them for adequacy to support loads and stresses, modify if required, install generally where shown, and integrate with the pipe support system design.
2. Engage the services of an independent registered professional engineer licensed in the State of New York ordinarily engaged in the business of pipe support systems analysis and design, to analyze system piping and service conditions, and to develop a detailed support system design, specific to the piping material, pipe joints, valves, and piping appurtenances proposed for use.

    a. Support system engineering groups include the following:

        1) SAC Incorporated https://www.sacincorporated.com/contact-us/.
        2) Fenny Engineering http://www.fennyengineering.com/contact/.
        3) Piping Solutions and Energy Associates https://www.pseassoc.com/request-for-service/.
        4) Newman Associates https://newmanassoc.com/.

3. The support system design shall include:

    a. Criteria by piping system.
    b. Summary of Contractor-selected related components including joints, class, valves, appurtenances, etc., and commercial supports and especially including pipe materials.
    c. Dead weight and dynamic analysis, including system thermal effects and pressure thrusts. Computer-based software system equivalent to Bentley Systems AutoPIPE or SST Systems CAEPIPE.

        1) Present each system in an isometric graphic and show the resolved and resultant force and moment systems, as well as all recommended hangers, supports, anchors, restraints, and expansion/flexible joints.

    d. Submit support system design to the Engineer for review. The submittal needs to be stamped by a professional engineer registered in New York.
    e. All aspects of the analysis and design to comply with the provisions of ANSI B31.9 and the referenced standards.

4. Coordinate support arrangements to eliminate interference with similar systems to be installed under HVAC, Plumbing, and Electrical, to account for structural expansion joints and to maintain access for both personnel and for the removal of equipment.

B. Manufacturers' Instructions: Submit special procedures and assembly of components.

C. Qualifications Statement: Submit qualifications for licensed professional.

1.8 INFORMATIONAL SUBMITTALS

A. Manufacturer’s Certificate: Certify that products meet or exceed specified requirements.

B. Welders' Certificate: Submit welders' certification of compliance with AWS D1.1, verifying qualification within previous 12 months.

C. Qualifications Statements:

1. Submit qualifications for manufacturer, fabricator, installer, and licensed professional.
2. Submit manufacturer's approval of installer.

1.9 DELIVERY, STORAGE AND HANDLING

A. All supports and hangers shall be crated, delivered, and uncrated so as to protect against any damage.

B. All parts shall be properly protected so that no damage or deterioration shall occur during a prolonged delay from the time of shipment until installation is completed.

C. Finished metal surfaces not galvanized, that are not of stainless-steel construction, or that are not coated, shall be grease coated, to prevent rust and corrosion.

1.10 QUALITY ASSURANCE

A. Perform Work according to AWS D1.1 for welding hanger and support attachments to building structure.

B. Maintain one copy of each standard affecting the Work of this Section on-site.

1.11 QUALIFICATIONS

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

B. Fabricator: Company specializing in fabricating products specified in this Section with minimum three years' documented experience.

C. Installer: Company specializing in performing Work of this Section with minimum three years' documented experience and approved by manufacturer.

D. Licensed Professional: Professional engineer experienced in design of specified Work and licensed in State of New York.

1. Have at least 5 years of experience in the analysis and design of similar systems, including the use of commercial and custom pipe supports and in the use of commercial pipe stress software programs.

1.12 DELIVERY, STORAGE, AND HANDLING

A. Inspection: Accept materials on-Site in original factory packaging, labeled with manufacturer's identification.

B. Protect products from weather and construction traffic, dirt, water, chemical, and damage by storing in original packaging.

1.13 EXISTING CONDITIONS

A. Field Measurements: Verify field measurements prior to fabrication. Indicate field measurements on Shop Drawings.

1.14 WARRANTY

A. Furnish five-year manufacturer's warranty for pipe hangers and supports.

PART 2 - PRODUCTS

2.1 GENERAL

A. Support pipe and appurtenances connected to equipment to prevent any strain being imposed on the equipment. Comply with manufacturer’s requirements regarding piping loads being or not being transmitted to their equipment. Submit certification stating that such requirements have been met.

B. Support and secure all pipe and tubing in the intended position and alignment to prevent significant stresses in the pipe or tubing material, valves, fittings, and other pipe appurtenances. Design all supports to adequately secure the pipe against excessive dislocation due to thermal expansion and contraction, internal flow forces, and all probable external forces such as equipment, pipe, and personnel contact. Any structural steel members required to brace any piping from excessive dislocation shall conform to the applicable requirements of Section 055000 “Metal Fabrications” and shall be furnished and installed under this Section.

C. Contractor may propose minor adjustments to the piping arrangements in order to simplify the supports, or in order to resolve minor conflicts in the work. Such an adjustment might involve minor change to a pipe centerline elevation so that a single trapeze support may be used.

D. Where flexible sleeve, split ring, vibration, or other couplings are required at equipment, tanks, etc., the end opposite to the piece of equipment, tank, etc., shall be rigidly supported to prevent

transfer of force systems to the equipment. Do not install fixed or restraining supports between a flexible coupling and the piece of equipment.

E. Pipe Supports:

1. Shall not induce point loadings but shall distribute pipe loads evenly along the pipe circumference.
2. Provide supports at changes in direction and elsewhere as shown in the Drawings or as specified herein.
3. No piping shall be supported from other piping or from metal stairs, ladders, and walkways, unless specifically directed or authorized by the Engineer.
4. Provide pipe supports to minimize lateral forces through valves, both sides of flexible split ring type couplings and sleeve type couplings, and to minimize all pipe forces on pump housings. Pump housings shall not be utilized to support connecting pipes.
5. Effects of thermal expansion and contraction of the pipe to be accounted for in the pipe support selection and installation.

F. Insofar as is possible, floor supports shall be given preference. Where specifically indicated, concrete supports, as shown on the Drawings, may be used. Base elbow and base tees shall be supported on concrete pedestals.

G. Restraints, flexible connections, expansion items, and related items as included in other specifications and shown on the Drawings.

2.2 PERFORMANCE REQUIREMENTS/DESIGN CRITERIA

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design hangers and supports for piping.

B. All supports and appurtenances shall be standard products from approved manufacturers wherever possible and shall be adequate to maintain the supported load in proper position under all operating conditions. Any reference to a specific figure number of a specific manufacturer is for the purpose of establishing a type and quality of product and shall not be considered as proprietary. Note that different materials required, as specified in Part 2 “Materials” Article, may require different figures or model numbers than those shown.

1. The minimum working factor of safety for all items, with the exception of springs, shall be five times the ultimate tensile strength of the material, assuming 10 feet of water-filled pipe being supported and normal test pressures.
2. Design for all loads using a safety factor of 5.

C. Piping schedule is included in the contract drawings.

D. All items shall be designed with strength and stiffness to support, restrain, and allow expansion of the respective pipes under the maximum combination of peak loading conditions to include pipe weight, liquid weight, liquid movement and pressure forces, thermal expansion and contraction, vibrations, and all probable externally applied forces.

E. Support spacing shall be per ASME B31.3.

F. Complete design details of the pipe system components shall be submitted for review and approval as specified in PART 1. No support shall be installed without approved support system Drawings.

G. The pipe support system shall not impose loads on the supporting structures in excess of the loads for which the supporting structure is designed.

H. Seismic Design and restraint requirements, in accordance with the Structural Design criteria.

2.3 MATERIALS

A. Metallic Pipe Support:

1.
1. Submerged, buried, or within outdoor structures (vaults, etc.): Type 316 stainless steel (SS).
2. Within chemical areas: Vinyl ester fiberglass reinforced plastic (FRP) for pipe size up to 2 inch, epoxy coated steel for 2-1/2 inches size and larger.
3. Other locations: steel with galvanizing where noted.
4. Additional requirements (including dielectric insulation) in “Accessories” Article.

B. Non-Metallic Pipe Support:

1. Submerged, buried, or within vaults: Type 316 stainless steel or FRP.
2. Within chemical areas: Vinyl ester FRP.
3. Other locations: Steel with galvanizing where noted; all with local stress protection shields.
4. Additional requirements (including stress protection shields) in “Accessories” Article.

C. Wherever stainless steel is noted, it shall be Type 316 unless noted otherwise.

2.4 INSULATION

A. See “Accessories” Article and Drawings.

2.5 SUPPORT AND RESTRAINT SYSTEMS

A. Steel or Ductile Iron Piping:

1. Cast iron and ductile iron, steel, and stainless-steel piping shall be supported at a maximum support spacing of 10 feet with a minimum of one support per pipe section at the joints.
2. Support spacing for ductile iron, steel, and stainless-steel piping 2 inches and smaller diameter shall not exceed 5 feet.

B. Copper Piping:

1. Supports for copper pipe shall be copper plated or shall have a 1/16 inch plastic coating.
2. Support spacing for copper piping and tubing 2 inches and smaller diameter shall not exceed 5 feet and greater than 2 inches diameter shall not exceed 8 feet.

3. Where pipe supports come in contact with copper piping, provide protection from galvanic corrosion by wrapping pipe with 1/16 inch thick neoprene sheet material and galvanized protection shield; isolators similar to Cooper B-Line B3195CT; or copper-plated or PVC-coated hangers and supports.

C. Non-Metallic Piping:

1. All uninsulated non-metallic piping such as PVC, CPVC, HDPE, PVDF, etc., shall be protected from local stress concentrations at each support point. Protection shall be provided by non-metallic protection shields or other method as approved by the Engineer.

    a. Where pipes are bottom supported 180 degrees, arc shields shall be furnished. Where 360-degree arc support is required, such as U-bolts, protection shields shall be provided for the entire pipe circumference. All U-bolts or clamps for non-metallic pipes shall be plastic coated.
    b. Protection shields shall have an 18-gauge minimum thickness, not be less than 12 inches in length and be securely fastened to pipe with Type 316 stainless steel straps not less than 1/2-inch wide.

2. Individually supported PVC pipes shall be supported as recommended by the pipe manufacturer except that support-spacing shall be manufacturers recommendation minus 2-feet down to 5 feet spacing recommendation, then spacing shall be 3 feet.
3. Supports for horizontal multiple PVC plastic piping:

    a. Shall be continuous wherever possible.
    b. Multiple, suspended, horizontal plastic PVC pipe runs, where possible, shall be supported by ladder type cable trays such as: Husky Ladder Flange Out by MPHusky; or equal.
    c. Rung spacing shall be 12 inches. Tray width shall be approximately 6 inches for single runs and 12 inches for double runs.
    d. Ladder type cable trays shall be furnished complete with all hanger rods, rod couplings, concrete inserts, hanger clips, etc., required for a complete support system. Individual plastic pipes shall be secured to the rungs of the cable tray by strap clamps or fasteners similar to: Globe, Series 600; Unistrut Pipe/Conduit Clamps and Hangers; or equal.
    e. Spacing between clamps shall not exceed 9 feet. The cable trays shall provide continuous support along the length of the pipe. Individual clamps, hangers, and supports in contact with plastic PVC pipe shall provide firm support but not so firm as to prevent longitudinal movement due to thermal expansion and contraction.

D. Framing Support System:

1. See PART 2 “Materials” Article for materials of construction.
2. Beams: Size such that beam stress does not exceed 25,000 psi and maximum deflection does not exceed 1/240 of span.
3. Column Members: Size in accordance with manufacturer's recommended method.
4. Support Loads: Calculate using weight of pipes filled with water.
5. Maximum Spans:

a. Steel and ductile iron pipe 3 inches diameter and larger: 10 feet centers, unless otherwise shown.
b. Other pipelines and special situations: Same as noted in previous paragraphs. Supplementary hangers and supports may be required.

E. All vertical pipes shall be supported at each floor or at intervals of not more than 12 feet by approved pipe collars, clamps, brackets, or wall rests and at all points necessary to ensure rigid construction. All vertical pipes passing through pipe sleeves shall be secured using a pipe collar.

2.6 ANCHOR BOLTS/SYSTEMS

A. Anchoring Devices: Design, size, and space support anchoring devices, including anchor bolts, inserts, and other devices used to anchor support, to withstand shear, and pullout loads imposed by loading and spacing on each particular support. DO NOTE USE ADHESIVE ANCHOR BOLTS ON ANY PIPE SUPPORT HUNG FROM A ROOF OR CEILING, unless specifically noted otherwise.

B. All post-installed anchors in concrete shall have current published ICC-ES Evaluation Report indicating the anchor is approved for installation in cracked concrete.

C. The latest edition of the following specification and recommended practices shall become part of this specification as if written herein. Wherever requirements conflict, the more stringent shall govern.

1. ACI 318, Appendix D.
2. ACI 355.2, Mechanical Anchors “Qualification of Post-Installed Mechanical Anchors in Concrete.”
3. Anchor manufacturer’s published installation requirements.

D. Expansion Anchors:

1. The length of expansion bolts shall be sufficient to place the wedge portion of the bolt a minimum of 1 inch behind the steel reinforcement.
2. Manufacturers:

a. Power-Stud+ SD4 and Power-Stud+ SD6 by Powers Fasteners, Brewster, NY.
b. Kwik Bolt as manufactured by Hilti USA, Tulsa, Oklahoma.
c. Wej-it by Wej-it Expansion Products, Inc., Broomfield, Colorado.

E. Unless otherwise noted: Use Type 304 stainless steel anchoring parts/bolts and hardware for non-submerged supports, Type 316 stainless steel for submerged anchors.

F. Size of anchor bolts as designed by manufacturer, 1/2 inch minimum diameter, or as shown on the Drawings.

G. Anchors to concrete in chemical areas shall be epoxy secured vinyl ester FRP all thread, insertion depth and size as required by the manufacturer for the design loads. Nuts, bolts, and hardware shall all be vinyl ester FRP construction.

2.7 HANGER RODS

A. Where use of steel is allowed, hanger rods shall be hot-rolled steel, machine-threaded, and, except for stainless steel, galvanized after fabrication. The strength of the rod shall be based on its root diameter.

1. Hanger rods shall be attached to concrete structures using single or continuous concrete inserts by the named support manufacturers above. Where use of steel is allowed, inserts shall be malleable iron or steel with galvanized finish.
2. Beam-clamps, C-clamps, or welded-beam attachments shall be used for attaching hanger rods to structural steel members.

B. Minimum rod size for metallic rod hangers: (* For pipe diameters less than 14 inches, if using pipe roller, use 2 hanger rods with minimum diameter noted below for pipe's diameter).

	Nominal Pipe / Tube Diameter	Minimum Hanger Rod Diameter
1	Less than 2-1/2 inch (64 mm)	1/4 inch (6.4 mm) *
2	3 to 8 inches (75 to 203 mm)	1/2 inch (13 mm) *
3	10 to 14 inches (254 to 356 mm)	3/4 inch (19 mm) *
4	16 to 20 inches (406 to 508 mm)	2 at 1 inch (25 mm)
5	24 inches (610 mm)	2 at 1-1/4 inch (32 mm)
6	30 inches (762 mm)	2 at 1-1/2 inch (38 mm)

2.8 SINGLE PIPE HANGERS

A. Unless otherwise indicated, pipe hangers and supports shall be standard catalogued components, conforming to the requirements of MSS-41, 58, or 69 and of the following type:

1. Anvil International.
2. Equal models by: Carpenter & Patterson, Inc., Wobum, MA.
3. Cooper B-Line.
4. Gulf State Manufacturing.
5. Unistrut Northeast, Cambridge, Massachusetts.
6. CADDY; nVent.
7. Carpenter & Paterson, Inc.
8. Empire Industries, Inc.
9. Globe Pipe Hanger Products Incorporated.
10. Haydon Corporation.
11. Hilti, Inc.
12. NIBCO INC.
13. PHD Manufacturing, Inc.
14. PHS Industries, Inc.
15. Unitron Product, Inc. / US-Strut.

B. Single pipes shall be supported by hangers suspended by hanger rods from structural steel members, concrete ceilings, bottom of trapeze hangers, and wall-mounted steel angle brackets.

C. Where pipes are near walls, beams, columns, etc., and located an excessive distance from ceilings or underside of beams, welded steel wall brackets similar to Carpenter and Patterson, Figure Nos. 68, 79, 84, or 139 shall be used for hanging pipe. Where single pipes rest on top of bracket pipe supports, attachments shall meet requirements as specified under multiple pipe hangers.

2.9 MULTIPLE PIPE HANGERS

A. Suspended multiple pipes, running parallel in the same horizontal plane that are adjacent to each other, shall be suspended by trapeze type hangers or wall brackets. Where use of steel is allowed, trapeze hangers shall consist of galvanized structural steel channel supported from galvanized threaded rod or attached to concrete walls, columns, or structural steel support members. See previous paragraphs about multiple PVC pipe supports.

B. Except as otherwise specified herein, pipe anchors used for attaching pipe to trapeze or multiple pipe wall brackets shall be anchor or pipe chairs similar to:

1. Anvil Fig. 175.
2. Cooper B-Line B3147A or B3147B.
3. Where use of steel is allowed, material of construction shall be galvanized steel. Chair U bolts shall be tightened to allow freedom of movement for normal expansion and contraction except where pipe must be anchored to control direction of movement or act as a thrust anchor.

2.10 SINGLE PIPE SUPPORTS FROM BELOW

A. Single pipes located in a horizontal plane close to the floor shall be Pedestal type: Schedule 40 pipe stanchion, saddle, and anchoring flange.

1. Nonadjustable Saddle: MSS SP 58, Type 37 with U-Bolt.

    a. Anvil, Figure 259.
    b. Cooper B-Line, Figure B3090.

2. Adjustable Saddle: MSS SP 58, Type 38 without clamp.

    a. Anvil, Figure 264.
    b. Cooper B-Line, Figure B3093.

B. Pipes less than 3 inches in diameter:

1. Hold in position by supports fabricated from steel C channel, welded post base similar to Unistrut, Figure P2072A, where use of steel is allowed; and pipe clamps similar to Unistrut, Figures P1109 through 26.

2. Where required to assure adequate support, fabricate supports using two vertical members and post bases connected by horizontal member of sufficient load capacity to support pipe.
3. Fasten supports to nearby walls or other structural member to provide horizontal rigidity.
4. More than one pipe may be supported from a common fabricated support.

C. Pipes 3 inches in diameter and larger:

1. Support by adjustable stanchions.
2. Provide at least 4-inch adjustment.
3. Flange mount to floor.

D. Use yoked saddles for piping whose centerline elevation is 18 inches or greater above the floor and for all exterior installations.

E. Pipe roller type supports shall be used where required to accommodate thermal movement in conjunction with axial supports.

2.11 WALL SUPPORTED SINGLE AND MULTIPLE PIPES

A. Single or multiple pipes located adjacent to walls, columns, or other structural members shall be supported using welded steel wall brackets, where use of steel is allowed, as manufactured by Carpenter and Patterson, Figure No. 69, 84, or 139.

B. Where noted, multiple pipes may be supported on C-channel with steel brackets similar to Unistrut pipe clamps; with pipe anchor chairs; or equal.

C. Individual pipes, up to 8-in diameter, where noted, may use MSS Type 8 pipe clamps as noted on the Drawings.

D. Securely fasten all members to wall, column, etc., using double-expansion shields or other method as approved by the Engineer. Provide additional wall bearing plates as required.

2.12 BASE ANCHOR SUPPORT

A. Bend Support: Where pipes change direction from horizontal to vertical via a bend, install a welded or cast base bend support to carry the load. Fasten to the floor, pipe stanchion, or concrete pedestal using expansion anchors or other method as approved by the Engineer.

B. Concrete Supports: Where indicated, securely fasten pipe bends to concrete supports with suitable metal bands as required and approved by the Engineer. Isolate piping from poured concrete with a neoprene insert.

2.13 VERTICAL PIPE SUPPORTS

A. Where vertical pipes are not supported by a Unistrut type system as specified, they shall be supported in one of the following methods.

1. For pipes 1/4 inch to 2 inches in diameter:

a. Provide extension hanger ring with an extension rod and hanger flange.
b. The rod diameter shall be as recommended by the manufacturer for the type of pipe to be supported.
c. Where use of steel is allowed, the hanger ring shall be steel- or PVC-clad depending on the supported pipe material of construction. The hanger ring shall be equal to Carpenter & Patterson, Figure Nos. 81.
d. Where use of steel is allowed, the anchor flange shall be galvanized malleable iron similar to Carpenter and Patterson, Figure No. 85.

2. For pipes equal to or greater than 2 inches in diameter:

a. Extended pipe clamps similar to Carpenter & Patterson, Figure No. 267 may be used.
b. Attach hanger to concrete structures using double expansion shields,
c. Attach hanger to metal support members using welding lugs similar to Carpenter & Patterson, Figure No. 114.

B. Pipe supports shall be provided for closely spaced vertical piping systems required to provide a rigid installation. The interval of vertical support spacing shall be as specified, but in no case shall vertical interval exceed 12 feet. The support system shall consist of a framework suitably anchored to floors, ceilings, or roofs.

C. Unless otherwise specified, shown, or specifically approved by the Engineer, vertical runs exceeding 12 feet shall be supported by base elbows/tees, clamps, brackets, wall rests, and pipe collars, all located as required to ensure a rigid installation.

D. Pipe riser clamps, per MSS SP58, shall be used to support all vertical pipes extending through floor slabs. Where use of steel is allowed, riser clamps shall be galvanized steel manufactured by:

1. Carpenter & Patterson, Figure No. 128.
2. Anvil, Figure 261.
3. Cooper B-Line, Figure B3373.
4. Or equal.

E. Copper-clad or PVC-coated clamps shall be used on copper pipes. Insulation shall be removed from insulated pipes prior to installing riser clamps. Insulation shall not be damaged by clamp installation.

2.14 SPECIAL SUPPORTS

A. Frame Work Supports:

1. Vertical and horizontal supporting members shall be U-shaped channels similar to Unistrut, Series P1000. Vertical piping shall be secured to the horizontal members by pipe clamps or pipe straps. See pipe clamp and strap requirements.
2. For piping 3 inches and smaller, framework shall be as manufactured by:

a. Unistrut Corporation.
b. Power-Strut (or Ackinstrut where fiberglass systems are specified).

c. Multi-Strut by Carpenter-Paterson.
d. Or equal.

3. For piping larger than 3 inches, the support frame shall be fabricated from structural stainless steel or steel shapes, depending upon the support location, and secured through the use of drop in, adhesive or expansion anchors.
4. The assemblies shall be furnished complete with all nuts, bolts, and fittings required for a complete assembly including end caps for all Unistrut members.
5. Electrical Conduit Support: Under Division 26.
6. The design of each individual framing system shall be the responsibility of the Contractor. Submit shop drawings, and show all details of the installation, including dimensions and types of supports. In all instances the completed frame shall be adequately braced to provide a complete rigid structure when all the piping has been attached. See also "Support and Restraint" Article.

B. Supports not otherwise described in this Section shall be fabricated or constructed from standard structural stainless steel or steel shapes in accordance with applicable provisions of Section 055000 "Metal Fabrications," or Unistrut-type frame; have anchor hardware similar to items previously specified herein; shall meet the minimum requirements listed below; and be subject to the approval of the Engineer.

