RAS PUMP SYSTEM PROCUREMENT

for the

PROVO WATRR CENTER PHASE 1 2020 CONSTRUCTION

PROCUREMENT DOCUMENTS

MARCH 2020

OWNER:

PROVO CITY CORPORATION

ENGINEER:

WATER WORKS ENGINEERS, LLC.

In Partnership with

ARCADIS U.S., INC.
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intended that the Equipment Supplier will design their equipment and coordinate their services to support the installing Contractor in meeting all requirements outlined in these specifications

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INVITATION FOR PROPOSALS

Provo City Corporation ("City" and/or "Owner"), is soliciting competitive sealed proposals to provide a RAS Pump System (the "equipment") for the Project, as defined in the attached specifications. The equipment provided under this procurement package will be installed by a General Contractor ("Contractor") under the Provo Water Advanced Treatment and Resource Recovery (WATRR) Center Phase 1 2020 Construction Project (the "Project"). The successful Proposer under this solicitation shall be the RAS PUMP EQUIPMENT SUPPLIER ("Supplier") of the specified Equipment for this Project, which is to be pre-selected by Owner.

Owner has retained the services of Water Works Engineers, LLC ("Engineer") to perform general design and Engineering services. The Engineer will complete final design in coordination with the Supplier and prepare general construction documents ("Contract Documents") for use by the Contractor to install, commission and test the equipment.

The selected equipment will be pre-selected prior to the preparation of the general construction documents. Owner has retained the services of Alder Construction Company (Contractor) as the Construction Manager/General Contractor to complete procurement and serve as the general contractor for the completion of the project. Contractor shall collect proposals, coordinate proposal evaluation, Contract with the selected supplier and provide contractor support in the completion of submittals, and in the provision, installation, start-up and testing of the goods.

The intent of this solicitation is to obtain proposals and select reliable, high performing equipment that specifically meets the performance requirements and needs of the Owner.

Equipment selection will be based upon overall demonstrated performance to meet or exceed the specified technical and performance requirements, guarantees and warranties, capital cost, O&M cost, experience, and references.

The selected equipment shall be suitable for its intended use within the Provo City wastewater treatment system. Owner will select only Equipment that is manufactured by a qualified, responsible, reputable, proven equipment company with demonstrated ability to provide technical design and repair parts and service throughout the life of the equipment.

The Supplier’s selected equipment will be included as part of the Project as Owner-selected equipment to be purchased, received, installed and commissioned by a General Contractor or the Owner’s designated representative. The selected Supplier shall perform services and provide the equipment in accordance with a Contract to be issued by the Contractor. The Contract will include Special Engineering Services and submittal development to be completed and submitted to the Contractor. In addition, the Contract...
will require that the Supplier enter into a Contract with the Contractor for supply of the equipment and performance of Special Services.

Proposals for the supply of the Provo WATRR Center Phase 1 2020 Construction RAS Pump System addressed to Alder Construction Company will be received until 2:00 p.m., local time, on Thursday April 9th, 2020. Submittals shall be addressed to Eric Alder and either hand delivered at 3939 S 500 W, Salt Lake City, UT 84123 or emailed to ealder@alderconstruction.com. It is the sole responsibility of the Supplier to ensure their proposal is submitted and received by Contractor before the closing date and time. Proposals, modifications, or corrections received after the closing time on the "Due Date" will be considered late and handled in accordance with the Utah Procurement Rules, section R33-3-109. It is the Owner's intent to begin the equipment procurement process immediately if an acceptable Proposal is received.

The Project contemplated consists of the phased construction of a new wastewater reclamation facility, the Provo Water Advanced Treatment and Resource Recovery (WATRR) Center. The Phase 1 2020 Construction will consist of the installation of a new secondary liquid stream process including but not limited to equalization, fine screen facility and membrane bioreactors, with all associated mechanical, electrical, instrumentation and control equipment and appurtenances. The existing coarse screen facility, grit removal system, influent pump station, primary clarifiers, as well as biosolids handling improvements will be utilized during Phase 1 of the Project with their replacement anticipated in future phases.

It is anticipated that the Work shall be completed in all respects by April 30th 2024. The Project will be completed at the existing Provo City Water Reclamation Facility, which will remain operational during the construction of the new facility.

A formal Pre-Proposal conference will not be held for this solicitation. Interested Equipment Suppliers may contact Water Works Engineers to schedule a tour of the facility if desired.

Obtaining Contract Documents: Contract documents may be viewed and downloaded from the Contractor’s website at; www.alderconstruction.com/downloads.