C. Additional Pipe Support Situations:

1. Supporting Multiple Chemical and Related Piping:

a. Location: Indicated on Drawings or otherwise required, especially adjacent to chemical pumps.
b. Use: Framework support.
c. Materials: FRP, with proper local stress protection.

2.15 ACCESSORIES

A. Insulation Shield: Install on insulated non-steel piping. Oversize the rollers and supports, as required. Manufacturers:

1. Anvil, Figure 167.
2. Cooper B-Line, Series B3151.

B. Welding Insulation Saddle: Install on insulated metal pipe. Oversize the rollers and supports, as required. Manufacturers:

1. Anvil, Figure 160.
2. Cooper B-Line, Series B3160.

C. Vibration Isolation Pad: Install under base flange of pedestal type pipe supports adjacent to equipment, and where required to isolate vibration.

1. Isolation pads to be neoprene, waffle type.
2. Manufacturers:

a. Mason Industries, Type W.
b. Korfund.

D. Dielectric Barrier:

1. Install between carbon steel members and copper or stainless-steel pipe.
2. Install between stainless steel supports and non-stainless steel ferrous metal piping.
3. All stainless-steel piping shall be isolated from all ferrous materials, including galvanized steel by use of neoprene sheet material and protection shields.

E. Electrical Isolation: Install 1/4 inch by 3 inches neoprene rubber wrap between submerged metal pipe and oversized clamps.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify field dimensions as indicated on Drawings.

3.2 INSTALLATION

A. Obtain permission from Engineer before using powder-actuated anchors.

B. Obtain permission from Engineer before drilling or cutting structural members.

C. Inserts:

1. Install inserts for placement in concrete forms. Before setting inserts, all drawings and figures shall be checked that have a direct bearing on the pipe location. Responsibility for the proper location of pipe supports is included under this Section.
2. Install inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
3. Provide hooked rod to concrete reinforcement section for inserts carrying pipe 4 inches and larger.
4. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
5. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut recessed into and grouted flush with slab.

D. Pipe Hangers and Supports:

1. Install according to: ASME B31.3.
2. Support horizontal piping as indicated on Drawings, depending upon pipe size.
3. Install hangers with minimum 1/2 inch space between finished covering and adjacent Work.
4. Place hangers within 12 inches of each horizontal elbow.
5. Use hangers with 1-1/2 inches minimum vertical adjustment.
6. Support horizontal cast iron pipe adjacent to each hub, with 5 feet maximum spacing between hangers.

7. Support vertical piping at every other floor. Support vertical cast iron pipe at each floor at hub.
8. Where piping is installed in parallel and at same elevation, provide multiple pipe or trapeze hangers.
9. Support riser piping independently of connected horizontal piping.
10. Provide copper-plated hangers and supports for copper piping.
11. Design hangers for pipe movement without disengagement of supported pipe.
12. Support piping independently so that equipment is not stressed by piping weight or expansion in piping system.
13. Support large or heavy valves, fittings, and appurtenances independently of connected piping.
14. Provide welded steel brackets where piping is to be run adjacent to building walls or columns.
15. Use beam clamps where piping is to be suspended from building steel.
16. Insulated Piping: Provide two bolted clamps designed to accommodate insulated piping.
17. Use offset clamps where pipes are indicated as offset from wall surfaces.
18. Proceed with installation of piping and supports only after any building structural work has been completed and new concrete has reached its 28-day compressive strength.
19. The installation of pipe support systems shall not interfere with the operation of any overhead bridge cranes, monorails, access hatches, etc. No piping shall be supported from stairs, other pipes, ladders, and walkways unless authorized by the Engineer.
20. Repair mounting surfaces to original condition after attachments are made.
21. Brace horizontal pipe movements by both longitudinal and lateral sway bracing.
22. Where supports are required in areas to receive chemical resistant seamless flooring, install supports prior to application of flooring system.

E. Insulation:

1. Provide clearance in hangers and from structure and other equipment for installation of insulation.

F. Equipment Bases and Supports:

1. Provide housekeeping pads as detailed on Drawings.
2. Using templates furnished with equipment, install anchor bolts and accessories for mounting and anchoring equipment.
3. Construct supports of steel pipe and fittings. Brace and fasten with flanges bolted to structure.

G. Prime Coat:

1. Prime coat exposed steel hangers and supports.
2. Manufacturer’s standard.
3. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

3.3 FIELD QUALITY CONTROL

A. All pipe support systems shall be tested after installation in conjunction with the respective piping pressure tests. If any part of the pipe support system proves to be defective or inadequate, it shall be repaired, augmented, or replaced to the satisfaction of the Engineer.

B. After the work is installed, but before it is filled for start-up and testing, the Support System Design Engineer shall inspect the work and shall certify its complete adequacy. Each system shall be inspected and certified in the same way.

C. Submit a report, including all field modifications and including all certificates.

1. Insert state where project is located.
2. The report shall bear the stamp of a professional engineer registered in New York State and shall be subject to the review of the Engineer.

3.4 ATTACHMENT SCHEDULE

A. Pipe Hanger Spacing:

1. Pipe Material: ABS.

   a. Maximum Hanger Spacing: 4 feet.
   b. Hanger Rod Diameter: 3/8 inch.

2. Pipe Material: Aluminum.

   a. Maximum Hanger Spacing: 10 feet.
   b. Hanger Rod Diameter: 1/2 inch.

3. Pipe Material: Cast iron.

   a. Maximum Hanger Spacing: 5 feet.
   b. Hanger Rod Diameter: 5/8 inch.

4. Pipe Material: Cast Iron, with 10-foot length of pipe.

   a. Maximum Hanger Spacing: 10 feet.
   b. Hanger Rod Diameter: 5/8 inch.

5. Pipe Material: CPVC.

   a. Size: 1 inch and smaller.
   b. Maximum Hanger Spacing: 3 feet.
   c. Hanger Rod Diameter: 1/2 inch.

6. Pipe Material: CPVC.

   a. Size: 1-1/4 inches and larger.
   b. Maximum Hanger Spacing: 4 feet.
   c. Hanger Rod Diameter: 1/2 inch.

7. Pipe Material: Copper tube.

    a. Size: 1-1/4 inches and smaller.
    b. Maximum Hanger Spacing: 6 feet.
    c. Hanger Rod Diameter: 1/2 inch.

8. Pipe Material: Copper tube.

    a. Size: 1-1/2 inches and larger.
    b. Maximum Hanger Spacing: 10 feet.
    c. Hanger Rod Diameter: 1/2 inch.

9. Pipe Material: Fiberglass:

    a. Maximum Hanger Spacing: 4 feet.
    b. Hanger Rod Diameter: 1/2 inch.

10. Pipe Material: Glass.

    a. Maximum Hanger Spacing: 8 feet.
    b. Hanger Rod Diameter: 1/2 inch.

11. Pipe Material: Polybutylene.

    a. Maximum Hanger Spacing: 2.7 feet.
    b. Hanger Rod Diameter: 3/8 inch.

12. Pipe Material: Polypropylene.

    a. Maximum Hanger Spacing: 4 feet.
    b. Hanger Rod Diameter: 3/8 inch.

13. Pipe Material: PVC.

    a. Maximum Hanger Spacing: 4 feet.
    b. Hanger Rod Diameter: 3/8 inch.

14. Pipe Material: Steel.

    a. Size: 3 inches and smaller.
    b. Maximum Hanger Spacing: 12 feet.
    c. Hanger Rod Diameter: 1/2 inch.

15. Pipe Material: Steel.

    a. Size: 4 inches and larger.
    b. Maximum Hanger Spacing: 12 feet.
    c. Hanger Rod Diameter: 5/8 inch.

END OF SECTION 400507

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SECTION 400531 - THERMOPLASTIC PROCESS PIPE

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. PVC pipe.
2. Fittings.
3. Accessories for plastic piping.

B. Related Requirements:

1. Section 400507 “Hangers and Supports for Process Piping” for hangers, anchors, sleeves, and sealing of piping to adjacent structures.
2. Section 400551 “Common Requirements for Process Valves” for common product requirements for valves for placement by this Section.

1.3 COORDINATION

A. Coordinate Work of this Section with piping and equipment connections specified in other Sections and indicated on Drawings.

1.4 PREINSTALLATION MEETINGS

A. Convene minimum one week prior to commencing Work of this Section.

1.5 ACTION SUBMITTALS

A. Product Data: Submit manufacturer's catalog information regarding pipe and fittings.

B. Shop Drawings: Indicate layout of piping systems, including equipment, critical dimensions, sizes, materials lists, location of all fittings, valves, and in-line accessories.

1.6 INFORMATIONAL SUBMITTALS

A. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

B. Manufacturer’s recommended butt fusion welding procedures identifying all quality control checks during the fusion procedure including the minimum and maximum allowable bead formation during the heat soak process and the final weld roll back process for the various size pipes.

C. Manufacturer to provide a sample joint for each size pipe to be supplied that is 12 inches long and has two heat fusion welds that identifies the manufacturer’s minimum and maximum allowable bead thicknesses. Provide documentation that the sample was pressure tested to 150 psi or the specified pressure.

D. Source Quality-Control Submittals: Indicate results of factory tests and inspections.

E. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

F. Qualifications Statements:

1. Submit qualifications for manufacturer, installer, and licensed professional.
2. Submit manufacturer's approval of installer.

G. Manufacturer's Certificate:

1. Certify that products meet or exceed specified sustainable design requirements.
2. Materials Resources Certificates:

    a. Certify source and origin for salvaged and reused products.
    b. Certify recycled material content for recycled content products.
    c. Certify source for regional materials and distance from Project Site.

H. Product Cost Data:

1. Submit cost of products to verify compliance with Project sustainable design requirements.
2. Exclude cost of labor and equipment to install products.
3. Provide cost data for following products:

    a. Salvaged, refurbished, and reused products.
    b. Products with recycled material content.
    c. Regional products.

1.7 DELEGATED DESIGN SUBMITTALS

A. Delegated Design Submittals: Submit signed and sealed Shop Drawings with design calculations and assumptions for pipe sizes and sizing methods.

1.8 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations of piping, valves and other appurtenances, connections, and centerline elevations.

B. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.9 QUALITY ASSURANCE

A. Permanently mark each length of pipe with manufacturer's name or trademark and indicate conformance to standards.

B. Materials in Contact with Potable Water: Certified according to NSF 61.

C. Perform Work according to City of Rome standards.

D. Maintain a copy of each standard affecting Work of this Section on Site.

1.10 QUALIFICATIONS

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

B. Installer: Company specializing in performing Work of this Section with minimum three years' documented experience and approved by manufacturer.

C. Licensed Professional: Professional engineer experienced in design of specified Work and licensed in State of New York.

1.11 DELIVERY, STORAGE, AND HANDLING

A. Inspection:

1. Accept materials on Site in manufacturer's original packaging and inspect for damage.
2. Manufacturer's Packaging: Comply with ASTM D3892.

B. Storage: Store materials according to manufacturer instructions.

C. Protection:

1. Protect materials from puncture, abrasion, moisture, dust, and UV by storing in clean, dry location remote from construction operations areas.
2. Protect piping and appurtenances by storing off ground.
3. Provide additional protection according to manufacturer instructions.

1.12 AMBIENT CONDITIONS

A. Minimum and Maximum Temperatures: Do not install pipe when temperature is below 40 degrees F or above 90 degrees F if pipe is exposed to direct sunlight.

B. UV Protection: Provide pipe installed above ground or outside with UV protection.

1.13 EXISTING CONDITIONS

A. Field Measurements:

1. Verify field measurements prior to fabrication.
2. Indicate field measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 GENERAL

A. Van Stone flanges shall not be used with pinch valves, industrial butterfly valves; elastomer bellows style expansion joints or other piping system components having an elastomer liner (rubber seat) that is used as a gasket.

2.2 PVC PIPE, TUBE, AND FITTINGS

A. PVC Pipe and Fittings:

1. Pipe and Fittings:

a. Comply with ASTM D1785, Class 12454.
b. Schedule: 80.
c. Fittings: ASTM D2467, Schedule 80, socket.

2.3 FINISHES

A. Coat machined faces of metallic flanges with temporary rust-inhibitive coating.

2.4 ACCESSORIES

A. PVC Piping:

1. Flange Bolting:

a. Hex-Head Bolts: Stainless steel; ASTM F593 Grade 316.
b. Hex-Head Nuts: Stainless steel; ASTM F594 Grade 316.

2. Flange Gaskets:

a. Type: Full faced.
b. Material: EPDM.
c. Comply with ASME B16.21.

3. Push-On Joint Seals:

a. Material: EPDM.

b. Comply with ASTM F477.

4. Solvent Cement:

a. Comply with ASTM D2564.
b. Formulated for use with sodium hypochlorite and other caustic solutions.
c. Primers: Comply with ASTM F656.

2.5 SOURCE QUALITY CONTROL

A. Provide shop inspection and testing of completed pipe sections.

B. Owner Inspection:

1. Make completed pipe sections available for inspection at manufacturer's factory prior to packaging for shipment.
2. Notify Owner at least seven days before inspection is allowed.

C. Owner Witnessing:

1. Allow witnessing of factory inspections and test at manufacturer's test facility.
2. Notify Owner at least seven days before inspections and tests are scheduled.

D. Certificate of Compliance:

1. If manufacturer is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at manufacturer's facility conforms to Contract Documents.
2. Specified shop tests are not required for Work performed by approved manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that field dimensions are as indicated on Drawings.

B. Inspect existing flanges for nonstandard bolt hole configurations or design and verify that new pipe and flange mate properly.

3.2 PREPARATION

A. Ream pipe ends, remove burrs, and bevel plain-end pipe.

B. Thoroughly clean pipe and fittings before installation.

C. Cleaning: Clean surfaces to remove foreign substances.

3.3 INSTALLATION

A. Comply with ASME B31.3 and B31.9.

B. Run piping straight along alignment as indicated on Drawings, with minimum number of joints.

C. Fittings:

1. According to manufacturer instructions.
2. Gaskets:

    a. Clean seats thoroughly.
    b. Wipe gaskets clean prior to installation.

3. Tighten bolts progressively, drawing up bolts on opposite sides until bolts are uniformly tight; use torque wrench to tighten bolts to manufacturer instructions.

D. Provide required upstream and downstream clearances from devices as indicated.

E. Install piping with sufficient slopes for venting or drainage of liquids and condensate to low points.

F. Support exposed piping as specified in Section 400507 “Hangers and Supports for Process Piping.”

G. Provide pipe guides as specified in Section 400507 “Hangers and Supports for Process Piping,” to compensate for pipe expansion due to temperature differences.

H. Field Cuts: According to pipe manufacturer instructions.

I. Joining:

1. Heat Joining: Comply with ASTM D2657.

    a. Butt-fusion joints to be done by a factory-qualified joining technician as designated by the pipe manufacturer.
    b. Field Samples: join two sample welds on each size of pipe to be installed using the same fusion welding equipment that will be used for completion of the entire work. These sample welds will be compared to the manufacturer’s sample previously submitted in accordance with PART 1.
    c. Pipe joints with beads in excess of 3/16-inch will not be approved by the Engineer.

2. Electrofusion: Comply with ASTM F1290.
3. Primers and Cleaners: Comply with ASTM F402.
4. PVC Solvent-Cemented Joints: Comply with ASTM D2855.

J. Insulation: As indicated on Drawings.

3.4 FIELD QUALITY CONTROL

A. Inspection:

1. Inspect for piping defects that may be detrimental as determined by the Engineer.
2. Repair damaged piping, or provide new, undamaged pipe.
3. After installation, inspect for proper supports and interferences.

B. Pressure Testing:

1. Test Pressure: Not less than 150 psig or 1.5 times the system's working pressure, whichever is greater.
2. Conduct hydrostatic test for minimum two hours.
3. Filling:

    a. Fill section to be tested with water slowly and expel air from piping at high points.
    b. Install corporation cocks at high points.
    c. Close air vents and corporation cocks after air is expelled.
    d. Raise pressure to specified test pressure.

4. Observe joints, fittings, and valves under test.
5. Remove and renew cracked pipe, joints, fittings, and valves showing visible leakage and retest.
6. Leakage:

    a. Correct visible deficiencies and continue testing at same test pressure for additional two hours to determine leakage rate.
    b. Maintain pressure within plus or minus 5 psi of test pressure.
    c. Leakage is defined as quantity of water supplied to piping necessary to maintain test pressure during period of test.
    d. Correct visible leaks and repeat test to verify no leaks at the required test pressures.

3.5 CLEANING

A. Keep pipe interior clean as installation progresses.

B. Clean pipe interior of soil, grit, shavings, and other debris after pipe installation.

END OF SECTION 400531

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SECTION 400551 - COMMON REQUIREMENTS FOR PROCESS VALVES

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. Common requirements for valves.
2. Common requirements for valve actuators.
3. Valve tags.
4. Valve Schedule.

B. Related Requirements:

1. Section 055000 “Metal Fabrications” for miscellaneous metalwork and fasteners specified by this Section.
2. Section 400507 “Hangers and Supports for Process Piping” for product and execution requirements for valve supports specified by this Section.
3. Section 400557 “Actuators for Process Valves and Gates.”

1.3 COORDINATION

A. Coordinate Work of this Section with individual process valve specifications.

1.4 PREINSTALLATION MEETINGS

A. Convene minimum one week prior to commencing Work of this Section.

1.5 ACTION SUBMITTALS

A. Valve Schedule:

1. Submit valve schedule populated with all Division 40 process valves specified for this project. Include all information shown on the Sample Valve Schedule included at the end of this section.
2. Approval of valve schedule submittal to precede all individual valve submittals. All subsequent individual valve submittals to include the approved valve tag number or group on the submittal cover sheet.

B. Valve Tags:

1. Materials, dimensions and thickness of tags, materials and gauge of cable and splicing hardware.
2. Color palate for Owner selection.
3. Full scale drawing of sample with lettering dimensions and scribe depth.
4. Valve tag lettering provided with Valve Schedule above.

C. Power Actuator Data:

1. Sizing calculations

a. Provide fluid pressure and velocity sizing basis.
b. Provide maximum valve torque based on disc shape and flow direction.
c. Clearly indicate safety factors and mechanical ratios of any intermediate gearing.

2. Maximum output torque of actuator and intermediate gearing.
3. Details of actuator mounting, including orientation of actuator and intermediate gearing.
4. Dimensional drawing of actuator assembled on valve.
5. Pneumatic/Hydraulic pressure requirements, electrical power supply, plumbing connection sizes and locations.
6. Wiring diagram, control wiring and protocol.
7. Valve cavitation limits for positioning, modulating and control valves mated to power actuator.

D. Shop Drawings: Valve and actuator model number and size, valve parts list, materials of each part including material standard designation (ASTM or other), position indicators, limit switches, actuator mounting.

E. Provide certified hydrostatic test data, per manufacturer's standard procedure or MSS-SP-61 for all valves.

1.6 DELEGATED DESIGN SUBMITTALS

A. Submit signed and sealed Shop Drawings with design calculations and assumptions for sizing of control valves.

1.7 INFORMATIONAL SUBMITTALS

A. Manufacturer Instructions: Submit installation and operation instructions for each component including valve, actuator, gearbox, and any included instrumentation.

B. Source Quality-Control Submittals: Indicate results of integrators facility tests and manufacturers factory tests and inspections.

C. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

D. Manufacturer Certification of Installation: Certify that equipment has been installed according to manufacturer instructions.

E. Qualifications Statement:

1. Submit qualifications for manufacturer and licensed professional.

1.8 QUALITY ASSURANCE

A. Maintain clearances as indicated on Drawings.

B. Ensure that materials of construction of wetted parts are compatible with process liquid.

C. Mate valves to actuators at manufacturer’s or integrator’s facility. Fully test assembled product and certify ready for installation prior to shipment to the job site.

1. Only in special cases for extremely large assemblies where installation requires disassembly, may actuators be mounted to the valves in the field.

D. Materials in Contact with Potable Water: Certified to NSF 61 and NSF 372.

E. Furnish affidavit of compliance with testing and manufacturing standards referred in this specification and the individual valve specifications.

F. Provide the services of a qualified and factory-trained service representative of the manufacturer to provide installation inspection and check out, and operational and maintenance instruction, for each type of the following equipment for the following durations:

Equipment	**Valve Sizes**	**Installation Inspection**	**O and M Instruction**
480-volt electric actuators	N/A	1 day, 8 hr.	1 day, 8 hr.
Automatic Strainer	N/A	1 day, 8 hr.	1 day, 8 hr.

G. Obtain Manufacturer’s Certification of Proper Installation for Specified valves and valve assemblies.

H. Maintain a copy of each standard affecting Work of this Section on Site.

1.9 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing valves and actuators with minimum ten years' documented experience.

B. Licensed Professional: Professional engineer experienced in design of specified Work and licensed in State of New York.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

B. Deliver factory mated power actuated valves on rigid wooden skids, fully braced, and strapped to prevent damage to valve, actuator or coupling system.

C. Store materials according to manufacturer instructions.

D. Protection:

1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
2. Protect valve ends from entry of foreign materials by providing temporary covers and plugs.
3. Provide additional protection according to manufacturer instructions.

1.11 EXISTING CONDITIONS

A. Field Measurements:

1. Verify field measurements prior to materials ordering or any fabrication.
2. Indicate field measurements on Shop Drawings.

1.12 WARRANTY

A. Furnish five-year manufacturer's warranty for valves and actuators.

PART 2 - PRODUCTS

2.1 VALVES

A. Description: Valves, operator, actuator, handwheel, chainwheel, extension stem, floor stand, worm and gear operator, operating nut, chain, wrench, and other accessories as required.

B. Provide all valves of the same type by same manufacturer.

C. Valve Ends: Compatible with adjacent piping system.

D. Operation:

1. Close by turning clockwise.
2. Cast directional arrow on valve or actuator with OPEN and CLOSE cast on valve in appropriate location.

E. Valve Marking and Labeling:

1. Marking: Comply with MSS SP-25.
2. Labeling (valve tags):

a. Fiberglass reinforced plastic, ASTM D709, 70 mil thick, 2-1/2-inch diameter or 2-1/2-inch by 1-1 /4 inches.

b. Lettering 1/16-inch thick of silk screening or other permanent embedment of subsurface printed graphics, permanently sealed.
c. Colors of lettering and backing as selected by Owner.
d. Two, 1/4-inch clear opening 316 stainless steel grommets at each end, center of hole 3/8 inch from tag edge.
e. 3/32-inch 316 SS cable and splice hardware.

F. Valve Construction: As Specified in Valve Sections.

G. Do not use Van Stone flanges with pinch valves, industrial butterfly valves; elastomer bellows style expansion joints or other piping system components having an elastomer liner (rubber seat) that is used as a gasket.

2.2 VALVE ACTUATORS

A. Provide mechanical position indicators for power actuated and gearbox actuated valves.

B. Comply with AWWA C541 (Pneumatic and Hydraulic actuators) and C542 (Electric Motor Actuators) as applicable.

C. Provide chain actuators for shutoff valves mounted greater than 7 feet above operating floor level.

D. Gear and Power actuators as specified in Section 400557 “Actuators for Process Valves and Gates.”

2.3 INSULATION

A. Insulate all valves installed in insulated piping systems as part of the Work.

B. As indicated on Drawings.

2.4 FINISHES

A. Valve Coating: Comply with AWWA C550.

B. Factory finishes are included in individual valve sections.
C. Exposed Valves: As specified in Manufacturer’s standard.

D. Stainless Body Valves: Do not coat.

E. Do not coat flange faces of valves unless otherwise specified.

2.5 SOURCE QUALITY CONTROL

A. Testing: Test valves according to manufacturer's standard testing protocol, including hydrostatic, seal, and performance testing.

B. Certificate of Compliance:

1. If manufacturer is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at manufacturer's facility conforms to Contract Documents.
2. Specified shop tests are not required for Work performed by approved manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that piping system is ready for valve installation.

B. Fully examine valves for debris, damage, and interior finish blemishes prior to installation. Do not install valves with soiled interior or any visible damage to seats, discs, or interior finish.

C. Identify any piping, plant, or equipment clearance issues prior to installation, bring to Engineer’s attention via job meetings, submittal process or request for information process.

3.2 INSTALLATION

A. Install valves, actuators, extensions, valve boxes, and accessories according to manufacturer instructions.

B. Inspect valve interiors before line closure for the presence of debris. At the option of the Engineer, internal inspection of valve and appurtenances may be required any time that the likelihood of debris is a possibility. Clean connecting pipes prior to installation, testing, disinfection, and final acceptance.

C. Disinfect valves installed in potable water lines with approved pipeline disinfection process.

D. Rigidly support valves to avoid stresses on piping.

E. Coat studs, bolts, and nuts with anti-seizing lubricant.

F. Dielectric Fittings: Provide between dissimilar metals.

G. Clean field welds of slag and splatter to provide a smooth surface.

H. Mate, adjust and fully test gearboxes, electric, hydraulic and pneumatic actuators to valves at manufacturer’s or integrator’s facility.

1. Only in special cases for extremely large assemblies where installation requires disassembly may actuators be mounted to the valves in the field. These circumstances require preinstallation meetings.

I. Do not install stems vertically downward.

J. Unless otherwise indicated on the Drawings:

1. Install Gate, Globe, Ball valves with stem vertical in the 12 o'clock position.
2. Install Plug valves with stem horizontal and plug opening to the top of the body unless position will not allow proper actuator access, in which case stem may be vertical in the 12 o'clock position.
3. Install Butterfly valves 12 inches and smaller with stem horizontal or vertical in the 12 o'clock position,
4. Install Butterfly valves 14 inches and larger with the stem horizontal unless position will not allow proper actuator access, in which case stem may be vertical in the 12 o'clock position.
5. Install Control valves in horizontal pipelines with top works vertically upward.

K. Install all brackets, extension rods, guides, the various types of operators and appurtenances as indicated. Before properly setting these items, check all drawings and figures which have a direct bearing on their location.

L. Inspect all materials for defects in construction and materials. Clean debris and foreign material out of openings, etc. Verify valve flange covers remain in place until connected piping is in place. Verify operability of all operating mechanisms for proper functioning. Check all nuts and bolts for tightness. Repaired or replace valves and other equipment which do not operate easily or are otherwise defective.

M. Where installation is covered by a referenced standard, install and certify in accordance with that standard, except as herein modified. Also note additional requirements in other parts of this Section.

N. Unless otherwise noted, provide joints for valves and appurtenances utilizing the same procedures as specified under the applicable type connecting pipe joint. Install valves and other items as recommended by the manufacturer. Verify manufacturers' torqueing requirements for all valves.

O. Coordinate direction of flow through offset type and shaped butterfly valve discs with the mated actuator torque capacity.

P. Rotate valve operators and indicators to display toward normal operation locations. Consult with Engineer prior to installing valves with handwheels to confirm final position of handwheel.

Q. Vertically center floor boxes, valve boxes, extension stems, and low floor stands over the operating nut, with couplings as required.

1. Adjust elevation of the box top to conform to the elevation of the finished floor surface or grade at the completion of the Contract.
2. Support boxes and stem guides during concrete placement to maintain vertical alignment.

R. Install brass male adapters on each side of valves in copper-piped system and solder adapters to pipe.

S. Install 1-inch ball valves with cap for drains at main shutoff valves, low points of piping, bases of vertical risers, and equipment.

T. Install valves with clearance for installation of insulation and to allow access.

U. Provide access where valves and fittings are not accessible.

V. Pipe Hangers and Supports: As specified in Section 400507 “Hangers and Supports for Process Piping.”

W. Comply with Division 40 - Process Interconnections for piping materials applying to various system types.

X. Install insulation as indicated on Drawings.

3.3 FIELD QUALITY CONTROL

A. Valve Field Testing:

1. Test for proper alignment.
2. If specified by valve Section, field test equipment to demonstrate operation without undue noise, vibration, or overheating.
3. Engineer will witness field testing.
4. Functional Test:

    a. Prior to system startup, inspect valves and actuators for proper alignment, quiet operation, proper connection, and satisfactory performance.
    b. After installation, open and close all manual valves in the presence of the Engineer to show the valve operates smoothly from full open to full close and without leakage.
    c. Cycle valves equipped with electric, pneumatic, or hydraulic actuators 5 times from full open to full closed in the presence of the Engineer to exhibit operation without vibration, jamming, leakage, or overheating.
    d. Operate pressure control and pressure relief valves in the presence of the Engineer to show they perform their specified function at some time prior to placing the piping system in operation and as agreed during construction coordination meetings.

5. Field test pipelines in which the valves and appurtenances are to be installed. During these tests, adjust, remove, or replace defective valve or appurtenance, or otherwise make acceptable to the Engineer. Test regulating valves, strainers, or other appurtenances to demonstrate conformance with the specified operational capabilities. Correct deficiencies, replace device or otherwise made acceptable to the Engineer.

END OF SECTION 400551

Sample Valve Schedule

Valve Designation	Tag Type	Size	End Connection	Pressure Rating (psi)	Service Pressure (psi) /Velocity (fps)	Service Fluid	viscosity(cP)/Temp (Deg F.)	Actuator Type	Drawing Located	Remarks
5941B-5947B	BV2	4	RF	150	80/15	EW Feed	1.3/ 50-90	E		
5941C-5947C	BFV4	6	L	150	45/5	LPOL Feed	200-1000/50-90	P		
5941D-5947D	GV1	8	W	50	10/5	POLS Discharge	700-3000/50-90	HC		
5941E-5947E	BV1	4	FPT	150	10/10	Tank Drain	700-3000/50-90	L		

User Notes	Explanation
Valve Designation	Originates from P&ID, this is often Owner defined or may be contractor defined if 400551 requires the contractor to prepare the
	The designation can be the tag number, however coordinate with valve tag required information with Owner
Tag Type	Is defined in the individual Valve Specification Sections. Engineer is encouraged to include the Tag Type on the drawing callouts
	For instance, there are four types of butterfly valves in 400564, BFV1, BFV2, BFV3, BFV4.
Size	Refers to the diameter at the piping connection. Ball valves and pinch valves may have reduced ports for instance, and would re
End Connections	FF-flat faced flange, RF-raised face flange, MJ-mechanical joint, FPT-female pipe thread, MPT-male pipe thread, SW-socket welc
	SW is applicable to steel and PVC piping systems, and will be obvious due to the piping system where valve is located
Service pressure/vel	Is required when a valve is fitted with a power actuator, it allows the valve torque to be determined
Service Fluid	Is optional
Vis/Temp	Is optional, include when extreme
Actuator Type	H-handwheel, L-lever, AN-AWWA nut, G-gear w/handwheel, E- electric, P-pneumatic, HC- hydraulic cylinder O- other, use Rem
Drawing Located	Is optional
Remarks	Could be used to alert contractor for special testing or installation requirements, etc.
	Could also indicate floorstand or other accessory

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SECTION 400553 - IDENTIFICATION FOR PROCESS PIPING

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. Nameplates.
2. Tags.
3. Stencils.
4. Pipe markers.
5. Ceiling tacks.
6. Labels.
7. Lockout devices.

B. Related Requirements:

1. Section 400551 “Common Requirements for Process Valves” for basic materials and methods for valves.

1.3 PREINSTALLATION MEETINGS

A. Convene minimum one week prior to commencing Work of this Section.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's catalog literature for each specified product.

B. Shop Drawings:

1. Indicate list of wording, symbols, letter size, spacing of labels, and color-coding for mechanical identification and valve chart and schedule.
2. Indicate valve tag number, location, function, and valve manufacturer's name and model number.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Manufacturer Instructions: Submit detailed instructions on installation requirements, including storage and handling procedures.

E. Qualifications Statement:

1. Submit qualifications for manufacturer.

F. Product Cost Data:

1. Submit cost of products to verify compliance with Project sustainable design requirements.
2. Exclude cost of labor and equipment to install products.
3. Provide cost data for following products:

a. Salvaged, refurbished, and reused products.
b. Products with recycled material content.
c. Regional products.

1.5 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations of tagged valves; include valve tag numbers.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Extra Stock Materials: Furnish two containers of spray-on adhesive.

B. Tools: Furnish special crimpers and other devices required for Owner to reinstall tags.

1.7 QUALITY ASSURANCE

A. Piping Color Scheme and Lettering Size: Comply with ASME A13.1.

B. Perform Work according to Municipality of Rome, New York Department of Public Works standards.

1.8 QUALIFICATIONS

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

1.9 DELIVERY, STORAGE, AND HANDLING

A. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

B. Store materials according to manufacturer instructions.

C. Protection:

1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
2. Provide additional protection according to manufacturer instructions.

PART 2 - PRODUCTS

2.1 NAMEPLATES

A. Manufacturers:

1. Craftmark Pipe Markers.
2. Kolbi Pipe Marker Co.
3. Pipemarker.com (Brimar Industries, inc.).
4. Seton Identification Products.

B. Description: Laminated three-layer plastic with engraved black letters on light, contrasting background color.

2.2 TAGS

A. Plastic Tags:

1. Manufacturers:

a. Brady ID.
b. Craftmark Pipe Markers.
c. Kolbi Pipe Marker Co.
d. Marking Services, Inc.
e. R&R Identification Co.
f. Seton Identification Products.

2. Description:

a. Laminated three-layer plastic with engraved black letters on light, contrasting background color.
b. Minimum Tag Size and Configuration: 2 inches; square.
c. Provide with brass hooks suitable for attaching the tag to the valve operator.
d. Stamp or etch tags with the valve number and information on the Valve Schedule coded in a system provided by the Owner.

2.3 STENCILS

A. Manufacturers:

1. Kolbi Pipe Marker Co.
2. Marking Services, Inc.

3. Pipemarker.com (Brimar Industries, Inc.).
4. R&R Identification Co.
5. Seton Identification Products.

B. Description:

1. Quality: Clean-cut symbols.
2. Letters (Table 1):

Table 1 – Letter Sizes	
Outside Diameter of Pipe	Size of Letters
3/4 inch to 1-1/4 inches	1/2 inch
1-1/2 inches to 2 inches	3/4 inch
2-1/2 inches to 6 inches	1-1/2 inches
8 inches to 10 inches	2-1/2 inches
Over 10 inches	3 inches

C. Stencil Paint:

1. Description: Manufacturer's standard.

2.4 PIPE MARKERS

A. Plastic Pipe Markers:

1. Manufacturers:

a. Brady ID.
b. Craftmark Pipe Markers.
c. Marking Services, Inc.
d. R&R Identification Co.
e. Seton Identification Products.

2. Description:

a. Factory-fabricated, flexible, and semi-rigid plastic.
b. Preformed to fit around pipe or pipe covering.
c. Larger sizes may be of maximum sheet size, with spring fastener.
d. Letter sizes per STENCILS, Description: Table 1 of this Section.
e. Color shall be white or black depending on background color.

B. Plastic Tape Pipe Markers:

1. Manufacturers:

a. Brady ID.
b. Craftmark Pipe Markers.
c. Kolbi Pipe Marker Co.
d. Marking Services, Inc.
e. Pipemarker.com (Brimar Industries, Inc.).
f. Seton Identification Products.

2. Description:

a. Flexible, 3.5 mil vinyl film tape with pressure-sensitive adhesive backing and printed markings.
b. Letter sizes per Table 1 of this Section.
c. Color shall be white or black depending on background color.

C. Plastic Underground Pipe Markers:

1. Manufacturers:

a. Kolbi Pipe Marker Co.
b. Marking Services, Inc.
c. Pipemarker.com (Brimar Industries, Inc.).
d. Rhino Marking and Protection System.
e. Seton Identification Products.

2. Description:

a. Brightly colored, continuously printed plastic ribbon tape.
b. Minimum Size: 6 inches wide by 4 mils thick.
c. Manufactured for direct burial service.
d. Letter sizes per Table 1 of this Section.

2.5 CEILING TACKS

A. Manufacturers:

1. Marking Services, Inc.
2. R&R Identification Co.
3. Seton Identification Products.

B. Description:

1. Material: Steel.
2. Head:

a. Color-coded.
b. Diameter: 3/4 inch.

2.6 LABELS

A. Manufacturers:

1. Brady ID.
2. Seton Identification Products.

B. Description:

1. Material: Polyester.
2. Minimum Size: 1.9 inches by 0.75 inch.
3. Adhesive backed, with printed identification.

2.7 LOCKOUT DEVICES

A. Lockout Hasps:

1. Manufacturers:

a. Brady ID.
b. Master Lock Company, LLC.

2. Description:

a. Material: Reinforced nylon.
b. Furnish hasp with erasable label surface.
c. Minimum Size: 7-1/4 by 3 inches.

B. Valve Lockout Devices:

1. Manufacturers:

a. Brady ID.
b. Master Lock Company, LLC.

2. Description:

a. Material: Plastic.
b. Furnish device to restrict access to valve operator and to accept lock shackle.

PART 3 - EXECUTION

3.1 PREPARATION

A. Degrease and clean surfaces to receive adhesive for identification materials.

B. Stencil Painting: Prepare surfaces as specified by manufacturer.

3.2 INSTALLATION

A. According to manufacturer instructions.

B. Apply stencil painting as specified by manufacturer.

C. Install identifying devices after completion of coverings and painting.

D. Install plastic nameplates with corrosion-resistant mechanical fasteners or adhesive.

E. Labels:

1. Install labels with sufficient adhesive for permanent adhesion and seal with clear lacquer.
2. For unfinished covering, apply paint primer before applying labels.
3. Titles:

a. Locate a maximum 26 feet apart.
b. Locate directly adjacent to pipeline breaches on each side wall.
c. Locate adjacent to each side of the valve regulator, flow meter, strainer, cleanout, and all pieces of equipment.
d. Identify the contents by complete name at least once in each room or space and thereafter may be labeled by generally recognized abbreviations.

F. Tags:

1. Identify valves in main and branch piping with tags.
2. Install tags using corrosion-resistant chain.
3. Number tags consecutively by location.

G. Install underground plastic pipe markers 6 to 8 inches below finished grade, directly above buried pipe.

H. Piping:

1. Identify piping, concealed or exposed, with plastic tape pipe markers.
2. Identify service, flow direction, and pressure.
3. Install in clear view and align with axis of piping.
4. Locate identification not to exceed 20 feet on straight runs, including risers and drops, adjacent to each valve and tee, at each side of penetration of structure or enclosure, and at each obstruction.

I. Ceiling Tacks:

1. Provide ceiling tacks to locate valves above T-bar-type panel ceilings.
2. Locate in corner of ceiling panel closest to equipment.

END OF SECTION 400553

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SECTION 400557 - ACTUATORS FOR PROCESS VALVES AND GATES

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: Following types of actuators for linear, multi-turn, and quarter turn valves and gates:

1. Manual actuators.
2. Electric motor actuators.

B. Related Requirements:

1. Section 055000 “Metal Fabrications” for miscellaneous metalwork and fasteners as required.
2. Section 400507 “Hangers and Supports for Process Piping” for hangers, anchors, sleeves, and sealing of piping to adjacent structures.
3. Section 400551 “Common Requirements for Process Valves” for common product requirements for valves for placement by this Section.

1.3 DEFINITION

A. Where the term “valve” alone is used in this Section, it applies to both valves and gates as the corresponding text context dictates.

1.4 COORDINATION

A. Section 400551 “Common Requirements for Process Valves” for Valve Schedule requirements.

B. Coordinate Work of this Section with installation of valves, gates, and accessories.

1.5 PREINSTALLATION MEETINGS

A. Convene minimum one week prior to commencing Work of this Section.

1.6 SUBMITTALS

A. Product Data: Manufacturer information for actuator with model number and size indicated.

B. Shop Drawings:

1. Parts list, materials, sizes, position indicators, limit switches, control system, actuator mounting, wiring diagrams, control system schematics with external interfaces on assembly drawings.
2. Actuator Shop Drawings with respective valve and gate submittal.

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

D. Manufacturer Instructions: Special procedures and placement requirements.

E. Source Quality-Control Submittals: Results of factory tests and inspections and provide required certifications.

F. Field Quality-Control Submittals: Results of Contractor-furnished tests and inspections.

G. Qualifications Statements:

1. Qualifications for manufacturer and installer.
2. Manufacturer's approval of installer.

1.7 CLOSEOUT SUBMITTALS

A. Project Record Documents: Documentation of actual locations and types of actuators.

1.8 QUALITY ASSURANCE

A. Valve Actuators in NEC Class 1,Division 1 or 2, Group C & D, Hazardous Locations: Comply with NFPA 70.

B. Minimum NEMA Enclosure Classification:

1. Non-submergence Installations: NEMA 4X.
2. Submergence Installations: NEMA 6P/IP68.

C. Perform Work according to Municipality of Rome, New York Department of Public Works standards.

D. Maintain a copy of each standard affecting Work of this Section on Site.

E. Single Source Requirements:

1. Furnish electric motor actuators in the scope of the project by the same manufacturer. Coordinate this requirement with actuated valves and gates included in scope of vender furnished equipment.
2. Furnish actuators, floor stands, stem guides, stems, extensions, and accessories for slide gate assemblies by slide gate manufacturer.

F. Mate actuators to equipment at equipment manufacturers or integrators facility.

1. Test assembled product. Certify ready for installation prior to shipment to job site.
2. For extremely large assemblies requiring disassembly for installation, the actuator may be disassembled for shipment and remounted in the field.

1.9 QUALIFICATIONS

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

B. Installer: Company specializing in performing Work of this Section with minimum five years' documented experience.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

B. Store materials according to manufacturer instructions.

C. Protection:

1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
2. Furnish temporary end caps and closures on piping and fittings and maintain in place until installation.
3. Provide additional protection according to manufacturer instructions.

1.11 EXISTING CONDITIONS

A. Field Measurements:

1. Verify field measurements prior to fabrication.
2. Indicate field measurements on Shop Drawings.

1.12 WARRANTY

A. Manufacturer’s Special Warranty: Submit standard written warranty against manufacturing defects for actuators.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 GENERAL

A. Refer to valve and gate schedule for actuator type, accessories, and sizing information.

B. Provide clockwise closed actuation unless otherwise noted on the valve and gate schedule.

C. Supply chain actuators for manual valves located 7 feet or higher above finished floor.

2.2 ACCESSORIES

A. Floor Stands:

1. Materials:

a. Stand: Cast iron**.**
b. Stem Bushing: Sintered bronze.
c. Position Indicator: Bronze.

2. Height to input shaft or handwheel: 32 inches.
3. Base Mounting Requirements:

a. Concrete Floor Mounting: Type 316 stainless-steel anchor bolts.
b. Face of Basin or Offset Mounting: Heavily reinforced, adjustable wall bracket with required anchor hardware using Type 316 stainless steel.

4. Actuator Mounting Requirements:

a. Manual Actuator: Cast iron handwheel on top of floor stand with dual ball type thrust bearings, grease fitting on bearing bowl, hardened machined alloy bronze lift nut (for rising stem). Where manual effort is greater than 40 lb. rim pull with 2 feet diameter wheel, provide geared actuator with a handwheel or crank.

1) Handwheel casting to include the word “OPEN” and an arrow indicating the direction of operation.

b. Gearbox or Direct Powered Actuator: Through bolt holes matched to actuator or gearbox bolting pattern.

5. Non-rising stem position indicator: Mechanical indicator connected to and driven by stem extension and cast position marks on floor stand with the word “OPEN” cast at the top of the travel, and a field mounted aluminum “CLOSED” tag supplied with drive rivets, installed based on number of valve turns.
6. Rising Stem Position Indicator: Permanent markings on transparent stem covers.

B. Stem Covers: Fracture-resistant clear polycarbonate stem covers for rising stems. Closed top with adhesive type position indicator markings.

C. Extension Stems and Stem Guides:

1. Extension stems and couplings to actuate recessed, buried, below slab valves and gates via operating nut or floor stand mounted actuator.
2. Stem Extensions and Stem Couplings: Alloy steel, hardware of Type 316 stainless steel unless specified otherwise in the respective slide gate specification.
3. Stem and Stem Couplings: Rated for five times the maximum input torque capacity of the actuator.
4. Adjustable, Cast-Iron Wall Bracket Type Stem Guides: Include two-piece UHMW bushing.
5. Spacing: 10 feet spacing or at spacing calculated by manufacturer to prevent buckling with a safety factor of 2 based on design thrust, shaft material and shaft size.

D. Torque Tubes:

1. Supply where shown on the Drawings or Valve and Gate Schedule.
2. Supported by/mated to valve bonnet/yoke.
3. Sized by supplier for the required actuator torque.
4. Drilled specifically for valve and actuator bolt pattern.
5. Internal extension keyed or shaped specifically to mate to valve shaft and fabricated of Type 316 stainless steel.
6. Internal extension designed for axial adjustment for mating purposes.

2.3 MANUAL ACTUATORS

A. Operating Nuts:

1. 2 inches cast iron AWWA design.

    a. Painted Carbon Steel Tee Handle Operator: 2 inches AWWA nut socket end extension length for nut actuated valves where nuts are recessed in valve boxes.
    b. Tee Extension Length: Determine based on nut height as shown on Drawings with handle height approximately 3 feet above operating surface.

2. Operating Nuts Recessed on Concrete: Cast iron floor box with cover and tee handle operator with 2 inches AWWA nut socket end.
3. Nut Operated Non-Rising Stem Buried Valves: Cast iron bonnet skirts, extension pipes valve box and cover. Stem extensions with AWWA nut end to elevation shown on the Drawings or scheduled.
4. Two tee handles for every ten buried or encased non-rising stem application with 2 inches AWWA operating nut.