All questions are to be submitted in writing to Eric Alder of Alder Construction at (801)266-8856 or ealder@alderconstruction.com. All questions are to be received in writing no later than March 30th, 2020. Any questions submitted after this date may not be answered.

Each Proposal must be submitted on the prescribed Form.

The successful Proposer may be required to furnish the additional Bond(s) prescribed in the Proposal Documents.
In order to propose and perform public work, the Proposers and Subcontractors shall hold or obtain such licenses as required by State Statutes, and federal and local Laws and Regulations.

For information concerning the proposed Work, contact Cory Christiansen, Water Works Engineers LLC; phone: (385) 630-4064; email: coryc@wwengineers.com, or Eric Alder, Alder Construction Company, phone: (801)266-8856; email: ealder@alderconstruction.com.

The Owner reserves the right to reject any or all Proposals or waive any informality in the Proposing. Proposals may be held by the Owner for a period of 120 days from the date of the opening of the Proposals for the purpose of reviewing the Proposals and investigating the qualifications of the Proposers prior to selecting the equipment.

++ END OF SECTION ++
Invitation for Proposals

Provo City

Provo WATRR Center Phase 1 2020 Construction

RAS Pump System Procurement

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INSTRUCTIONS TO PROPOSERS FOR PROCUREMENT CONTRACT

ARTICLE 1—DEFINED TERMS

1.01 Terms used in these Instructions to Proposers will have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Proposers have the meanings indicated below.

A. Issuing Office—The office from which the Procurement Proposal Documents are to be issued and where the proposal procedures are to be administered.

B. Proposer—one who submits a proposal to the Owner as distinct from a subcontractor, who submits a proposal to a Proposer. The selected proposer shall act as the RAS PUMP SYSTEM EQUIPMENT SUPPLIER “Supplier”, or “Seller”.

C. Base Proposal—includes proposal for all Lump Sum and Unit Price Work.

D. Successful Proposer—Proposer to whom the Owner (on the basis of Owner’s evaluation as hereinafter provided) makes an award.

ARTICLE 2—PROCUREMENT PROPOSAL DOCUMENTS

2.01 Proposer may obtain complete sets of the Procurement Proposal Documents from the Issuing Office. Proposers must obtain a complete set of the Procurement Contract Documents as listed in the Procurement Agreement.

2.02 Proposer must use a complete set of the Procurement Proposal Documents in preparing the proposal; neither Buyer nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Procurement Proposal Documents.

2.03 The Drawings included in the Proposal Documents are reductions of the original tracings. The amount of reduction is indicated by a note or scale bar on the Drawings. Full-size Drawings may be obtained from the Engineer at the cost of reproduction and handling, plus postage for mailing (if mailing is requested). Drawings will only be made available to firms on the Proposal Document Holders List having complete sets of Proposal Documents. No return of full-size Drawings is required, and no refund will be made.

2.04 Buyer and Engineer make copies of Procurement Proposal Documents available on the above terms only for obtaining proposals for furnishing Goods and Special Services, and do not authorize or confer a license for any other use.

ARTICLE 3—QUALIFICATIONS OF PROPOSERS

3.01 Buyer may at any time conduct such investigations as Buyer deems necessary to establish the responsibility, qualifications, and financial ability of Proposer, and after the opening of proposals may require a Proposer to submit documentation of its qualifications, including but not limited to financial data and documentation of previous experience providing goods and services comparable to the specified Goods and Special Services.

3.02 Proposer is to carefully review those portions of the proposal Form requiring Proposer’s representations and certifications.

3.03 Proposer shall submit a qualifications statement with the proposal, including financial data and documentation of previous experience providing comparable goods and
services, to demonstrate Proposer’s qualifications to furnish the specified Goods and Special Services.

ARTICLE 4—SITE VISIT; PRE-PROPOSAL CONFERENCE

4.01 Buyer recommends that Proposer visit the Point of Destination and the site where the Goods are to be installed and Special Services will be provided, taking into account observable local and site conditions that may affect the delivery, cost, progress, and furnishing of the Goods and Special Services. Arrangements for such a visit may be made through Engineer.

4.02 A pre-proposal conference will not be held for this procurement.

4.03 Interpretations or clarifications considered necessary by Engineer in response to questions from proposers will be issued by Addenda delivered to all parties recorded by Engineer as having received the Procurement Proposal Documents. Only answers in the Addenda will be binding. Oral statements, interpretations, and clarifications may not be relied upon in the preparation of a proposal and will not be binding or legally effective.