B. Gear-Assisted Manual Valve Actuators:

1. Provide:

    a. For manually actuated valves and gates larger than 8 inches nominal diameter and for ball and plug valves 6 inch and larger.
    b. With power actuators where torque requirements dictate.

2. Comply with AWWA C504.
3. Handwheel Diameter: 8 inches minimum.
4. Maximum Handwheel Pull: 40 lbs. maximum.
5. Housings: Cast or ductile iron.
6. Worm or helical gear type.
7. Gears: Hardened steel, machine cut and mated.
8. Bearings: Permanently lubricated bronze.
9. Input and Output Shafts: Sealed with greased, waterproof machine shaft seals.
10. Filled with waterproof grease and designed for submerged service where scheduled.
11. Handwheel: Removable.

    a. Diameter: 8 inch up to 12 inch valve size.
    b. Diameter: 12 inch diameter up to 16 inch valve size.
    c. Diameter: 18 inch diameter for larger than 16 inch valve size.
    d. Maximum Diameter: 24 inches diameter.

12. Include mechanical top mounted valve position indication, opening direction, and adjustable stops.
13. Provide gear reducer for handwheel.

C. Chain Wheels:

1. Supply for manual valves 3 inch diameter or larger mounted 7 feet and greater above operating floor level.
2. Type: Sprocket rim with chain and floating chain guide.
3. Chain Wheel and Guides Materials: Cast iron with hot-dip galvanized chain.
4. Chain Length: Extend to 5-1/2 feet above operating floor level.
5. Chain Storage: Include where chains may interfere with personnel egress, made with high-strength thermoplastic polymer in safety orange color.

    a. Basis-of-Design: Trumbull, Model ‘Chain Up’ as manufactured by Trumbull Manufacturing. Inc., or equal.

6. Chain Wall Hooks: Include where feasible to prevent chain from impeding personnel egress.

D. Direct Manual Slide Gate Actuators:

1. Small Gates not Requiring Gear Reduction to Achieve Rim Pull Requirements: Yoke or floor stand mounted handwheel with dual ball type thrust bearings, grease fitting on bearing bowl, hardened machined alloy bronze lift nut.

E. Gear-Assisted Manual Slide Gate Actuators:

1. Provide manually actuated slide gates where direct mount actuators cannot meet rim pull requirements and design safety factors.
2. Include power actuators where torque requirements dictate.
3. Comply with AWWA C504.
4. Yoke mount for self-contained gates and floor stand mount for non-self-contained gates.
5. Accessories specified hereinabove where pertinent to the application.
6. Handwheel or crank style operator with maximum rim or crank pull of 40 lbs.

a. Crank operators of cast iron construction with revolving brass grip.
b. Handwheel casting to include the word “OPEN” and an arrow indicating the direction of operation.

7. Gear Boxes:

a. Bevel or parallel shaft as required by installation geometry.
b. Fully enclosed cast or ductile iron housings.
c. Suitable for pedestal or yoke (bench) mounting.
d. Mechanical seals on input shafting.
e. Shafting fully supported with anti-friction ball or roller bearings throughout.
f. Precision machined high strength bronze lift nuts.
g. Precision cut steel gears.
h. Input Shafts: Type 316 stainless steel.
i. AWWA drive nut for removable crank, wheel, or portable power operator to be 2 inches.
j. Single or compound reduction as required to achieve rim pull requirements.
k. No damage to gearbox components with 100 lbs. rim pull.
l. Coordinate with gate stem design such that catastrophic failure occurs at stem nut prior to stem buckling.

8. Tandem gear drives where indicated on Gate Schedule. Tandem drives include parallel gear boxes, Type 316 stainless-steel interconnecting shafting, and flexible couplings furnished by the manufacturer.

2.4 ELECTRIC MOTOR ACTUATORS

A. General:

1. Where specified on the Valve and Gate Schedule.
2. Comply with AWWA C542.
3. Actuators for Valves 3 inches and Smaller: 120 Volt, 1 Phase, 60 Hertz power supply.

a. Actuators for Valves Larger than 3 inches and for slide gates and weir gates: 480 Volt, 3 Phase, 60 Hz power supply.

B. 120 Volt Power Actuators:

1. Actuators to have reversing motor, reduction gearing, local position indicator, position limit switches, provision for manual override, 100 to 1000 in-lbs. torque range and motor thermal and electronic control protection.
2. Enclosure:

a. Cast aluminum or steel alloy.
b. Powder coated or fusion bonded epoxy finish.
c. NEMA 4X.

3. Power Train:

a. Self-locking planetary epicyclical gear design.

b. Hardened steel gears with bronze bearings.
c. Housing Penetrations: Seal with mechanical seals.
d. Housing: Equip with space heaters.
e. Mounting System: ISO 5211.

4. Actuator for Open/Close/Jog Reversing Service: Proportional/modulating service where required in the equipment specifications or Instrumentation Drawings.
5. Motors:

a. Design for valve actuation service.
b. Insulation: Class F.
c. Split phase capacitor protection.
d. Duty Cycle: 40 percent at 100 degrees F for open/close duty, and 100 percent for modulating duty.
e. 90-Degree Travel Time: 10 to 20 seconds depending on actuator size.
f. Actuator Switches: Have two SPDT 15 Amp rated switches for remote open/close valve position indication.

6. Products: Subject to compliance with requirements, provide one of the following or equal:

a. Series 92 as manufactured by Asahi/America.
b. EPM-6 by Hayward.
c. P Series as manufactured by Promation Engineering, Inc.
d. Or equal.

C. 480 Volt Power Actuators:

1. General: 2 phase 60 Hz supply rated, self-contained, totally enclosed with motor, integral reversing starters, local controls, reduction gearing, limit switch gearing, limit switches, control power transformer, torque switches, bored and keyed drive sleeve for non-rising stems, declutch lever, auxiliary handwheel, and local position indication.
2. Separately seal motor and control compartments with space heaters in limit switch, motor, and control compartments.
3. Suitable for indoor and outdoor use, fully functional in ambient temperature range from 40 to 140 degrees F at 100 percent relative humidity.
4. Size to guarantee full travel, seating and unseating torque or thrust as specified by the valve or gate manufacturer.
5. Size to provide torque required to operate valve or gate at 90 percent of nominal voltage.
6. Design Travel Rate:

a. As indicated below:

1) Gate Valves and Slide Gates: 12 inches per minute.
2) Globe Valves: 4 inches per minute.
3) Quarter Turn Valves: 30 seconds per 1 foot of throat diameter.

7. Enclosure:

a. Cast iron construction.
b. NEMA 4X for watertightness from pressure hose.

c. NEMA 6 for submergence up to 6 feet for 30 minutes.
d. NEMA 6P for submergence up to 15 feet for 72 hours.
e. IP 68-8 for submergence up to 26 feet for 96 hours per EN 60529.
f. NEMA 7 for Class 1, Division 1 & 2, Groups C & D hazardous environment.
g. Operate successfully a minimum of 10 full cycles under submersion.
h. External Fasteners: Type 316 stainless steel.
i. Include anti-condensation heater, suitable for continuous operation with alarm output to indicate heater failure.

8. Motors:

a. High-starting torque; low stall torque, low inertia, designed and built by actuator manufacturer.
b. Embed thermistor in each motor winding for thermal protection.
c. Insulation: Class F, with a duty rating of at least 15 minutes at 40 degrees F ambient temperature.
d. Electrical disconnection by means of plug and socket. Allow motor removal without loss of lubricant.
e. Hardware to ensure motor runs with correct rotation for required direction of valve travel regardless of power supply connection sequence.

9. Motor Protection:

a. De-energize without damage in the event of a stall condition when attempting to move a jammed valve.
b. De-energize in the event of an over-torque condition.
c. Imbed a minimum of three thermal devices in motor windings to de-energize the motor in case of overheating.
d. Lost phase protection algorithm.

10. Gear Train:

a. Grease filled, O-ring sealed in cast or ductile iron gear case.
b. Suitable for operation in any orientation.
c. Hardened, machine cut steel gears, and precision machined alloy bronze worm gear.
d. Reduction gearboxes as specified in Paragraph “Gear-Assisted Manual Valve Actuators.”

11. Manual Operation:

a. Handwheel which does not rotate during motor operation.
b. Output contact with declutch mechanism to indicate manual operation.
c. Utilize actuator worm shaft/worm wheel to maintain self-locking gearing and to facilitate changeover from motor to manual operation when the actuator is under load. Do not use designs that bypass actuator worm gear or break valve load at worm gear.
d. Automatic return from manual to motor operation upon starting motor.
e. Manual operation capable with seized motor.

12. Position and Torque Calibration:

    a. Sensing by absolute encoder using hall effect sensors. Incremental encoders requiring batteries to retain settings upon loss of power are not acceptable. Settings stored in permanent non-volatile memory.
    b. Torque and travel adjustment parameters:

        1) Position Setting Range: 10 to 5,000 turns, with resolution of 2.81 degrees and accuracy to 5.0 degrees of actuator output.
        2) Torque Setting: 40 to 100 percent of rated torque.

    c. Torque switch bypass for the torque sensing system to inhibit torque switch trip during unseating or during starting in mid-travel against high inertia loads.

13. Wiring and Terminals:

    a. Tropical grade insulated stranded cable of appropriate size for the control and 3-phase power.
    b. Include a removable plug and socket head for termination of all external wiring. Include actuators without plug and socket terminal connections having power and control disconnect switches for ease of maintenance and safety.

14. Controls:

    a. Microprocessor: Based with mechanically and electronically interlocked reversing contactors for Open/Close duty and solid-state contactors for modulating duty.
    b. Local/Off /Remote Selector Switch and Open/Stop/Close Pushbuttons: Mount on actuator face with red and green indication lights for open/close and amber for fault.
    c. Remote On/Off Service: Actuator to accept one remote signal to open and a second remote signal to close.
    d. Modulating Service: When in remote mode, actuator to accept a 4 to 20 mA DC position control signal and position valve 0 to 100 percent of travel in proportion to control signal.
    e. Monitoring Relays: Remotely indicate fault signal for indication of power failure, phase failure, thermal switch tripped, torque switch tripped between travel stops, and Local-Off-Remote selector switch position.
    f. Gear Actuated Position Transmitter: On modulating duty actuator that is a two-wire device, produce 4 to 20 mA DC signal proportional to 0 to 100 percent travel.
    g. Transmitter: Have easily accessible zero and span adjustment potentiometers.
    h. DC Power Supply: Integral with operator and powered from 110-volt AC internal transformer. Positioner board to provide repeatable accuracy to 0.25 percent of span and have separate trim pots for zero, span, and dead band adjustment.

15. Position Indication: Continuous mechanical dial indication of valve and gate position in step with the actuator at all times in both the hand wheel and motor operation. For modulating applications, graduations on mechanical dial position indicator to be 0 to 100 percent scale.
16. Limit Switches:

    a. Adjustable type to trip at any point between fully opened and fully closed.

b. Mid-travel Switches: Provide as noted in valve and gate schedule.
c. Do not allow set position to be lost if over travel occurs in either manual or electric modes of operation.
d. Two independent and fully adjustable rotary type position limit switches each with 15 Amp DPDT contacts for remote open/close position indication.

17. Torque Switches: Actuator with adjustable torque switches and be responsive to load encountered in either direction of travel.
18. Terminal Compartment:

a. Separate from the inner electrical components of actuator with a watertight seal.
b. Three threaded cable entries.
c. Stud-type Terminals: Embed in a terminal block of high tracking-resistance compound.
d. Three-phase Power Terminals: Shroud from control terminals by means of an insulating cover.

19. Remote Control Stations:

a. For actuators located below the operating floor or located more than 7 feet above the operating floor, provide a UL Listed remote control station at the operating floor level with the same enclosure rating as the actuator.
b. Include a Local/Off/Remote selector switch, Open/Stop/Close pushbuttons, and Open/Close indicating lights.

1) Local/Off/Remote selector to include padlock mount for the Off position.

c. Include auxiliary contacts for remote indication of switch position.

20. Manufacturers: Provide products by one of the following or equal.

a. IQ/IQM as manufactured by Rotork, Plc.
b. Limitorque QX/MX as manufactured by Flowserve Corporation.
c. EIM TEC2000 as manufactured by Allied Valve, Inc.

2.5 SOURCE QUALITY CONTROL

A. Factory Testing:

1. Shop inspect and test completed assemblies.
2. Factory performance test each actuator and supply individual test certificates. Submit test certificates prior to shipment of valve actuators. Test equipment to simulate a typical valve and gate load, and record the following parameters:

a. No load current.
b. Current at maximum torque setting.
c. Stall current.
d. Torque at maximum torque setting.
e. Stall torque.
f. Test voltage and frequency.

g. Flash test voltage.
h. Actuator output speed.

B. Owner Inspection:

1. Make completed valve and gate and actuator assembly available for inspection at manufacturer's factory prior to packaging for shipment.
2. Notify Owner at least seven days before inspection is allowed.

C. Certificate of Compliance:

1. If manufacturer is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at manufacturer's facility conforms to Contract Documents.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify field dimensions are as indicated on Drawings.

3.2 INSTALLATION

A. Install products plumb, square, and true according to manufacturer’s published installation instructions.

B. Securely mount actuators using brackets or hardware specifically designed for attachment to valves/gates.

C. Extend chain actuators to 5-1/2 feet above operating floor level.

3.3 FIELD QUALITY CONTROL

A. After installation, inspect for proper supports and interferences according to manufacturer’s requirements and Section 400551 “Common Requirements for Process Valves.”

B. Repair damaged coatings with material equal to original coating.

3.4 ADJUSTING

A. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Perform adjustments during normal occupancy hours.

3.5 DEMONSTRATIONS

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain actuators.

1. Time Duration: Allow four hours during a single day.

END OF SECTION 400557

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SECTION 400559.23 - STAINLESS STEEL SLIDE GATES

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. Stainless steel slide gates.

B. Related Requirements:

1. Section 400557 “Actuators for Process Valves and Gates.”

1.3 DEFINITIONS

A. Operating Head: Distance from centerline of gate to maximum water level of channel.

1.4 ACTION SUBMITTALS

A. Product Data: Manufacturer's product information for system materials and component equipment.

B. Shop Drawings:

1. System materials and component equipment.
2. Description of materials cross-referenced to a sectional drawing listing material by trade name and ASTM reference number.
3. Certified shop and installation drawings showing details of construction, dimensions and anchor bolt locations.
4. Installation and anchoring requirements, fasteners, and other details.
5. Descriptive literature, bulletins and/or catalogs of the equipment.
6. The weight of each component.
7. Description of surface preparation and shop prime painting of gates and accessories.
8. Gate identification number, location, service, type, size, design pressure, operator details, stem details, and loads.
9. Listing of forces transmitted to floor stands if applicable.

1.5 INFORMATIONAL SUBMITTALS

A. Manufacturer's Certificate: Products meet or exceed specified requirements.

B. Manufacturer's Instructions: Detailed instructions on installation requirements, including storage and handling procedures.

C. Source Quality-Control Submittals: Results of factory tests and inspections.

D. Field Quality-Control Submittals: Results of Contractor-furnished tests and inspections.

E. Manufacturer Reports:

1. Certify that equipment has been installed according to manufacturer's instructions.
2. Document activities on Site, adverse findings, and recommendations.

F. Qualifications Statements:

1. Submit qualifications for manufacturer and licensed professional.

1.6 DELEGATED DESIGN SUBMITTALS

A. Delegated Design Submittals: Submit signed and sealed Shop Drawings with design calculations and assumptions for seating pressure.

B. Copy of PE License of Engineer of Record.

1.7 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations of installed slide gates and components.

B. Operation and Maintenance Data: Submit maintenance instructions for equipment and accessories.

1.8 MAINTENANCE MATERIAL SUBMITTALS

A. Spare Parts:

1. Furnish one set of manufacturer's recommended spare parts.

B. Tools: Furnish special wrenches and other devices required for Owner to maintain equipment. Provide special tools and spare parts required for normal operation and maintenance of the equipment.

C. O&M Manual: One copy of manufacturer's operation and maintenance manuals.

1. Include required cuts, drawings, equipment lists, descriptions, etc. to instruct operating and maintenance personnel unfamiliar with such equipment.
2. Include trouble shooting data and full preventive maintenance schedules.

D. Factory Representative: Provide three days to instruct representatives of the Owner on proper operation and maintenance of the equipment.

1.9 QUALITY ASSURANCE

A. Materials in Contact with Potable Water: Certified to NSF Standard 61 and NSF Standard 372.

B. Perform Work according to Municipality of Rome, New York Department of Public Works standards.

C. Maintain a copy of each standard affecting Work of this Section on Site.

1.10 QUALIFICATIONS

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

B. Licensed Professional: Professional engineer experienced in design of specified Work and licensed in State of New York.

1.11 DELIVERY, STORAGE, AND HANDLING

A. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

B. Store materials according to manufacturer's instructions.

C. Protect materials from physical damage, moisture, and dust by storing in clean, dry location remote from areas involved in construction operations.

1. Provide additional protection according to manufacturer's instructions.

1.12 EXISTING CONDITIONS

A. Field Measurements: Verify field measurements prior to fabrication. Document field measurements on Shop Drawings.

1.13 WARRANTY

A. Furnish three-year manufacturer's warranty for slide gates.

B. Furnish five-year manufacturer's warranty that clear plastic stem covers will not crack, discolor, or become opaque.

PART 2 - PRODUCTS

2.1 PERFORMANCE AND DESIGN CRITERIA

A. Seating pressure:

1. Measurement: From maximum water surface to centerline of gate.

B. Minimum Vertical Loading: 50 percent of force on the gate from operating head acting on horizontal centerline of gate, multiplied by effective gate area, plus weight of slide and stem.

C. Gate Reinforcement: As required for deflection not greater than 1/360 of span.

D. Operating Head:

1. Safety Factor: Design gate to operate under specified operating head with safety factory of five.

2.2 STAINLESS STEEL SLIDE GATES

A. Manufacturers:

1. Golden Harvest, Inc.
2. Waterman Industries.

B. Furnish materials according to City of Rome standards.

C. Description:

1. Comply with AWWA C561.
2. Self-contained stainless steel slide gate, with extended frame, yoke, lifting stem attached to yoke, lift and lift support, stem, stem guide, and stem block.
3. Non-self-contained stainless steel slide gate, with limited frame, lifting stem, lift and lift support, stem, stem guide, and stem block.
4. Size: As indicated on Drawings.
5. Operating Head: As indicated on Drawings.
6. Closure: As indicated on Drawings.
7. Opening: As indicated on Drawings.

D. Gates: Type 304 stainless steel, self-contained type with disc arranged to lower or raise to open and with guides designed to mount on the face of or embedded in concrete.

1. Disc or Sliding Member: Type 304 and the stainless steel plate reinforced with "U" or angle-shaped stainless steel members welded to the plate not more than 16 inches apart.

a. Deflection: 1/360 of span of the gate under the design head.
b. Reinforcing Ribs: Extend into guides so they overlap seating surface of the guide.
c. A Specially Molded Resilient Seal:

1) Mounted on bottom of embedded unit discs or on the edge of the disc to provide flush bottom closure.
2) Seal Shape: Produce a seating surface with minimum width of 3/4 inch and extend into secondary slot of the guide.
3) Vertical Seal Face: In contact with seating surface of guide providing a proper seal at the corners.

d. Reinforcements, Retainer and Bolts: Same material as disc.
e. The invert of embedded unit frames to have an angle welded to the lower ends of the guides forming a seating surface for a resilient seal mounted on the disc. Angle to be the same material as the guides.

2. Minimum Thickness: 1/4 inch.
3. Configuration: Removable.

E. Guides: Type 304 stainless steel construction, designed for maximum rigidity, weighing a minimum of 3 lbs. per foot.

1. Holes for anchor bolts every 18 inches for face mounted units or embedding keyways for embedded units.
2. Guides to extend beneath opening a sufficient amount to support the disc in fully down or open position for downward opening gates.
3. Weld angle to guides across the invert of the opening on face-mounted gates and up both sides of all gates. Provide a rigid sealing system comprising of low friction high abrasion resistant self-adjusting seals of UHMWPE fitted on frame with compression resilient cord seals to ensure forced contact between seal and face of slide. Arrange seal so it deflects 1/16 inch minimum. Angle, strips and bolts to be the same material as the guides.
4. Where guides extend above operating floor, they must be sufficiently strong, so no further reinforcing is required.
5. Where required, the yoke supporting the operating bench stand will be formed by two angles welded at top of the guides providing a one-piece rigid frame.

F. Yokes: Structural steel. Bolted to gate frame.

1. Arrangement: Disc and stem to be removable without disconnecting the yoke.

G. Seats: Impacted into dovetail slots and held in position without use of screws or other fasteners.

1. Maximum Clearance between Seating Faces: 0.004 inch when gate is fully closed.

H. Wedges: Machined brass blocks with angled faces and secured with a stud bolt to prevent slippage during operation.

1. Wedge Types: Side, top, and bottom.

I. Frames: One-piece configuration.

1. Mounting: As indicated on Drawings.
2. Material: Type 304 stainless steel.
3. Thickness: 1/4 inch.
4. Bottom Flush Closure: Resilient seal securely attached to frame along invert.

J. Lifting Nut: Brass.

1. Grease fitting.
2. Polymer bearing pads above and below lifting nut.

K. Lifting Stem: Type 304 stainless steel for the entire length.

1. Tensile Strength: 60,000 psi.
2. Diameter: Of sufficient size at base of thread to lift the weight of the gate, offset the resistance of the gate to the maximum unbalanced head and fully allow for starting impact.
3. Transmit in compression at least two times the rated output of the crank operated floor stand with a 40 pound effort on the crank.

4. Stems More Than One Section: Joined by stainless steel couplings pinned and bolted to the stems.
5. Threaded and Keyed Couplings of Same Size: To be interchangeable.
6. Bronze Stop Collars: On the stem preventing over closing of the gate.
7. Minimum Diameter: 1-1/2 inch to withstand twice the rated output of the operator.
8. Slenderness Ratio (l/r): Less than 200.
9. Configuration: Rising. Removable.
10. Thread: Machine cut threads, Acme type, double lead. Cut threads are not acceptable.
11. Diameter: 1-1/8 inch.
12. Fully lubricated.
13. Maximum Number of Turns: 16 per foot of travel.
14. Stem Covers: Provide rising stem gates with clear fracture resistant plastic covers.

    a. Will not discolor or become opaque for a minimum of 5 years after installation.
    b. Capped, vented, and of a length to allow full travel of gate.
    c. Bottom end mounted in a housing or adapter plate for easy field mounting.
    d. Indicator markings showing gate position.

2.3 FINISHES

A. Stainless Steel Surfaces: Mill finish.

2.4 ACCESSORIES

A. Hardware: Type 304 stainless steel. Conform to ASTM A193/A194 and F593/F594 unless otherwise specified.

B. Attaching Bolts and Anchor Bolts: Type 304 stainless steel. Furnished by slide gate manufacturer.

C. Nameplates: Stainless steel.

2.5 SOURCE QUALITY CONTROL

A. Shop inspection and testing of completed assemblies.

B. Owner Inspection: Make completed clarifier equipment available for inspection at manufacturer's factory prior to packaging for shipment. Notify Owner seven days before inspection is allowed.

C. Owner Witnessing: Allow witnessing of factory inspections and test at manufacturer's test facility. Notify Owner at least seven days before inspections and tests are scheduled.

D. Certificate of Compliance: When fabricator is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at fabricator's facility conforms to Contract Documents.

    1. Specified shop tests are not required for Work performed by approved fabricator.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify facilities are ready to receive slide gates.

3.2 PREPARATION

A. Clean surfaces according to manufacturer's instructions.

3.3 INSTALLATION

A. Install slide gates according to manufacturer's instructions.

B. Ensure products are installed plumb, true, and free of warp or twist.

C. Locate operators to avoid interference with handrails and other Work.

D. Gate Installation: Under the supervision of the gate manufacturer’s factory representative.

1. Factory Representative: Furnish services for one day. Who has complete knowledge of proper installation, startup, and operation of cast iron slide gates. Inspect the final installation and supervise a test of the equipment.

E. If there are difficulties in operation of the equipment due to the manufacturer's fabrication or Contractor's installation, additional service will be provided at no cost to the Owner.

F. Guides: Surface and Flange Mounted.

1. Install guides with expansion anchors.
2. Position guides at elevation as indicated on Drawings.

G. Sealant:

1. Apply 1/8 inch thick layer of elastomeric sealant to back of frame.
2. Tighten nuts snug until sealant begins to flow beyond frame.
3. Remove excess sealant.
4. Cure sealant for minimum seven days.
5. Tighten nuts to their final positions.

H. Lubricants: Oil and grease as required for initial operation.

I. Installation Standards: Install Work according to City of Rome standards.

3.4 FIELD QUALITY CONTROL

A. Inspection: Verify gate and components alignment, smooth operation, with no binding or scraping.

B. Testing per AWWA C561:

1. Leakage Under 20 feet of Seating Head: 0.05 gpm/ft. of seating perimeter
2. Leakage Under 20 feet of Unseating Head: 0.2 gpm/ft.
3. After installation, field test slide gates ensuring items of equipment are in compliance with Specifications, including leakage requirements.
4. For units failing to meet specified requirements, make necessary change and retest units. If unit remains unable to meet test requirements to Engineer’s satisfaction, it will be replaced with a satisfactory unit at no additional cost to Owner.

C. Manufacturer Services: Manufacturer's representative experienced in installation of products furnished per this Section for a minimum of 1 day on Site for installation, inspection, field testing, and instructing and training Owner's personnel in maintenance of equipment.

D. Equipment Acceptance: Adjust, repair, modify, or replace components failing to perform as specified and re-inspect.

1. Make final adjustments to equipment under direction of manufacturer's representative.

E. Furnish physical checkout and installation certificate from equipment manufacturer's representative attesting equipment has been properly installed and is ready for startup and testing.

F. Submit the equipment manufacturer's Certificate of Field Testing.

G. Submit the equipment manufacturer's Certificate of Functional Testing.

3.5 ADJUSTING

A. Adjust slide gates to provide smooth operation.

3.6 DEMONSTRATION

A. Demonstrate equipment operation, routine maintenance, and emergency repair procedures to Owner's personnel.

END OF SECTION 400559.23

SECTION 400563 - BALL VALVES

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. Two-Piece Brass Body Ball Valves 3-Inch And Smaller

B. Related Requirements:

1. Section 400551 “Common Requirements for Process Valves”: Basic materials and methods related to valves commonly used for process systems.

1.3 SUBMITTALS

A. As specified in Section 400551 “Common Requirements for Process Valves”: Submittal requirements for compliance with this Section.

1.4 QUALITY ASSURANCE

A. Test valves in accordance with AWWA C504, API 598, MSS SP61 as applicable for types listed herein.

B. Provide Installation Inspection and Operator Training per Section 400551 “Common Requirements for Process Valves.”

C. Provide testing and inspection certificates.

PART 2 - PRODUCTS

2.1 TWO-PIECE BRASS BODY BALL VALVES 3-INCH AND SMALLER

A. Manufacturers:

1. Apollo Valve.
2. Milwaukee Valve.
3. NIBCO Inc.

B. Description:

1. Standard: MSS SP-110.
2. SWP Rating: 150 psi .
3. CWP Ratings for Valves NPS 1/4 to NPS 2: 600 psi .
4. CWP Ratings for Valves NPS 2-1/2 to NPS 4: 400 psi.
5. Body Design: Two-piece.
6. Body Material: Forged Brass.
7. Ends: Threaded or soldered joint.
8. Seats: RPTFE or PTFE.
9. Stem Material: 316 Stainless steel.
10. Stem Extension Sleeve Material: Aluminum to extend operating handle past pipe insulation.
11. Ball Material: 316 Stainless steel.
12. Port: Full.
13. Packing Material: PTFE.
14. Operator: Steel lever with zinc plating and vinyl grip.

2.2 SOURCE QUALITY CONTROL

A. As specified in Section 400551 “Common Requirements for Process Valves.”

B. Testing: Test ball valves according to AWWA C507.

PART 3 - EXECUTION

3.1 INSPECTION

A. As specified in Section 400551 “Common Requirements for Process Valves:” Submittal requirements for compliance with this Section.

3.2 INSTALLATION

A. According to AWWA C507.

B. As specified in Section 400551 “Common Requirements for Process Valves.”

END OF SECTION 400563

SECTION 400582 - SOLENOID VALVES FOR PROCESS SERVICE

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: Solenoid valves for process applications.

B. Related Requirements:

1. Section 400551 “Common Requirements for Process Valves”: Basic materials and methods related to valves commonly used for process systems.
2. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.3 COORDINATION

A. Coordinate Work of this Section with process piping Work as specified in other Sections and as indicated on Drawings. Note that solenoid valves may be shown on Electrical and/or Mechanical Drawings, or may only be specified, but if so specified or shown, shall be provided. Solenoid valves located in hazardous classified areas shall be provided with electrical enclosures which satisfy the electrical classification as specified or shown on the electrical drawings.

1.4 ACTION SUBMITTALS

A. Product Data: Submit manufacturer information, indicating materials of construction, wiring diagrams, and compliance with indicated standards.

B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.5 INFORMATIONAL SUBMITTALS

A. Manufacturer Instructions: Submit detailed instructions on installation requirements, including storage and handling procedures.

B. Source Quality-Control Submittals: Indicate results of factory tests and inspections.

C. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

D. Qualifications Statement:

1. Submit qualifications for manufacturer.

1.6 QUALITY ASSURANCE

A. Materials in Contact with Potable Water: Certified to NSF 61 and NSF 372.

B. Perform Work according to City of Rome standards.

C. Maintain a copy of each standard affecting Work of this Section on Site.

1.7 QUALIFICATIONS

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

1.8 DELIVERY, STORAGE, AND HANDLING

A. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

B. Store materials according to manufacturer instructions.

C. Protection:

1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
2. Provide additional protection according to manufacturer instructions.

1.9 EXISTING CONDITIONS

A. Field Measurements:

1. Verify field measurements prior to fabrication.
2. Indicate field measurements on Shop Drawings.

1.10 WARRANTY

A. Furnish five-year manufacturer's warranty for solenoid valves.

PART 2 - PRODUCTS

2.1 SOLENOID VALVES – Tag Type SV

A. Manufacturers:

1. Solenoid valves less than 2 inches:

a. Red Hat Valve by ASCO Valve, similar by Circle Seal Controls-Atkomatic Valve Co.

2. Solenoid valves 2 inches or greater:

a. Type A by Magnatrol Valve Corp.

B. Description:

1. Type: As indicated on Drawings.
2. Minimum Working Pressure: 150 psig at 80 degrees F.
3. Minimum Working Pressure Differential: 0 psig at 80 degrees F.
4. Maximum Fluid Temperature: 80 degrees F.
5. Coil: Continuous duty.
6. Operation: Fail close, energize to open.
7. Enclosures: NEMA 250 Type 4, watertight (WP) rated according to area designation.
8. Electrical Characteristics: As indicated on Drawings.
9. End Connections: Screwed.
10. Conduit Connection: Threaded.
11. Valves 2 inch in size or larger:

a. Include a manual override actuated by a handle-levered plunger mounted to the bottom of the valve body.
b. Mounting: Horizontal run of piping, with the solenoid up in the vertical position.

C. Materials:

1. Body: Brass.
2. Trim and Spring: Stainless steel.
3. Seals: PTFE.

2.2 SOURCE QUALITY CONTROL

A. Provide shop inspection and testing of completed assembly.

B. Certificate of Compliance:

1. If manufacturer is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at manufacturer's facility conforms to Contract Documents.
2. Specified shop tests are not required for Work performed by approved manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION

A. As specified in Section 400551 “Common Requirements for Process Valves.”

B. Install protective strainers upstream of solenoid valves, pressure-reducing valves, and pressure-sustaining valves.

3.2 FIELD QUALITY CONTROL

A. As specified in Section 400551 “Common Requirements for Process Valves.”

END OF SECTION 400582

SECTION 400593.23 – LOW-VOLTAGE MOTOR REQUIREMENTS FOR PROCESS EQUIPMENT

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. Single- and three-phase motors for application on process equipment provided under other Sections.
2. Motors furnished loose to Project.

B. The manufacturer of the driven equipment shall provide the associated motor.

C. Related Requirements:

1. Section 260010, “Supplemental Requirements for Electrical.”
2. Section 260510, “Limited Electrical for Small Projects.”

1.3 DEFINITIONS

A. NETA ATS: Acceptance Testing Specification.

B. VFC: Variable-frequency motor controller. See VFD.

C. VFD: Variable-frequency drive. Used interchangeably with the term VFC.

1.4 SUBMITTALS

A. Product Data: For each type and rating of motor indicated.

1. Include construction details, material descriptions, dimensions, profiles, and finishes.
2. Include nameplate data, compliance with specified standards, electrical ratings and characteristics, physical dimensions, frame size, weights, mechanical performance data, support points and the following:

a. Descriptive bulletins, including full description of insulation system.
b. Bearing design data.
c. Efficiency at 1/2, 3/4, and full load.
d. Power factor at 1/2, 3/4, and full load.
e. Conduit entry points and sizes.

f. Special features and accessories (i.e. space heaters, temperature detectors, etc.).
g. Power factor correction capacitor rating and type (when required).

B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

C. Qualifications Statements:

1. Submit qualifications for manufacturer and testing agency.

1.5 QUALITY ASSURANCE

A. Electric motors driving identical equipment shall be identical

B. Motors shall be listed under UL recognized component file as applicable.

C. Motor manufacturer to maintain a documented ISO 9001 quality assurance program implementing suitable procedures and controls to monitor all aspects of production and testing.

D. When electrically driven equipment differs from that indicated, adjust the motor size, wiring and conduit systems, disconnect devices, and circuit protection to accommodate the equipment actually installed.

E. Testing Agency Qualifications: Member company of NETA or NICET.

1.6 DELIVERY, STORAGE AND HANDLING

A. Ship motor fully assembled, capable of being lifted in one piece. Comply with Section 016000 "Product Requirements" for transporting, handling, storing, and protecting products.

B. Inspection: Accept materials on site in manufacturer's original packaging and inspect for damage.

C. Storage:

1. Store materials according to manufacturer instructions.
2. Energize motors furnished with space heaters to prevent condensation throughout the storage and construction period. Perform periodic motor insulation resistance tests per manufacturer’s storage recommendations.
3. For extended outdoor storage, remove motors from equipment and store separately.
4. Maintain bearings during storage and construction period, and periodically rotate the motor shaft per manufacturer’s storage recommendations.
5. Lubricate per manufacturer’s recommendations and inspect purged grease for water, rust, or other contaminants.

D. Protection:

1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
2. Provide additional protection according to manufacturer instructions.

1.7 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of motors that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Three-years from date of Substantial Completion for inverter duty motors.
2. Warranty Period: Five years from date of Substantial Completion for constant speed severe-duty motors.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:

1. Nidec (US Motors).
2. ABB (Baldor-Reliance).
3. TECO-Westinghouse.
4. Toshiba.
5. WEG.
6. General Electric.
7. Or equal.

2.2 GENERAL MOTOR REQUIREMENTS

A. Comply with requirements in this Section except when stricter requirements are specified in equipment schedules or Sections.

B. Comply with the latest revision of the following as applicable:

1. NEMA MG 1, “Motors and Generators.”

C. Unless otherwise noted, all motors 1/2 through 100 horsepower shall be rated 230/460 Volt, three-phase, 60 Hertz A.C.; motors 125 horsepower and above shall be rated 460 Volt, three-phase, 60 Hertz; and motors below ½ horsepower shall be rated 115/230 Volt, single phase, 60 Hertz A.C.

D. Duty: Continuous duty at ambient temperature of 40 degrees C and at altitude of 3300 feet above sea level.

E. Capacity and Torque Characteristics: Sufficient to start, accelerate, and operate connected loads at designated speeds, at installed altitude and environment, with indicated operating sequence, and without exceeding nameplate ratings or considering service factor.

F. Horsepower rating: Size for operation within the full load nameplate rating without applying the service factor, throughout the full range of mechanical or hydraulic operating condition.

G. Specific motor application data such as Hp, rpm, enclosure type, accessories, etc., are specified under the detailed driven mechanical equipment specification.

H. Nameplates: Engrave or emboss on 316 stainless steel fastened to the motor frame with stainless steel screws or drive pins with information per NEMA MG 1.

I. Space heater: Include 120-volt space heater for moisture control on all motors rated 50 horsepower and larger.

J. Service Factor: 1.15 service factor on sine wave power and 1.0 service factor on VFD power in a 40 degrees C ambient, unless otherwise noted.

K. Motors and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

L. Enclosures: Conform to one of the NEMA standard enclosure designs as specified under the detailed driven mechanical equipment specification. If no enclosure type is specified, provide TEFC (Totally Enclosed Fan Cooled) enclosures.

M. Motors connected to VFCs: Inverter duty rated and comply with NEMA MG 1, Part 31. First or second torsional critical speed shall be outside the operating speed range for all VFC controlled motors.

N. Three-phase motors:

1. Description: NEMA MG 1, Design B, medium induction motor.
2. Efficiency: Meet or exceed requirements for NEMA MG 1, Part 12 for Premium Efficient motors 1 HP and larger.
3. Service Factor: 1.15.
4. Multispeed Motors: Variable torque.
    a. For motors with 2:1 speed ratio, consequent pole, single winding.
    b. For motors with other than 2:1 speed ratio, separate winding for each speed.
5. Rotor: Random-wound, squirrel cage.
6. Code Letter Designation:
    a. Starting codes in first subparagraph below are adequate for most variable-torque loads; 15 hp is a common breakpoint in rating among manufacturers when Code F and Code G apply. Retain both subparagraphs and first options unless Project conditions or equipment characteristics dictate otherwise.
    b. Motors 15 HP and Larger: NEMA starting Code F or Code G.
    c. Motors Smaller Than 15 HP: Manufacturer's standard starting characteristic.
7. Accessories: Where specified herein, or under process mechanical specification.

2.3 THREE PHASE MOTOR CONSTRUCTION

A. Enclosure and Frame:

1. NEMA enclosure type as specified in the process equipment specification.

2. NEMA frame for the associated horsepower.
3. Motor frames: Cast iron or welded heavy plate steel construction, stiff enough to withstand the rotating forces and torques generated and designed to limit or avoid any undesirable harmonic resonances.
4. Provide a threaded, forged steel, shouldered eyebolt blind tapped into the motor frame for lifting on all frames 254T and larger.
5. Condensate drain openings: Locate drain holes at the low points in the end brackets to allow removal of accumulated moisture from enclosures. Provide corrosion resistant, breather drain plugs for severe-duty motors.
6. Hardware: Hex head, SAE Grade 5 or better, plated for corrosion protection.
7. Nameplates: Engraved or embossed stainless steel plates fastened to the motor frame with stainless steel screws or drive pins. Clearly indicate all items of information listed in the applicable part of NEMA MG 1.
8. Main terminal box: Fabricated steel or cast iron, sized per the NEC for number and size of conduit connections and conductor bending and terminations as indicated on the Drawings. Split box top to bottom with capability to rotate entry point to any quadrant. Provide gaskets between the box and motor frame and between box and its cover. Include ground lug for equipment grounding conductor termination.
9. Bearing housings: Provide machined surfaces for attaching a magnet mounted accelerometer to monitor the motor vibration in the vertical, horizontal, and axial directions at each bearing housing.
10. Frame grounding: provide motor frame grounding pad or threaded stud where supplemental grounding to frame is indicated on the drawings.

B. Windings:

1. Copper.
2. Insulation rating: Class F.
3. Temperature rise: Class B at 1.0 SF, Class F at 1.15 SF.
4. Insulation: Non-hygroscopic, epoxy encapsulated windings for enclosure types WP I and WP II. Provide upgraded insulation by additional dips and bakes to increase moisture resistance for totally enclosed designs. Provide vacuum pressure impregnated (VPI) epoxy insulation for moisture resistance for outdoor motors.
5. Provide chemical and humidity resistance insulation system when IEEE 841 motors are specified.
6. Provide winding surge withstand capability per NEMA 1, Part 31 for VFC driven motors.
7. Provide specified temperature sensing devices for VFC driven equipment. If not specified, provide a winding temperature detector per the accessories paragraph.

C. Motor leads: Non-wicking type, minimum Class F temperature rating and permanently numbered for identification.

D. Stator: Built up core using high grade, low loss silicon steel laminations keyed or dovetailed to the stator frame and securely held in place at each end.

E. Rotor:

1. Forged or rolled steel shaft, machined, smooth finished, with sufficient strength for operation including 25 percent overspeed condition.
2. Shaft end coordinated with driven equipment coupling.
3. Entire assembly coated with protective coating.

4. Inpro seals on both ends of the shaft to prevent grease leakage and entrance of foreign materials, such as water and dirt, into the bearing area while running, coasting, or at rest. Severe duty motors to have improved sealing per IEEE 841.

5. Vertical Motor Shafts:

    a. Provide hollow shaft and P flange mounting to allow driven shaft to extend through provide for vertical pump applications.
    b. Coupling for connecting the motor shaft to the driven shaft is located in the top of the motor.
    c. Where solid shaft is provided couple the driven shaft below the P flange face.

6. Rotor Core:

    a. Solid, built-up stack of fully processed and coated, high-grade, low-loss silicon steel laminations.
    b. Die cast aluminum or fabricated copper bars or their respective alloys.
    c. Rotors on frames 213T and above to be keyed to shaft and rotating assembly dynamically balanced.

7. Rotor Assembly:

    a. Coated with corrosion resistant epoxy insulating varnish or other protective coating, thermally stable, statically and dynamically balanced.
    b. Balance weights securely attached to the rotor resistance ring by welding or similar permanent method.

F. Horizontal Bearings: roller type, grease lubricated.

1. Bearings: Anti-friction open or single-shield, vacuum-degassed steel ball or roller bearings, electric motor quality, designed for 45 degrees C maximum temperature rise. Metric size bearings are not acceptable.
2. Life: L 10 life of 100,000 hours for direct coupled applications and 26,000 hours for belted applications based. IEEE 841 motors, L 10 life increased to 150,000 and 50,000 hours, respectively.
3. Shaft Seals: Provide to prevent grease leakage and the entrance of foreign materials, such as water and dirt, into the bearing area while running, coasting, or at rest.
4. Shaft Currents: Provide mitigation per this specification section unless specified in the process equipment specification.
5. Comply with ABMA and refer to process equipment specification for stricter or additional requirements.

G. Vertical Bearings: per manufacturer, thrust type.

1. Bearings: Manufacturer's standard design, constructed with thrust bearings on top to allow inspection and/or replacement without requiring complete disassembly of motor, of type and size to satisfy thrust loading requirements.
2. Life: Rated for an in-service L 10 life of 50,000 hours, designed to support the weight of the rotor plus, if required, the weight of the rotating driven equipment parts and the hydraulic thrust created by the driven equipment, with a 40 degrees C maximum temperature rise. Metric bearings are not acceptable.

3. Shaft seals: Provide to prevent grease leakage and the entrance of foreign materials, such as water and dirt, into the bearing area while running, coasting, or at rest.
4. Shaft currents: Provide mitigation per this specification section unless specified in the process equipment specification.
5. Comply with ABMA and refer to process equipment specification for stricter or additional requirements.

2.4 THREE PHASE MOTOR ACCESSORIES

A. Space heaters: Silicone rubber strip type, accessible for inspection, rated 120 Volt, single phase, designed to prevent condensation inside the enclosure when the motor is idle, with leads brought out to a separate terminal box. Emboss the heater wattage and voltage on the motor nameplate.

B. Winding Temperature Switch: Three embedded bi-metallic temperature thermostat switches with normally open or normally closed per process equipment specification and leads terminating in the main conduit box.

C. Winding Temperature Relay: Three embedded PTC thermistors with epoxy-encapsulated 115 VAC, single-phase, solid-state control relay with dual Form C contacts. Wire thermistor leads brought out to separate terminal box on the motor frame.

D. Winding Temperature RTDs: Six 100 Ohm platinum (PT 100), three-wire resistance-type temperature detectors (RTDs) embedded in the stator windings, two per phase, symmetrically installed between stator coils where highest temperature will occur. RTD leads brought out to separate terminal box on the motor frame. One RTD set in each phase to be operational and one RTD set to be spare.

E. Bearing Temperature Sensing: Number, type, and location for motor and driven equipment per process equipment specification.

1. RTD: Replaceable 100 Ohm platinum (PT 100) three-wire RTD's, with spring loaded tip. Mount RTD as close as possible to outer surface of each bearing. RTD includes conduit connection head, terminal block, and cabling brought out to a common terminal box.
2. Dial type thermometer.
3. Temperature relay, furnished with indicating scale.
4. Iron or copper constantan thermocouple.

F. Motor Shaft Currents: insulate the ODE bearing and provide a shaft grounding strap. Insulate bearing probes to prevent shorting out bearing insulation.

G. Shaft Grounding Rings: maintenance free, circumferential microfiber type, AEGIS™ SGR by Electro Static Technology or equal to discharge shaft currents to ground.

H. Vibration Sensors: Number, type, and location for motor and driven equipment per process equipment specification. Provide machined surfaces at each bearing housing for attaching a magnetic mounted accelerometer to monitor motor vibration in vertical, horizontal and axial directions. Coordinate with the supplier of the machine monitoring equipment.

I. Anti-Backspin Device: Provide shaft mounted, mechanical non-reverse ratchet rated at 100 percent of motor full load torque for immediate protection against reversing due to phase reversals or from backspin at shutdown.

J. Encoder for vector drive motors: Provide encoder on opposite drive end to sense rotor speed and provide closed loop feedback (quadrature signal with line driver output) to a control device. Provide sufficient length of encoder cable to connect encoder to variable frequency controller.

2.5 POWER FACTOR CORRECTION CAPACITORS

A. Select the PFCC rating to provide an operating power factor of the motor between 93 to 95 percent at full load and 95 to 98 percent when partially loaded. The capacitor current shall not exceed the motor no-load magnetizing current.

B. Provide the required capacitor and capacitor information to the motor control center (MCC) manufacturer for inclusion inside the MCC.

C. Capacitors: UL listed, NEMA rated and tested, three phase dry film or non-PCB dielectric liquid insulated, with three current limiting fuses rated for 100 kA interrupting capacity at 480 Volts, equipped with internal discharge resistors and fuse loss indicators, mounted in hermetically sealed steel enclosures suitable for conduit connection. Covers shall be gasketed, bolt-on type.

2.6 SINGLE-PHASE MOTORS

A. Motors larger than 1/20 hp shall be one of the following, to suit starting torque and requirements of specific motor application:

1. Permanent-split capacitor.
2. Split phase.
3. Capacitor start, inductor run.
4. Capacitor start, capacitor run.

B. Multispeed Motors: Variable-torque, permanent-split-capacitor type.

C. Motors 1/20 HP and Smaller: Shaded-pole type.

D. Thermal Protection: Internal protection to automatically open power supply circuit to motor when winding temperature exceeds a safe value calibrated to temperature rating of motor insulation. Thermal-protection device shall automatically reset when motor temperature returns to normal range.

E. Insulation: Class F or better, with Class B temperature rise of 80 degrees C above ambient, 1.15 service factor. Locked rotor current to be no greater than specified in NEMA MG 1, Design "N".

F. Standard enclosure: Fully gasketed, totally-enclosed air over or fan cooled in conformance with NEMA MG 1.

G. Washdown Duty Enclosure: Where motor is installed in wet or corrosive areas routinely exposed to washdowns, high humidity or caustic chemicals, provide stainless steel, paint free washdown motors with Inpro bearing isolators, stainless steel T-type condensation drains, nitrile conduit box gasket, and corrosion resistant fans.

H. Bearings: Sealed ball bearings permanently lubricated for 10 years normal use, furnished with shaft slinger.

I. Class 1, Division 1 and 2 locations: Explosion proof, marked with a T3B temperature code label, and UL listed for use in Class 1, Division 1, Groups C & D, and Class II, Groups E, F, & G hazardous location. The temperature code marking to appear on the nameplate.

2.7 SOURCE QUALITY CONTROL

A. Section 014000 “Quality Requirements:” Requirements for testing, inspection, and analysis.

B. Factory Testing: Prior to shipment perform manufacturer’s standard tests in accordance with NEMA MG 1 and IEEE 112.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Upon delivery of motor and prior to unloading, inspect equipment for damage.

B. Comply with “Delivery, Storage, and Handling” Article within this specification.

3.2 INSTALLATION

A. Prepare rigid foundation or mounting surface to minimize vibration and maintain alignment between motor and load shaft.

B. Install the motors per manufacturer's installation instructions.

C. Anchor motor base to load bearing surface with grade 5 steel bolts or better.

D. Align the motor shaft with driven equipment according to manufacturer’s written instructions. Adjust axial position of motor frame with respect to load shaft.

E. Accurately adjust flexible couplings for direct drive according to machine manufacturer’s guidelines. Check alignment to minimize vibrations. Coupling spacing shall be according to coupling manufacturer guidelines.

F. Install motor branch circuit conduits and conductors in accordance with NEC and local code requirements. Connect motors to rigid conduit system by a short section of liquid-tight flexible conduit to isolate the conduit system from motor vibration. Where motors are installed outdoors, bring conduit into bottom of motor terminal box to avoid standing water at connection point.

G. Terminate the motor leads as shown on the connection diagrams using products intended for vibration applications.

H. Ground equipment according to Section 260510 “Limited Electrical for Small Projects.”

I. Tighten electrical connections and terminals according to manufacturers' published torque values.

J. Install conduit and wiring between motor auxiliary devices and associated indicators, controllers and protective devices in accordance to installation drawings.

K. Connect devices sensitive to electromagnetic interferes such as RTD's, thermistors, thermal protector switches, vibration sensors with shielded instrumentation wiring per installation drawings.

L. Comply with NECA 1.

3.3 IDENTIFICATION

A. Comply with requirements for identification specified in Section 260510 “Limited Electrical for Small Projects.” Identify field-installed conductors, interconnecting wiring, and components.

3.4 PROTECTION

A. Temporary Heating: Apply temporary heat to maintain temperature according to manufacturer's written instructions until motors are ready to be energized and placed into service.

B. Lubrication and Shaft Rotation: Lubricate parts and rotate shaft periodically according to manufacturer’s written instructions until motors are ready to be energized and placed into service.

3.5 FIELD QUALITY CONTROL

A. Perform inspections and tests Inspect and test according to the Inspection and Test Procedures for Rotating Machinery state in NETA Acceptance Testing Specification paragraph 7.15.1. Options tests are not required unless called for within the process equipment specification.

B. Perform the following infrared (thermographic) scan tests and inspections, for all motors 250 hp and larger, and prepare reports:

1. Initial Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each motor exterior for detection of hot spots in stator or bearings.
2. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each motor 11 months after date of Substantial Completion.
3. Instruments and Equipment: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.

C. Test and adjust controls, remote monitoring, and safeties. Replace damaged and malfunctioning controls and equipment.

D. Motors will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports, including a certified report that identifies the motor and describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations made after remedial action.

3.6 STARTUP AND ADJUSTMENT

A. Complete installation and startup checks according to manufacturer's written instructions. Confirm motor is structurally, mechanically, and electrically ready for start-up. Checks include support system, vibration isolation, alignment, lubrication system, and cleanliness.

B. Start-up motor in accordance with process equipment specification.

C. Verify correct phase rotation at motor with driven equipment uncoupled. Correction for phase rotation to be made in the motor terminal box.

D. Prepare inspection and test reports.

3.7 DEMONSTRATION / SYSTEM FUNCTION TESTS

A. Run motor for system testing as required in motor controller and driven equipment specifications.

B. Confirm correct operation of all protective and metering devices.

C. Measure voltage and motor running current and evaluate relative to load conditions and nameplate full load amperes. Corrective action is required for any current imbalance 10 percent or greater.

D. Prepare driven equipment system testing report. Include results of all tests and check made, meter readings and recordings, and summary adjustments made. Clearly identify any discrepancies and concerns.

END OF SECTION 400593.23

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SECTION 464123 - SUBMERSIBLE MIXERS

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: Submersible propeller mixers and accessories.

B. Related Requirements:

1. Section 055000 “Metal Fabrications” for miscellaneous metalwork and fasteners as required by this Section.

1.3 COORDINATION

A. Coordinate Work of this Section with other equipment or project components that may be impacted by the installation or operation of the mixers, such as tanks, baffles, process piping, aeration equipment, or pumping equipment.

1.4 PREINSTALLATION MEETINGS

A. Convene minimum one week prior to commencing Work of this Section.

1.5 ACTION SUBMITTALS

A. Product Data:

1. Manufacturer's Product Data for system materials and component equipment, including:

a. Literature and drawings describing the equipment in sufficient details, including parts list, dimensions, materials and details of construction and installation.
b. Mixer Information, including:

1) Manufacturer.
2) Model.
3) Propeller.
4) Weight of mixer and motor.
5) Rated horsepower.
6) Efficiency.
7) Electrical requirements.

8) Non-Standard Materials of Construction Supplied.
9) Motor data.

c. Electrical accessory information:

1) Moisture Sensors.
2) Temperature Sensors.
3) Associated Relays.

2. Wiring and control diagrams, installation and anchoring requirements, fasteners, and other details.

B. Shop Drawings:

1. Custom wiring, control schematics, control logic diagram and ladder logic, process and instrumentation diagram, connection diagram including all accessories and submersible cable connection diagram.
2. Certified dimensional data for components, including mixer mount assembly, anchor bolts and details.
3. Mixer mount assembly details, including details of the design.
4. Design Data: Sufficient to verify performance requirements including structural vibration requirements, of these specifications.

1.6 INFORMATIONAL SUBMITTALS

A. Manufacturer's Certificate:

1. Certify that mixers meet or exceed specified requirements.
2. Certify installation is completed according to manufacturer's instructions and that mixers have been properly installed and tested and are ready for operation.

B. Manufacturer's Instructions: Detailed instructions on installation requirements, including storage and handling procedures.

C. Source Quality-Control Submittals:

1. A description of the proposed factory test procedures for review and acceptance a minimum of 30 days prior to the date of the test
2. Copies of test results, organized in a written report that clearly presents testing methods and procedures, testing equipment, test data, calculations and analyses, conclusions, and recommendations.

D. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

E. Qualifications Statements:

1. Submit qualifications for manufacturer and licensed professional.

1.7 DELEGATED DESIGN SUBMITTALS

A. Delegated Design Submittals: Submit signed and sealed Shop Drawings with design calculations and assumptions for required, thrust, blade configuration and power requirements.

1.8 MAINTENANCE MATERIAL SUBMITTALS

A. Spare Parts: Furnish one set of manufacturer's recommended spare parts for each size mixer.

B. Tools: Furnish special tools required for Owner to maintain and calibrate equipment, including as required to disassemble and reassemble mixer.

1.9 QUALITY ASSURANCE

A. Materials in Contact with Water: Comply with NSF Standard 61 and NSF Standard 372.

B. Mixer manufacturer to furnish and coordinate mixer, driver, drive controls, mixer mount assembly, and other components as specified and to provide written installation and check out requirements.

C. Mixer Test: The mixer manufacturer shall perform the following inspections and tests on each mixer prior to shipment from the factory:

1. Propeller size, motor rating, voltage, phase, and frequency will be checked for compliance with specifications.
2. Check motor and power cable before submergence for insulation defects and moisture content.
3. Pressurize the motor with dry air and check for leaks at all joints and seals. A vacuum leakage test of the motor is also acceptable.
4. Prior to shipment, run the mixer dry to establish correct rotation and mechanical integrity.
5. Run mixer for 30 minutes submerged in a minimum of six feet of water. After this test, repeat the insulation test.
6. Run mixer to determine thrust produced. Each mixer shall produce the force at maximum input power as shown on the approved manufacturer's submittals.
7. Supply a written report stating the foregoing steps have been done with each mixer at the time of shipment.

1.10 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years' documented experience, including a minimum of five installations of same size equipment in similar applications within the last five years. Manufacturer to submit installation information, including size, location, and phone numbers with the submittals.

B. Licensed Professional: Professional engineer experienced in design of specified Work and licensed in State of New York.

1.11 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's packaging including application instructions.

B. Inspection: Accept mixers on-Site in original packaging and inspect for damage.

C. Store mixers according to manufacturer's instructions.

D. Protect mixers from water and wet weather.

1.12 EXISTING CONDITIONS

A. Field Measurements:

1. Verify field measurements prior to fabrication.
2. Indicate field measurements on Shop Drawings.

1.13 WARRANTY

A. Furnish one-year manufacturer's warranty for mixers.

PART 2 - PRODUCTS

2.1 SUBMERSIBLE MIXERS

A. Manufacturers:

1. Flygt.
2. Or approved equal.

B. Performance and Design Criteria:

1. Tank Geometry: As indicated on Drawings.
2. Minimum/Maximum Operational Liquid Depth: As indicated on Drawings.
3. Viscosity: 0.000037 lbf-s/square foot.
4. Specific Gravity: 1.
5. Turbidity: 2 NTU.
6. Maximum Working Temperature: 180 degrees F.
7. Mixer Mount Assembly: An integral part of the mixer unit and must be able to handle all thrust created by the mixer.
8. Mixer Mount Assembly: Provides the capability of redirecting the center line of its jet 30 degrees in a vertical plane and 30 degrees in a horizontal plane.
9. The mixer, with its appurtenances and cable, shall be capable of continuous submergence under water without loss of watertight integrity to a minimum depth of 50 feet.
10. Propeller: Type 316 stainless steel dynamically balanced, non-clogging backward curved design.

C. Shaft:

1. Direct Drive Mixers:

a. Seals:

1) Four seals separating three separate chambers.
2) The outer mechanical seal shall contain both stationary and rotary silicon carbide or tungsten carbide faced rings.
3) Each Mixer: Equipped with a solids deflection ring to prevent seal failure due to interference from solids contained in the mixed liquid.
4) Only the seal faces of the outer mechanical seal assembly and its retaining clips shall be exposed to the mixed liquid. No seals shall require neither routine maintenance nor adjustment and shall not be damaged when the mixer is run dry.
5) Do not rely on the mixing liquid as a lubricant.

2. Gear-driven Mixers:

a. Motor Shaft and Rotor: Integral-gear, close-coupled.
b. Shaft Material: Type 316 stainless steel.
c. Gearbox: Single-stage planetary reduction gear equipped with high precision low-loaded gears designed for infinitive life. The reduction stage shall consist of an integral toothed ring gear to which the planet wheels are mounted on the planet carriers engaging with the sun pinion. Gearbox shall be contained in an oil chamber. Designs that require removing the propeller to inspect or change oil are not acceptable.
d. Seals:

1) Four seals separating three separate chambers.
2) The outer mechanical seal shall contain both stationary and rotary silicon carbide or tungsten carbide faced rings.
3) Each Mixer: Equipped with a solids deflection ring to prevent seal failure due to interference from solids contained in the mixed liquid.
4) Only the seal faces of the outer mechanical seal assembly and its retaining clips shall be exposed to the mixed liquid. Mount a mechanical seal, containing both stationary and rotary silicon carbide or tungsten carbide faced rings, on the motor shaft to isolate the gearbox oil chamber from the dry motor stator housing. No seals shall require neither routine maintenance nor adjustment and shall not be damaged when the mixer is run dry.
5) Do not rely on the mixing liquid as a lubricant.

D. Bearings:

1. Outboard Propeller Bearing: An angular contact ball bearing.
2. Motor Shaft End: Supported by two bearings. A roller and an angular contact ball bearing shall take up the axial and radial loads while an angular contact ball bearing shall take up the axial loads. The bearings shall be preloaded by a bearing loading nut located on the motor end of the shaft in order to reduce shaft deflection and increase bearing life and seat life.
3. Ball Bearings:

a. Comply with ABMA 9.
b. L-10 Life: 100,000 hours.

4. Roller Bearings:

a. Comply with ABMA 11.
b. L-10 Life: 100,000 hours.

E. Materials:

1. Blades: Type 316 stainless steel.
2. Mixer body: Type 304 stainless steel.
3. Elastomers: Machine all mating surfaces where watertight sealing is required and fit with a double set of NBR O-rings. Do not use secondary sealing compounds, rectangular gaskets, elliptical O-rings, grease, or other devices.

F. Accessories:

1. Flow Ring Assembly:

a. Mixer Assembly: Incorporate a 360-degree, type 316 stainless steel flow ring around the propeller, designed to improve hydraulic efficiency of the mixer.

2. Guide Bar System:

a. As recommended by manufacturer for mixer assembly.
b. Materials: Compatible with process liquid.
c. Depth: As indicated on Drawings.
d. Lifting clamp: Provide Type 316 stainless steel lifting clamp fastened to the mixer designed to install and remove the mixer from the basin.
e. Cable holders: Provide cable holders to secure the mixer electric power cable (minimum of one every five feet). Designed to prevent the electric cable from becoming entangled in the mixer propeller during operation.

3. Davit Crane: Mixer supplier to provide type 316 stainless steel davit crane with mounting socket, hand-winch operation, and type 316 stainless steel cable. Davit crane shall be sized appropriately by mixer supplier for removal of supplied mixer.
4. Fasteners: Type 316 stainless steel.

G. Operation:

1. Motor Electrical Characteristics:

a. 15 hp, 58 rated load amperes.
b. Voltage: 208 V, three phase, 60 Hz.
c. Maximum Overcurrent Protection: 110 A.
d. Minimum Circuit Ampacity: 58 A.
e. Minimum Power Factor: 67 percent at rated load.

2. Motors:

a. Mixer Motor: Squirrel cage, induction, shell type NEMA B design, housed in an air filled, watertight chamber.
b. Stator Winding: Insulated with moisture resistant Class F insulation which will resist a temperature of 311 degrees F.
c. Stator: Dipped and baked three times in Class F varnish. As an alternative, insulate stator by the trickle impregnation method with Class F insulation.
d. Motor: Designed for continuous duty, handling pumped media at 104 degrees F and capable of a minimum of fifteen evenly spaced starts per hour.
e. The use of pins, bolts, screws, or other fastening devices used to locate or hold the stator and that penetrate the stator housing are not acceptable.
f. Stator: Equipped with three thermal switches embedded in the end coils of the stator winding. These shall be used in conjunction with, and supplemental to, external motor overload protection, and wired to the Control Panel. The temperature monitors shall automatically reset once the stator temperature returns to normal.
g. Motors to be provided with leak detection in the stator chamber. These sensors must be used in conjunction with, and supplemental to, external motor overload protection, and wired to a sensor control and status monitoring unit furnished with the motor.

3. Power Cables:

a. Submersible to same water depth as motor casing.
b. Type AWG subcab cable.
c. Insulation rated for 194 degrees F.
d. Length: Sufficient to connect to surface junction box (without the need of splices) as indicated on the Drawings, or 50 feet, whichever is greater.
e. Cables: Oil resistant, chloroprene rubber jacketed.
f. Terminate all power and control conductors at terminal blocks in the local control panel or junction box.
g. Sized to conform to NEC, ICEA and CSA Standards.

4. Cable Entry:

a. Cable Entry Housing: Integral part of the upper lid or backplate with a double set of elastomer grommets in order to ensure a redundant system in the event of a cable entry failure.
b. Cable Entry: Comprised of cylindrical elastomer grommets, flanked by washers and a ferrule designed with close tolerance fit against the cable outside diameter and the entry inside diameter. Cable entrance shall provide a leak proof seal without the need for specific torque requirements.
c. The assembly shall bear against a shoulder and be compressed by a gland nut threaded casing opening. Interaction between the gland nut and the ferrule should move the grommet along the cable axially instead of with a rotary motion.
d. The junction chamber and motor compartment shall be separated by a terminal board to protect the motor interior from foreign material gaining access.
e. Connection shall securely affix the cable wires to the terminal board. Use O-ring to render the motor compartment leak proof from any liquid that may enter the terminal compartment.
f. Epoxies, silicones, or other secondary sealing systems not acceptable.

5. Control Panel:

    a. Factory mounted.
    b. NEMA 4X.
    c. Single-point power connection and grounding lug.
    d. Interlocks: Three stator thermal switches.
    e. Disconnect Switch: Factory-mounted in control panel.
    f. Operation Sequences: Manual.
    g. Leak detection device.
    h. Provide integral input disconnecting means and overcurrent protective device. Minimum interrupting rating 22kA or as noted on the Drawings.
    i. Variable frequency motor controllers (VFC) in control panel enclosure for each mixer per “Variable Frequency Motor Controller (VFC)” subparagraph below.
    j. Active cooling as required to keep the VFC within their manufacturer specified operating temperature range

6. Variable Frequency Motor Controller (VFC):

    a. Nominal Input Voltage: 120/240VAC, 1 phase, 60 Hz
    b. Nominal Output Voltage: 208VAC, 3 phase, 60 Hz
    c. Input Power: Not exceeding 17kW
    d. VFC: Compatible with the provided submersible mixer motor.
    e. Overall Short Circuit Current Rating: 22kA minimum or as noted on the Drawings.
    f. Provide internal temperature/moisture system from internal control power transformer to maintain internal components temperature requirements and mitigate condensation when drive is shut down but main disconnect is on, providing control power.
    g. Provide integral surge protection device.
    h. Variable frequency controller (VFC) construction shall control the power distribution system harmonics by limiting the current distortion level at the unit’s input terminal to the levels listed in IEEE 519. The point of common coupling (PCC) for the purposes of this specification are defined as input lugs of the drive solution.

2.2 SOURCE QUALITY CONTROL

A. Certificate of Compliance: When fabricator is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at fabricator's facility conforms to Contract Documents.

    1. Specified shop tests are not required for Work performed by approved fabricator.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify layout, type, and orientation of piping connections.

B. Verify that tank configuration will accommodate mixer, piping, and accessories.

3.2 INSTALLATION

A. Install equipment according to manufacturer's instructions.

B. Provide a minimum separation equal to 1.5 times the diameter of the propeller to any obstructions.

3.3 FIELD QUALITY CONTROL

A. Manufacturer Services: Furnish services of manufacturer's representative experienced in installation of products furnished under this Section for not less than two days on-Site for installation, inspection, field testing, and instructing Owner's personnel in maintenance of equipment.

B. Furnish installation certificate from equipment manufacturer's representative attesting that equipment has been properly installed and is ready for startup and testing.

C. Operational Testing:

1. Operate mixers for a minimum of 48 hours with varying levels of water in the reservoir.
2. Confirm that the mixer mount assembly is free from vibration and that the mixers are maintained in their set positions at all times.
3. After completion of 48-hour test, remove the equipment from the reservoir and inspected by a factory-trained representative for leaks through the seals. Document and correct all leaks.

D. Equipment Acceptance:

1. Adjust, repair, modify, or replace components failing to perform as specified, and rerun tests.
2. Make final adjustments to equipment under direction of manufacturer's representative.

3.4 ATTACHMENTS

A. Submersible Mixer Schedule:

1. Submersible Mixers (2):

a. No. of Blades: 3.
b. Blade Diameter: 22-13/16 inch.
c. Blade Angle: 13 degrees.
d. Motor Hp: 15.
e. Propeller Speed: 580 rpm.

END OF SECTION 464123

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SECTION 466173 - AUTOMATIC STRAINING EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Automatic strainers.

B. Related Requirements:

1. Section 055000 "Metal Fabrications" for fasteners, brackets, and other miscellaneous metal fabrications as required by this Section.
2. Division 40 - Process Integration for shutoff valves as required by this Section.

1.2 COORDINATION

A. Coordinate Work of this Section with Work of other Sections.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project Site.

1.4 SUBMITTALS

A. Product Data:

1. Automatic strainers.
2. Submit manufacturer product data for system materials and component equipment, including electrical characteristics.

B. Shop Drawings:

1. Indicate system materials and component equipment.
2. Submit wiring and control diagrams, installation and anchoring requirements, fasteners, and other details.
3. Signed and sealed by the qualified professional engineer responsible for their preparation.

C. Source Quality-Control Reports: For automatic strainers.

D. Field Quality-Control Reports: For automatic strainers.

E. Qualifications Statement: For manufacturer.

1.5 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations of installed automatic strainers.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Spare Parts: Furnish one set of manufacturer's recommended spare parts.

B. Tools: Furnish special wrenches and other devices required for Owner to maintain and calibrate equipment.

1.7 QUALITY ASSURANCE

A. Materials in Contact with Water: Comply with NSF Standard 61 and NSF Standard 372.

B. Manufacturers Qualifications: Company specializing in manufacturing products specified in this Section with minimum three years' documented experience.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

B. Store materials according to manufacturer instructions.

C. Protection:

1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
2. Provide additional protection according to manufacturer instructions.

1.9 WARRANTY

A. Furnish five-year manufacturer's warranty for automatic strainers and accessories.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Perform Work according to:

1. The City of Rome standards.

2.2 AUTOMATIC STRAINERS

A. Manufacturers:

1. S.P. Kinney Model “A”.
2. Fluid Engineering; a division of TM Industry Supply, Inc.
3. R.P. Adams; subsidiary of Service Filteration Corporation.
4. Sure Flow Equipment Inc.

B. Description:

1. Comply with ASTM F1199 and F1200.
2. Free Area: Minimum three times pipe cross-sectional area.
3. Body Material: Cast iron or type 304 stainless steel.
4. Straining element: Clog resistant rotating drum.
5. Backwash: Electrically operated valve.
6. Connections:

    a. Type: Flush.
    b. Size: 3-inch.
    c. End: Flanged.

C. Straining Element:

1. Screen.
2. Opening Size: 2 inch.
3. Mesh Size: 3/8 inch.
4. Minimum Open Area: 22 square inches.
5. Material: Cast Iron or type 304 stainless steel.

D. Performance and Design Criteria:

1. Minimum Operating Pressure: 20 psig.
2. Entering Pipe Size: 3 inches.
3. Manual operation in case of power failure.

E. Operation:

1. Electrical Characteristics:

    a. 0.5 hp.
    b. Voltage: 230 V, single phase, 60 Hz.
    c. Maximum Overcurrent Protection: 20 A.
    d. Minimum Circuit Ampacity: 6.2A.
    e. Minimum Power Factor: 67 percent at rated load.

2. Control Panel:

    a. Factory mounted.
    b. NEMA 250 Type 4.
    c. Single-point power connection and grounding lug.

3. Controls:

    a. Three indicating lights.
    b. One two position selector switch marked "Open-Close."
    c. One three position selector switch marked “Manual-Off-Auto.”
    d. One repeat cycle timer, which has a timing range of 0.1 seconds-100 hours.
    e. Non-revising motor starter w/ start-stop push button.
    f. Fused disconnect switch.
    g. Control transformer.
    h. 12 pt. terminal block

4. Disconnect Switch: Factory mounted in control panel.
5. Operation Sequences: Backwash based on pressure differential setting.
6. Provide connections for signals and controls to be operated through SCADA system.

2.3 SOURCE QUALITY CONTROL

A. Provide shop inspection and testing of automatic strainers.

B. Owner Inspection:

1. Make completed automatic strainer available for inspection at manufacturer's factory prior to packaging for shipment.
2. Notify Owner at least seven days before inspection is allowed.

C. Owner Witnessing:

1. Allow witnessing of factory inspections and test at manufacturer's test facility.
2. Notify Owner at least seven days before inspections and tests are scheduled.

D. Certificate of Compliance:

1. If fabricator is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at fabricator's facility conforms to Contract Documents.
2. Specified shop tests are not required for Work performed by approved fabricator.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that facility, piping, and electrical Work are ready to receive automatic strainers.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF AUTOMATIC STRAINING EQUIPMENT

A. According to manufacturer instructions.

B. Unless indicated otherwise, provide automatic strainers ahead of control valves, regulators, and steam and condensate traps, and preceded by shutoff valves.

3.3 FIELD QUALITY CONTROL

A. Inspect for proper operation.

B. Testing:

1. Functional Testing: Prior to system startup, inspect components for proper alignment and connection and acceptable operation.

3.4 ADJUSTING

A. Check control functions and adjust as required.

3.5 DEMONSTRATION

A. Demonstrate equipment startup, shutdown, routine maintenance, and emergency repair procedures to Owner's personnel.

B. Manufacturer Services:

1. Furnish services of manufacturer's representative experienced in installation of products furnished under this Section for not less than one day days on Site for installation, inspection, startup, field testing, and instructing Owner's personnel in maintenance of equipment.
2. Performance Testing: Use plant raw water on each unit to determine actual system operating conditions and verify that units meet minimum performance requirements as specified in this Section.

C. Equipment Acceptance:

1. Adjust, repair, modify, or replace components failing to perform as specified and rerun tests.
2. Make final adjustments to equipment under direction of manufacturer's representative.

D. Furnish installation certificate from equipment manufacturer's representative attesting that equipment has been properly installed and is ready for startup and testing.

END OF SECTION 466173

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Appendix A
Aqualogics Systems Inc. Quotation

5 Dwight Park Drive
Syracuse, NY 13209
Phone: (315) 413-0400
Fax: (315) 413-0404

Proposal # Q1-25-015
February 4, 2025

City of Rome Water Filtration Plant
6105 Stokes Lee Center Rd
Lee Center, NY 13363

Attention: David Cardarelli, Water Supply Maintenance Supervisor

Reference: Kessinger Dam Screen Control Panel Upgrades

AquaLogics Systems, Inc. is pleased to offer the following proposal for your consideration.

Screen Control Panel:

Qty.1- Screen Control Panel (SCP) inclusive of the following:

- 72" H x 54" W x 18" D, NEMA 4X 304 stainless-steel, free-standing enclosure with door interlocked flange mounted disconnect, thermostatically controlled ventilation fans, fan/louver hoods and door activated LED panel lighting.
- Input Power: 240VAC, 1-phase, 60 Hz.
- CITEL 240VAC, 1-phase, 60 Hz. incoming power surge protector.
- Allen-Bradley 140G series Main Circuit Breaker (MCB) with interlock hardware for flanged disconnect.
- (2) Socomec fused disconnect switches for screen VFD input protection.
- (2) ABB ACS580, 1HP, 240VAC, 1-Phase Input variable frequency drives with remote keypads.
- (3) Allen-Bradley 140MG Series Motor Circuit Protectors (Spray Pumps, 5HP, 240VAC, 1-Phase).
- (3) Allen-Bradley 100-C23D10 contactors (Spray Pumps, 5HP, 240VAC, 1-Phase)
- (3) Allen-Bradley thermal overload, adjustable trip (Spray Pumps, 5HP, 240VAC, 1-Phase).
- (3) Allen-Bradley electronic remote overload reset (Spray Pumps, 5HP, 240VAC, 1-Phase).
- CyberPower 1000VA Uninterruptible Power Supply (UPS), 120VAC.
- Allen-Bradley branch circuit rated 120VAC control power circuit breakers as required.
- Allen-Bradley, AC fuse disconnects with neon blown fuse indicator, qty. as required.
- Allen-Bradley, DC fuse disconnects with LED blown fuse indicator, qty. as required.
- PULS 240-watt, 24VDC power supply with input and output fuses as required.
- Allen-Bradley CompactLogix 5069-L306ER Programmable Logic Controller (PLC) with all required 5069 series I/O modules and accessories.
- Antaira LNX-0702G-SFP, seven (7) port unmanaged Ethernet switch, (5) TX ports, (2) SFP slots
- Panel mounted Allen-Bradley PanelView Plus 7, 10" color touch screen Operator Interface Unit (OIU).
- Allen-Bradley panel mounted common alarm pilot light, red, 30-mm, push-to-test.
- Floyd Bell panel mounted alarm horn.
- Allen-Bradley panel mounted, alarm silence/reset pushbutton.
- Screen Controls:
  - (1) Allen-Bradley panel mounted 30mm Auto/Fast/Slow screen speed selector switch.
  - (2) Allen-Bradley panel mounted 30mm Hand-Off-Auto (H-O-A) screen control switches.
  - (2) Allen-Bradley panel mounted 30mm screen E-STOP pushbuttons, red.
  - (2) Allen-Bradley panel mounted 30mm, push-to-test, screen running pilot lights, green.
  - (2) Allen-Bradley panel mounted 30mm, push-to-test, screen failure pilot lights, red.

- Spray Pump Controls:
  (1) Allen-Bradley panel mounted 30mm Auto/1-2-3/2-3-1/3-1-2 spray pump sequence selector switch.
  (3) Allen-Bradley panel mounted 30mm Hand-Off-Auto (H-O-A) spray pump control switches.
  (3) Allen-Bradley panel mounted 30mm spray pump E-STOP pushbuttons, red.
  (3) Allen-Bradley panel mounted 30mm, push-to-test, spray pump running pilot lights, green.
  (3) Allen-Bradley panel mounted 30mm, push-to-test, spray pump failure pilot lights, red.
- Screen Spray Valve Controls:
  (2) Allen-Bradley panel mounted 30mm Open-Close-Auto (O-C-A) spray valve control switches.
  (2) Allen-Bradley panel mounted 30mm, push-to-test, spray valve open pilot lights, amber.
  (2) Allen-Bradley panel mounted 30mm, push-to-test, spray valve closed pilot lights, red.
- All required relays, wire, terminal blocks and misc. control panel hardware.
- Completely factory programmed, assembled, wired and tested for proper functionality.
- UL508A Listed and Labeled.

Field Services:

Qty.3- Days onsite service to provide equipment start-up, final calibration, system programming and operator training.

SCADA Integration Services:

Qty.1- Lot engineering services to integrate the new Screen Control Panel into the existing WFP SCADA system.

Documentation:

Qty.1- Electronic Submittal in PDF format, delivered via email.

Qty.1- Electronic Operations & Maintenance Manual in PDF format, USB thumb drive.

Qty.3- Hard Copy Operations & Maintenance Manuals, three-ring binders.

Additions to Screen Control Panel (CDM Project):

Qty.1- Lot additional panel components required for the CDM Kessinger Dam Project.

- Trough Spray Valve Controls:
  (1) Allen-Bradley panel mounted 30mm Open-Close-Auto (O-C-A) trough spray valve control switch.
  (1) Allen-Bradley panel mounted 30mm, push-to-test, trough spray valve open pilot light, amber.
  (1) Allen-Bradley panel mounted 30mm, push-to-test, trough spray valve closed pilot light, red.
- Allen-Bradley 5069-IA16, 120VAC discrete PLC input module, 16-point.
- All required fuses, wire, terminal blocks and misc. control panel hardware.

Qty.1- Lot additional labor required for the CDM Kessinger Dam Project.

- (12) Hours drafting services.
- (16) Hours PLC/OIU programming services.
- (2) Hours factory testing services.
- (8) Shop fabrication services
- (8) Field Services (start-up)

Pricing:

Screen Control Panel (SCP).....	$67,025.00
Field Services.....	$4,200.00
SCADA Integration Services.....	$3,920.00
Additions to Screen Control Panel (CDM Project)	$7,940.00
Total Net Price.....	$83,085.00

Taxes:

Sales or Use Taxes are not included.

Warranty:

All proposed equipment is warranted against system failure due to defects in workmanship and/or materials for a period of twelve (12) months from equipment start-up, not to exceed eighteen (18) months from date of shipment from our factory. This warranty does not cover failures due to human negligence and/or acts of nature.

Not Included:

Equipment installation, field wiring, conduits or piping unless specifically stated above.

Freight:

Prepaid and included to Rome, NY.

Delivery:

Submittals: 4-5 weeks after receipt of order.
Equipment: 12-14 weeks after drawing approvals.

Terms:

95% Net 30 days, 5% retainage allowed, not to exceed 90 days from shipment.

Thank you for the opportunity to provide you with our quotation. Should you have any questions or desire additional information please don't hesitate to contact our office.

Best regards,
AquaLogics Systems, Inc.

Donald W. Ballway

Donald W. Ballway

SCREEN CONTROL PANEL (SCP) I/O MATRIX

P&ID TAG	DESCRIPTION	DI	DO	AI	AO	INDICATE-VIRTUAL	INDICATE PHYSICAL	TOTALIZATION	ALARM-VIRTUAL	ALARM-PHYSICAL	TREND	(H-O-A) -VIRTUAL	(H-O-A)-PHYSICAL	(ETM)-VIRTUAL	(ETM)-PHYSICAL	CONTROL-MODULATE	CONTROL-ON/OFF, OPEN/CLOSE	CONTROL-PID	VIRTUAL SELECT/CONTROL	NOTES
	COMMON ALARM LIGHT		1							X										
	COMMON ALARM HORN		1							X										
	ALARM ACK/RESET PUSHBUTTON	1																		
	UTILITY POWER "ON"	1							X											
	AC SURGE PROTECTOR STATUS	1				X			X											CLOSED = OK, OPEN = TRIPPED
	SPRAY PUMP NO.1 AUTO	1				X						X	X							
	SPRAY PUMP NO.1 CALL		1			X											X			
	SPRAY PUMP NO.1 RUN	1				X	X							X	X					
	SPRAY PUMP NO.1 FAILURE PL		1			X	X													
	SPRAY PUMP NO.1 E-STOP	1				X														PHYSICAL E-STOP PB, INTERLOCK HARD WIRING
	SRRAY PUMP NO.2 AUTO	1				X						X	X							
	SPRAY PUMP NO.2 CALL		1			X											X			
	SPRAY PUMP NO.2 RUN	1				X	X							X	X					
	SPRAY PUMP NO.2 FAILURE PL		1			X	X													
	SPRAY PUMP NO.2 E-STOP	1				X														PHYSICAL E-STOP PB, INTERLOCK HARD WIRING
	SPRAY PUMP NO.3 AUTO (FUTURE)	1				X						X	X							
	SPRAY PUMP NO.3 CALL (FUTURE)		1			X											X			
	SPRAY PUMP NO.3 RUN (FUTURE)	1				X	X							X	X					
	SPRAY PUMP NO.3 FAILURE PL (FUTURE)		1			X	X													
	SPRAY PUMP NO.3 E-STOP (FUTURE)	1				X														PHYSICAL E-STOP PB, INTERLOCK HARD WIRING
	SPRAY PUMP SEQ. SELECTOR = AUTO																			
	SPRAY PUMP SEQ. SELECTOR = 1-2-3	1				X							X							
	SPRAY PUMP SEQ. SELECTOR = 2-3-1	1				X							X							
	SPRAY PUMP SEQ. SELECTOR = 3-1-2	1				X							X							
	SCREEN AUTO-FAST-SLOW SWITCH = AUTO	1				X						X	X							
	SCREEN AUTO-FAST-SLOW SWITCH = FAST	1				X						X	X							
	SCREEN AUTO-FAST-SLOW SWITCH = SLOW	1				X						X	X							
	SCREEN NO.1 AUTO	1				X						X	X							
	SCREEN NO.1 CALL		1			X											X			
	SCREEN NO.1 RUN	1				X	X							X	X					
	SCREEN NO.1 FAILURE PL		1			X	X													
	SCREEN NO.1 E-STOP	1				X														PHYSICAL E-STOP PB, INTERLOCK HARD WIRING
	SCREEN NO.1 SLOW SPEED (VFD RRESET NO.1)		1			X	X													
	SCREEN NO.1 FAST SPEED (VFD PRESET NO.2)		1			X	X													
	SCREEN NO.2 AUTO	1				X						X	X							
	SCREEN NO.2 CALL		1			X											X			
	SCREEN NO.2 RUN	1				X	X							X	X					
	SCREEN NO.2 FAILURE PL		1			X	X													
	SCREEN NO.2 E-STOP	1				X														PHYSICAL E-STOP PB, INTERLOCK HARD WIRING

SCREEN CONTROL PANEL (SCP) I/O MATRIX

P&ID TAG	DESCRIPTION	DI	DO	AI	AO	INDICATE-VIRTUAL	INDICATE PHYSICAL	TOTALIZATION	ALARM-VIRTUAL	ALARM-PHYSICAL	TREND	(H-O-A) -VIRTUAL	(H-O-A)-PHYSICAL	(ETM) -VIRTUAL	(ETM)-PHYSICAL	CONTROL-MODULATE	CONTROL-ON/OFF, OPEN/CLOSE	CONTROL-PID	VIRTUAL SELECT/CONTROL	NOTES
	SCREEN NO.2 SLOW SPEED (VFD PRESET NO.1)		1			X	X													
	SCREEN NO.2 FAST SPEED (VFD PRESET NO.2)		1			X	X													
	SCREEN NO 1 SPRAY WATER PRESSURE SWITCH	1				X			X											
	SCREEN NO.1 SPRAY VALVE AUTO	1				X						X	X							PHYSICAL OPEN-CLOSE-AUTO SWITCH
	SCREEN NO.1 SPRAY VALVE OPEN/CLOSE		1			X											X			
	SCREEN NO.1 SPRAY VALVE OPEN LIMIT SWITCH	1				X	X		X											
	SCREEN NO.1 SPRAY VALVE CLOSED LIMIT SWITCH	1				X	X		X											
	SCREEN NO.2 SPRAY WATER PRESSURE SWITCH	1				X			X											
	SCREEN NO.2 SPRAY VALVE AUTO	1				X						X	X							PHYSICAL OPEN-CLOSE-AUTO SWITCH
	SCREEN NO.2 SPRAY VALVE OPEN/CLOSE		1			X											X			
	SCREEN NO.2 SPRAY VALVE OPEN LIMIT SWITCH	1				X	X		X											
	SCREEN NO.2 SPRAY VALVE CLOSED LIMIT SWITCH	1				X	X		X											
	TOTAL	**32**	**18**	**0**	**0**															

SCP ADDITIONS (CDM PROJECT) I/O MATRIX

P&ID TAG	DESCRIPTION	DI	DO	AI	AO	INDICATE-VIRTUAL	INDICATE PHYSICAL	TOTALIZATION	ALARM-VIRTUAL	ALARM-PHYSICAL	TREND	(H-O-A) -VIRTUAL	(H-O-A)-PHYSICAL	(ETM) -VIRTUAL	(ETM)-PHYSICAL	CONTROL-MODULATE	CONTROL-ON/OFF, OPEN/CLOSE	CONTROL-PID	VIRTUAL SELECT/CONTROL	NOTES
	TROUGH SPRAY VALVE AUTO	1				X						X	X							PHYSICAL OPEN-CLOSE-AUTO SWITCH
	TROUGH SPRAY VALVE OPEN/CLOSE		1			X											X			
	TROUGH SPRAY VALVE OPEN LIMIT SWITCH	1				X			X											
	TROUGH SPRAY VALVE CLOSED LIMIT SWITCH	1				X			X											
	DE-ICING MIXER CP NO.1 POWER "ON"	1				X								X						
	DE-ICING MIXER CP NO.1 RUNNING	1				X								X						
	DE-ICING MIXER CP NO.1 FAULT	1				X			X											
	DE-ICING MIXER CP NO.2 POWER "ON"	1				X								X						
	DE-ICING MIXER CP NO.2 RUNNING	1				X								X						
	DE-ICING MIXER CP NO.2 FAULT	1				X			X											
	AUTOSTRAINER CP POWER "ON"	1				X								X						
	AUTOSTRAINER CP RUNNING	1				X								X						
	AUTOSTRAINER CP FAULT	1				X			X											
	AUTOSTRAINER CP HIGH DIFFERENTIAL PRESSURE	1				X			X											
	AUTOSTRAINER CP BACKWASH VALVE OPEN	1				X														
	AUTOSTRAINER CP BACKWASH VALVE CLOSED	1				X														
	TOTAL	**15**	**1**	**0**	**0**															

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Appendix B
Subsurface Exploration Data

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CME Associates, Inc.

6035 Corporate Drive
East Syracuse, New York 13057
(315) 701-0522
(315) 701-0526 (Fax)

www.cmeassociates.com

Transmittal

July 21, 2023

CDM Smith
11 British American Blvd, Suite 200
Latham, New York 12110

Attn: Ms. Nancy Oram Vigneault, P.E., BCEE, PMP
Email: VigneaultNO@cdmsmith.com

Re: Kessinger Dam
Taberg, New York
CME Project No.: 27990-05

Gentlepeople:

Attached you will find….

Number of Copies	Report Number/Description
1	27990B-01-0723/Subsurface Exploration Data Report

This report was emailed to Ms. Nancy Oram Vigneault at vigneaultno@cdmsmith.com 07/21/23.

Respectfully submitted,
CME Associates, Inc.

S. P. Avila

Sharon Avila
Drilling Division Office Administrator

MS.sa

CME Associates, Inc.

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July 21, 2023

CDM Smith
11 British American Blvd, Suite 200
Latham, New York 12110

Attn: Ms. Nancy Oram Vigneault, P.E., BCEE, PMP
Email: VigneaultNO@cdmsmith.com

Re: Subsurface Exploration Data Report
Kessinger Dam
Taberg, New York
Report No.: 27990B-01-0723

1.0 INTRODUCTION

CME Associates, Inc. (CME) was retained by CDM Smith (Client) to provide subsurface exploration services for the subject project. CME advanced one (1) Test Boring at the project site on June 23, 2023.

The Scope of Basic Services and this report have been provided pursuant to the acceptance of CME Proposal/Agreement No. 05.6814 by Client. This report provides a summary of exploration activities conducted at the subject site.

2.0 EXPLORATION METHODOLOGY

Prior to mobilization, CME contacted UDIG NY to clear public utilities in the vicinity of the work area. The exploration locations were selected in the field by Client on the day of drilling. An Exploration Location Plan, ELP-1, is attached which depicts the approximate as-drilled exploration location.

On June 23, 2023, one (1) Test Boring (B-1) was advanced using a Central Mine Equipment Model 550X, ATV-mounted, rotary exploration drill rig, equipped with 3-¼" I.D. hollow stem augers and drive sampling tools. Soil sampling was conducted using a 140-pound automatic hammer dropping through a distance of 30 inches to drive a 2" O.D. and/or a 3" O.D. split barrel sampler in general conformance with ASTM Standard Practice D1586. Rock sampling was conducted using an NQ-size wireline coring system in general conformance with ASTM Standard Practice D2113. Upon completion, the borehole was backfilled with auger cuttings to match existing grade.

Samples were logged and visually classified in the field by CME's drillers, and a portion of each soil sample was placed and sealed in a glass jar. Rock core samples were placed and secured in a wooden box. The soil and rock classifications were later reviewed by CME Senior Geologist, Mark Schumacher, P.G. The visual soil classifications were made using a modified Burmister Classification System, as practiced by CME, and as generally described in the attached document entitled *General Information & Key to Test Boring Logs*. Subsurface Exploration Log B-1 and Rock Core Photographs are attached.

Following visual classification of the rock samples, the Subsurface Exploration Test Boring Log was provided to Client for review and selection of samples for testing. One sample was selected for rock core compression testing (ASTM D7012 Method C). All laboratory testing was conducted in CME's AASHTO re:source[1] accredited East Syracuse Laboratory, and results are presented in the attached Laboratory Test Summary Report, labeled CME Report Number 27990L-01-0723.

3.0 STANDARD OF CARE

CME endeavored to conduct services identified herein in a manner consistent with that level of care and skill ordinarily exercised by members of the industry currently practicing in the same locality and under similar conditions as this project. No warranty, either expressed or implied, is made or intended by CME's proposal, contract, and written and oral reports, all of which warranties are hereby expressly disclaimed. CME shall not be responsible for the acts or omissions of Client, its contractors, agents and consultants. CME may rely upon information supplied by Client, its contractors, agents and consultants or information available from generally accepted reputable sources, without independent verification, and CME assumes no responsibility for the accuracy thereof.

4.0 CLOSING

CME's services have been provided according to the requirements of the referenced CME Proposal/Agreement. No other representations, expressed or implied, are intended or made with respect to the information provided herein, and including but not limited to, its suitability for use by others.

Respectfully Submitted,
CME Associates, Inc.

Mark J Schumacher, P.G.
Drilling Division Manager

Reviewed By,
CME Associates, Inc.

Bryan Reles, P.G.
Drilling Division Assistant Manager

Attachment Listing:

CME Exploration Location Plan ELP-1 (1 of 1)
Subsurface Exploration Log B-1 (2 of 2)
Rock Core Photographs (4 of 4)
General Information & Key to Test Boring Logs (4 of 4)
Laboratory Test Summary, CME Report Number 27990L-01-0723 (3 of 3)

[1] AASHTO re:source – American Association of State Highway & Transportation Officials (AASHTO) Materials Reference Laboratory, a Federal Agency having jurisdiction to assess laboratory competency according to the Standards of the United States of America. CME East Syracuse accreditation includes testing of Portland Cement Concrete, Aggregate and Soil Materials. www.AASHTOresource.org.

CME Exploration Location Plan, ELP-1

CME Report No.: 27990B-01-0723
Kessinger Dam
Taberg, New York

Legend

- Approximate Soil Boring Location

B-1

N

200 ft

Google Earth

CME Associates, Inc.
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East Syracuse, NY 13057
Phone: 315-701-0522

SUBSURFACE EXPLORATION TEST BORING LOG

Boring No.	**B-1**
Page No.	1 of 2
Report No.	27990B-01-0723
Project Name:	Rome Dam Project (Kessinger Dam), Taberg, New York
Client:	CDM Smith
Location:	See CME Exploration Location Plan, ELP-1
Date Started	06/23/23
Date Finished	06/23/23
Surface Elev.	

METHODS OF INVESTIGATION

Driller:	Beau Fletcher	**Casing:**	3 ¼" ID H.S.A.
Driller:	Chris O'Hara	**Casing Hammer:**	
Inspector:		**Other:**	NQ-Core
Drill Rig:	CME 550X	**Soil Sampler:**	2" OD Split Barrel
Type:	ATV	**Hammer Wt:**	140 lbs.
Rod Size:	AWJ	**Hammer Fall:**	30 in.

GROUNDWATER OBSERVATIONS

Date	Time	Depth (Ft.)	Casing At (Ft.)
06/23/23	While Drilling	None Noted	2.5'
06/23/23	Before Casing Removed	*	2.5'
06/23/23	After Casing Removed	*	out
06/23/23	After Casing Removed	caved @	out

LOG OF BORING SAMPLES / VISUAL CLASSIFICATION OF MATERIAL

Depth Scale (Feet)	Sample No.	Sample Depth (Ft.) From	Sample Depth (Ft.) To	Type / Sample Rec. (in.)	Blows on Sampler Per 6 Inches	Depth of Change (Ft.)	c - coarse m - medium f - fine / and - 35 to 50% / some - 20 to 35% / little - 10 to 20% / trace - 0 to 10%	SPT "N" or RQD %
0							Augered to bedrock with no sampling.	
1								
2						2.5'		
	R1	2.5	7.5	C/60	NQ-Core		Black SHALE, moderately weathered, laminated to thinly bedded, medium soft. Horizontal fractures with iron staining @ 2.6', 3.8', 4.6', 5.5', 6.7' and 7.1'. Broken zone @ 4.6' to 5.2'. Recovery: 60"/60" = 100% RQD: 32"/60" = 53% 17 Pieces, 3" Chips and Fragments *3:32 min/ft, 0 ft - 1 ft, 2:24 min/ft, 1 ft - 3 ft, 3:20 min/ft, 3 ft - 4 ft, 1:52 min/ft, 4 ft - 5 ft, no water loss* *Coring conducted in 5th gear, 2000 rpm, 500 psi down pressure.*	53%
3								
4								
5								
6								
7								
	R2	7.5	12.5	C/60	NQ-Core		Black SHALE, moderately weathered, laminated to thinly bedded, medium soft. Horizontal fractures with iron staining @ 8.3', 8.4', 8.7', 10.8', 11.0', 11.2' and 11.4'. Recovery: 60"/60" = 100% RQD: 34"/60" - 57% 13 Pieces, 4" Chips and Fragments *2:40 min/ft, no water loss* *Coring conducted in 5th gear, 2000 rpm, 500 psi down pressure.*	57%
8								
9								
10								
11								
12								
	R3	12.5	17.5	C/60	NQ-Core		Black SHALE, slightly weathered, thinly to medium bedded, medium hard. Horizontal fractures with iron staining @ 12.9', 13.5' and 15.8'. Recovery: 60"/60" = 100% RQD: 52"/60" = 87% 9 Pieces, 0" Chips and Fragments *2:45 min/ft, no water loss* *Coring conducted in 5th gear, 2000 rpm, 500 psi down pressure.*	87%
13								
14								
15								
16								
17								
	R4	17.5	21.5	C/60	NQ-Core		Black SHALE, slightly weathered, thinly to medium bedded, medium hard. Horizontal fractures with iron staining @ 18.8', 19.2' and 19.9'. Recovery: 60"/60" = 100% RQD: 51"/60" = 85%	85%
18								
19								
20							Continued on Page 2	

SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer + Rod, WR - Weight of Rod

Remarks: *Water added to boring during coring process.

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Phone: 315-701-0522

SUBSURFACE EXPLORATION TEST BORING LOG

Boring No.	B-1
Page No.	2 of 2
Report No.	27990B-01-0723

LOG OF BORING SAMPLES

VISUAL CLASSIFICATION OF MATERIAL

Depth Scale (Feet)	Sample No.	Sample Depth (Ft.) From	Sample Depth (Ft.) To	Type / Sample Rec. (in.)	Blows on Sampler Per 6 Inches	Depth of Change (Ft.)	c - coarse m - medium f - fine	and - 35 to 50% / some - 20 to 35% little - 10 to 20% / trace - 0 to 10%	SPT "N" or RQD %
20							Continued from Page 1		
21							7 Pieces, 1" Chips and Fragments		
22							*2:40 min/ft, no water loss*		
23							*Coring conducted in 5th gear, 2000 rpm, 500 psi down pressure.*		
24							Bottom of Boring @ 21.5'		
25									
26									
27									
28									
29									
30									
31									
32									
33									
34									
35									
36									
37									
38									
39									
40									
41									
42									
43									
44									
45									

SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer + Rod, WR - Weight of Rod

Remarks:

Bedrock Core Photographs
Attachment to CME Report No: 27990B-01-0723

Photograph 1 Boring: B-1 Run 1 Depth 2.5'-7.5' See Photographs Nos. 2 and 3 for detailed views.

Photograph 2 B-1 Run 1 Top Depth 2.5'-5.0'

Photograph 3 B-1 Run 1 Bottom Depth 5.0'-7.5'

Bedrock Core Photographs
Attachment to CME Report No: 27990B-01-0723

Photograph 4 Boring: B-1 Run 2 Depth 7.5'-12.5' See Photographs Nos. 5 and 6 for detailed views.

Photograph 5 B-1 Run 2 Top Depth 7.5'-10.0'

Photograph 6 B-1 Run 2 Bottom Depth 10.0'-12.5'

Bedrock Core Photographs
Attachment to CME Report No: 27990B-01-0723

Photograph 7 Boring: B-1 Run 3 Depth 12.5'-17.5' See Photographs Nos. 8 and 9 for detailed views.

Photograph 8 B-1 Run 3 Top Depth 12.5'-15.0'

Photograph 9 B-1 Run 3 Bottom Depth 15.0'-17.5'

Bedrock Core Photographs
Attachment to CME Report No: 27990B-01-0723

Photograph 10 Boring: B-1 Run 4 Depth 17.5'-22.5' See Photographs Nos. 11 and 12 for detailed views.

Photograph 11 B-1 Run 4 Top Depth 17.5'-20.0'

Photograph 12 B-1 Run 4 Bottom Depth 20.0'-22.5'

GENERAL INFORMATION & KEY TO TEST BORING LOGS

The **Subsurface Exploration – Test Boring Logs** produced **by CME Associates, Inc.** (CME) present observations and mechanical data collected by the CME Drill Crew while at the site, supplemented, at times, by classification of the materials removed from the borings determined through visual identification by technicians in the laboratory. It is cautioned that the materials removed from the borings represent only a fraction of the total volume of the deposits at the site and may not necessarily be representative of the subsurface conditions between adjacent borings or between the sampled intervals. The data presented on the Exploration Logs together with the recovered samples will provide a basis for evaluating the character of the subsurface conditions relative to the proposed construction. The evaluation must consider all the recorded details and their significance relative to each other. Often, analyses of standard boring data indicate the need for additional testing and sampling procedures to more accurately evaluate the subsurface conditions. Any evaluations of the contents of CME's report and the recovered samples must be performed by Licensed Professionals having experience in Soil Mechanics, Geological Sciences and Geotechnical Engineering. The information presented in this Key defines some of the methods, procedures and terms used on the CME Exploration Logs to describe the conditions encountered. Refer to the Log on page 4 for key number.

Key No. **Description**

1. The figures in the **DEPTH SCALE** column define the vertical scale of the Boring Log.

2. The **SAMPLE NO.** is used for identification on the sample containers and in the Laboratory Test Report or Summary.

3. The **SAMPLE DEPTH** column gives the depth range from which a sample was recovered.

4. The **TYPE / SAMPLE RECOVERY** column is used to signify the various types of samples. "SS is Split Spoon, "U" is Undisturbed Tube, and "C" is Rock Core. For soil and rock samples, the recovered length of the sample is recorded in inches.

5. **BLOWS ON SAMPLER** – This column shows the results of the "Standard Penetration Test (SPT) ASTM D1586", recording the number of blows required to drive a 2-inch outside diameter (O.D.) split spoon sampler into the ground beneath the casing. The number of blows required for each six inches of penetration is recorded. The total number of blows required for the 6-inch to 18-inch interval is summarized in the **SPT "N"** column and represents the "Standard Penetration Number". The outside diameter of the sampler, the hammer weight and the length of drop are noted in the **Methods of Investigation** portion of the log. A "WH" or "WR" in this column indicates that the sample spoon advanced a 6-inch interval under the **W**eight of **H**ammer + Rod or **W**eight of **R**od, respectively. If a rock core sample is taken, the core bit size designation is given here.

6. The **DEPTH OF CHANGE** column designates the depth (in feet) that the driller noted a compactness or stratum change. In soft materials or soil strata exhibiting a consistent relative density, it is difficult for the driller to determine the exact change from one stratum to the next. In addition, a grading or gradual change may exist. In such cases the depth noted is approximate or estimated only and may be represented by a dashed line. When continuous split spoon sampling is not employed, or an interval of several feet exists between samplings, the Depth of Change may not be indicated at all.

7. **VISUAL CLASSIFICATION OF MATERIAL** – Soil materials sampled and recovered are described by the Driller or Geotechnical Representative on the original field log. Notes of the Drillers observations are also placed in this column. Recovered samples may also be visually classified by a Geologist, Engineer, or Soil Technician. Visual soil classifications are made using a modified Burmister System as practiced by CME and as generally described in this Key and abbreviated on the Test Boring Log. This modified Burmister System is a type of visual-manual textural classification estimated by the Driller, Geologist, Engineer, or Technician on the basis of weight-fraction of the recovered material and estimated plasticity, among other characteristics. See Table 1 **"Classification of Materials"**. The description of the relative compactness or consistency is based upon the standard penetration number as defined in Table 2. The description of the recovered sample moisture condition is described as dry, moist, wet, or saturated. Water used to advance the boring may affect the moisture content of the recovered sample. Special terms may be used to describe recovered materials in greater detail, such terms are listed in ASTM D653. When sampling gravelly soils with a standard two-inch O.D. Split Spoon, the true percentage of gravel is often not recovered due to the relatively small sampler diameter. The presence of boulders, cobbles, and large gravel is sometimes, but not necessarily, detected by observation of the casing advancement and sampler blows and/or through the "action" of the drill rig, sampler and/or casing as reported by the Driller.

   The description of **Rock** is based upon the recovered rock core. Terms frequently used in the description are included in Tables 3, 4 and 5. The length of core run is defined as length of penetration between retrievals of the core barrel from the bore hole, expressed in inches. The core recovery expresses the length of core recovered from the core barrel per core run, in percent. The size core barrel used is noted in Column 5. An "N" size core, being larger in diameter than "A" size core, often produces better recovery, and is frequently utilized where accurate information regarding the geologic conditions and engineering properties is needed. An estimate of in-situ rock quality is provided by a modified core recovery ratio known as the **"Rock Quality Designation" (RQD)**. This ratio is determined by considering only pieces of core that are at least 4 inches long and are hard and sound. Breaks obviously caused by drilling are ignored. The percentage ratio between the total length of such core recovered and the length of core drilled on a given run is the RQD. Table 4 indicates in-situ rock quality as related to the **RQD**.

8. The **SPT "N"** or **RQD** is given in this column as applicable to the specific sample taken. In Very Compact coarse-grained soils and in Hard fine-grained soils the N-value may be indicated as 50+ or 100+. This typically means that the blow count was achieved prior to driving the sampler the entire 6-inch interval or the sampler refused further penetration. For an "N"size rock core, the RQD is reported here, expressed in percent (%).

9. **GROUNDWATER OBSERVATIONS** and timing noted by the Drill Crew are shown in this section. It is important to realize that the reliability of the water level observations depend upon the soil type (e.g. water does not readily stabilize in a hole through fine grained soils), and that drill water used to advance the boring may have influenced the observations. Groundwater levels typically fluctuate seasonally so those noted on the log are only representative of that exhibited during the period of time noted on the log. One or more perched or trapped water levels may exist in the ground seasonally. All the available resources and data should be evaluated. If definite conclusions cannot be made, it is often prudent to examine the conditions more thoroughly through test pit excavations or through groundwater observation well installations.

10. **METHODS of INVESTIGATION** provides pertinent information regarding the identity of the Drill Crew members, inspector (if any), drill rig make and model, drill rig mount vehicle, casing and type of advancement, soil and rock sampling tools and appurtenances used in the installation of the Test Boring.

TABLE 1 - CLASSIFICATION OF MATERIALS	
GROUP	**COARSE GRAINED SOILS TEXTURAL SIZES**
BOULDERS	larger than 12" diameter
COBBLES	12" diameter to 3" sieve
GRAVEL	3" - coarse - 1" - medium - 1/2" - fine - #4 sieve
SAND	#4 - coarse - #10 - medium - #40 - fine - #200 sieve
GROUP	**FINE GRAINED SOILS SIZE (PLASTICITY*)**
SILT	#200 sieve (0.074mm) to 0.005mm size (see below *)
CLAY	0.005mm size to 0.001 mm size (see below *)
GROUP	**ORGANIC SOILS, PEAT, MUCK, MARL**
ORGANIC	Based on smell, visual-manual and laboratory testing

ABBREVIATIONS	**TERM**	**ESTIMATED PERCENT OF TOTAL SAMPLE BY WEIGHT**
f - fine	and	35 to 50%
m - medium	some	20 to 35%
c - coarse	little	10 to 20%
	trace	0 to 10%

***PLASTICITY DESCRIPTIONS and INDICATOR FIELD TESTS**			
		DRY STRENGTH TEST	
TERM	**PLASTICITY INDEX**	**INDICATION**	**FIELD TEST RESULT**
non-plastic	0 - 3	Very low	falls apart easily
slightly plastic	4 - 15	Slight	easily crushed by fingers
plastic	15 - 30	Medium	difficult to crush
highly plastic	31 or more	High	impossible to crush with fingers
Other Field Tests include: Dilatancy, Thread and Shine Testing			

*TABLE 2 - DESCRIPTION OF SOIL COMPACTNESS OR CONSISTENCY based on SPT "N"**		
Primary Soil Type	**Descriptive Term of Compactness**	**Range of Standard Penetration Resistance (N)**
COARSE GRAINED SOILS	Very Loose	less than 4 blows per foot
(More than half of Material is larger than No. 200 sieve size)	Loose	4 to 10
	Medium Compact	10 to 30
	Compact	30 to 50
	Very Compact	Greater than 50
FINE GRAINED SOILS	**Descriptive Term of Consistency**	**Range of Standard Penetration Resistance (N)**
(More than half of material is smaller than No. 200 sieve size)	Very Soft	less than 2 blows per foot
	Soft	2 to 4
	Medium Stiff	4 to 8
	Stiff	8 to 15
	Very Stiff	15 to 30
	Hard	Greater than 30
*The number of blows of 140-pound weight falling 30 inches to drive a 2-inch O.D., 1-3/8 inch I.D. sampler 12 inches is defined as the Standard Penetration Resistance, designated "N".		

TABLE 3 - ROCK CLASSIFICATION TERMS		
Rock Classification Terms		**Field Test or Meaning of Term**
Hardness	Soft	Scratched by fingernail. Crumbles under firm blows with a geologic pick.
	Medium Soft	Shallow indentations (1 to 3 mm) can be made by firm blows of a geologic pick. Can be peeled with a pocketknife with difficulty.
	Medium Hard	Scratched distinctly by penknife or steel nail. Can't be peeled or scraped with knife.
	Hard	Scratched with difficulty by penknife or steel nail. Requires more than one blow with a geologic hammer to break it
	Very Hard	Cannot be scratched by penknife or steel nail. Breaks only by repeated heavy blows with a geologic hammer.
Bedding (Divisional planes and/or surfaces separating it from layers above and below)	Thinly Laminated Laminated Thinly Bedded Medium Bedded Thickly Bedded Massive	less than 1/8th inch 1/8th to 1 inch 1 inch to 4 inches 4 inches to 12 inches 12 inches to 48 inches greater than 48 inches

TABLE 4 **Relation of Rock Quality Designation (RQD) and in-situ Rock Quality**	
RQD %	**Rock Quality Term Used**
90 to 100	Excellent
75 to 90	Good
50 to 75	Fair
25 to 50	Poor
0 to 25	Very Poor

TABLE 5 – BEDROCK WEATHERING CLASSIFICATION	
Classification	**Diagnostic Features**
Fresh	No visible sign of decomposition or discoloration. Rings under hammer impact.
Slightly Weathered	Slight discoloration inwards from open fractures, otherwise similar to Fresh.
Moderately Weathered	Discoloration throughout. Strength somewhat less than fresh rock but cores cannot be broken by hand or scraped with knife. Texture observed.
Highly Weathered	Most minerals somewhat decomposed. Specimens can be broken by hand with effort or shaved with knife. Core stones present in rock mass. Texture becoming indistinct but fabric preserved.
Completely Weathered	Minerals decomposed to soil, but fabric and structure preserved (e.g. Saprolite). Specimens easily crumbled or penetrated.
Residual Soil	Advanced state of decomposition resulting in plastic soils. Rock fabric and structure completely destroyed. Large volume change.

CME Associates, Inc. 6035 Corporate Drive East Syracuse, NY 13057 Phone: 315-701-0522	SUBSURFACE EXPLORATION TEST BORING LOG	Boring No.	B-2
		Page No.	1 of 1
		Report No.	
Project Name:		Date Started	
Client:		Date Finished	
Location:		Surface Elev.	

METHODS OF INVESTIGATION			
Driller: 10	**Casing:** 10		
Driller:	**Casing Hammer:**		
Inspector:	**Other:**		
Drill Rig:	**Soil Sampler:**		
Type:	**Hammer Wt:**		
Rod Size:	**Hammer Fall:**		

GROUNDWATER OBSERVATIONS			
Date	**Time**	**Depth (Ft.)**	**Casing At (Ft.)**
	While Drilling	9	9
	Before Casing Removed		
	After Casing Removed		
	After Casing Removed		

LOG OF BORING SAMPLES						VISUAL CLASSIFICATION OF MATERIAL		
Depth Scale (Feet)	Sample No.	Sample Depth (Ft.) From	Sample Depth (Ft.) To	Type / Sample Rec. (in.)	Blows on Sampler Per 6 Inches	Depth of Change (Ft.)	c - coarse m - medium f - fine	and - 35 to 50% / some - 20 to 35% little - 10 to 20% / trace - 0 to 10%	SPT "N" or RQD %
1	2	3	3	4	5	6	7		8

SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer + Rod, WR - Weight of Rod

Remarks:

CME Associates, Inc.

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www.cmeassociates.com

LABORATORY TEST SUMMARY
Rome Dam Project (Kessinger Dam), Taberg, NY
CDM Smith
CME Report No.: 27990L-01-0723
July 19, 2023

CME Representatives obtained a rock sample from Test Borings advanced as part of the Subsurface Exploration Program conducted for the subject project. The selected sample was delivered to CME's East Syracuse facility, an AASHTO re:source[1] accredited laboratory for various laboratory testing. The results are presented below:

Sample ID Notations: B - Test Boring, R – Run

I. Rock Core Compression (ASTM D7012 Method C)

A) Testing Conditions:

Tested by:	M.L.	Moisture Condition:	Laboratory air-dry	Equipment:	Forney QC-400-DR
Date of Test:	7/12/23	Load Direction:	Generally perpendicular to laminations		

B) Core Identification and Location:

Core ID	Location	Description
B-1; R-2	7.5' – 8.2'	Black SHALE, moderately weathered, laminated to thinly bedded, medium soft

C) Core Measurements:

Core ID	Core Diameter (inch)	Length (in.)	Length to Diameter	Mass (g)	Density (lb./ft^3)
B-1; R-2	1.98	2.83	1.43	387.93	170

[1]**AASHTO re:source** – American Association of State Highway & Transportation Officials (AASHTO) Materials Reference Laboratory, a Federal Agency having jurisdiction to assess laboratory competency according to the Standards of the United States of America. CME East Syracuse accreditation includes testing of Portland Cement Concrete, Aggregate and Soil Materials. www.AASHTOresource.org.

CME Associates, Inc.

D) Compression Test Results:

Core ID	Specimen Area ($inch^2$)	Total Load (lbs.)	Compressive Strength (psi)	Temperature (°C)	Time to Failure (seconds)	Rate of Loading (psi/sec)
B-1; R-2	3.08	11,500	3730	22	108	35

Note: Sample Length-to-Diameter ratio does not conform to ASTM D7012 and the results reported may differ from the results obtained from a test specimen that meets the requirements of Practice D7012.

If you have any questions regarding this report please contact our office.

Hannah Kloiber
Laboratory Supervisor

Attachment (1 of 1): Rock Core Photographs

CME Associates, Inc.

B-1; R-2 Before Compression (7.5' – 8.2')

B-1; R-2 After Compression (7.5' – 8.2')