4.04 It is each Proposer's responsibility, before submitting a Proposal, to:
   A. Examine thoroughly the Proposal Documents and other related data identified in the Proposal Documents (including “technical data” referred to below).
   B. Consider federal, state, and local Laws and Regulations that may affect cost, progress, performance, or furnishing of the Work.
   C. Study and carefully correlate Proposer's knowledge and observations with the Proposal Documents and such other related data.
   D. Promptly notify Engineer of all conflicts, errors, ambiguities, or discrepancies which Proposer has discovered in or between the Proposal Documents and such other related documents.

ARTICLE 5—INTERPRETATIONS AND ADDENDA

5.01 All questions about the meaning or intent of the Procurement Proposal Documents are to be submitted to Buyer in writing at:
   Alder Construction Company
   3939 South 500 West
   Salt Lake City, Utah 84123
   Eric Alder – ealder@alderconstruction.com
   (801) 266-8856

5.02 Interpretations or clarifications considered necessary by Engineer in response to such written questions will be issued by Addenda through Buyers website at www.alderconstruction.com/downloads. Questions received after the deadline for submittal of questions will not be answered. Only answers in the Addenda will be
binding. Oral statements, interpretations, and clarifications may not be relied upon in the preparation of a proposal and will not be binding or legally effective.

5.03 Addenda may be issued to clarify, correct, or change the Procurement Proposal Documents as deemed advisable by Buyer or Engineer.

ARTICLE 6—PROPOSAL SECURITY

6.01 Proposal Security, in the form of a Proposal/Bid Bond may be required at the Owner’s discretion for this Procurement. Cost of Proposal Bond must be provided by the Supplier in the space provided in the Proposal Form.

ARTICLE 7—PROCUREMENT CONTRACT TIMES

7.01 See applicable provisions in the Procurement Agreement.

ARTICLE 8—LIQUIDATED DAMAGES

8.01 Any provisions for liquidated damages, such as those for Seller’s failure to attain a specified Milestone such as the delivery of the Goods, are set forth in the Procurement Agreement.

ARTICLE 9—CONFIDENTIALITY OF PROPOSAL INFORMATION

9.01 Confidential information is information in the proposal, or in documents submitted by Proposer with the proposal or submitted subsequent to the opening of proposals in support of the proposal, that Proposer clearly and prominently labels in writing to be a trade secret, proprietary, or confidential. Proposals will be opened and accompanying documents, if any, will be maintained in a manner that endeavors to avoid disclosing confidential information to third parties, to the extent allowed by Laws and Regulations.

9.02 Proposer shall clearly and prominently mark confidential information with the word “CONFIDENTIAL” on each page or sheet or on the cover of bound documents. Place “CONFIDENTIAL” stamps or watermarks so that they do not obscure any of the required information on the document, either in the original or in a way that would obscure any of the required information in a photocopy of the document.

9.03 If Buyer is requested to disclose confidential information, becomes legally compelled to disclose confidential information, or is required by a regulatory body, governing agency, or controlling authority to disclose confidential information, or make any other disclosure that is prohibited or otherwise constrained by these Procurement Proposal Requirements, Buyer will provide Proposer with prompt notice so Proposer may seek a protective order or other appropriate remedy. Proposer will be solely responsible for submitting to the regulatory body, governing agency, or controlling authority any arguments, briefs, memoranda, motions, authorities, or other information in opposition to disclosure.

9.04 Buyer’s obligations with respect to confidential information are nullified by the following exceptions:

A. Confidential information becomes a part of the public domain through publication or otherwise, through no fault of the Buyer;

B. Buyer can demonstrate through suitable documentation that the confidential information was already in the Buyer’s possession, and not previously marked as confidential, or was otherwise publicly available prior to the date of proposal submittal;
C. The confidential information is subsequently and independently disclosed to the Buyer by a third party who has a lawful right to disclose such information;

D. Buyer concludes in good faith that the information is not confidential, or that disclosure is required or justified; or

E. Buyer is required to disclose the confidential information by court order or by applicable Laws and Regulations.

9.05 Notwithstanding any other provision of the Procurement Proposal Documents, it is stipulated and agreed that by accepting a proposal, Buyer has not and does not waive its legal immunity (if any) from suit or liability.

ARTICLE 10—“OR-EQUAL” ITEMS

10.01 The Procurement Contract, if awarded, will be based on material and equipment specified in the Procurement Proposal Documents without consideration of possible “or-equal” items. Whenever it is specified or described in the Procurement Proposal Documents that an “or-equal” item of material or equipment may be furnished or used by Supplier if acceptable to Engineer, application for such acceptance will not be considered by Engineer until after the Effective Date of the Procurement Contract. The procedure for submittal of any such application by Supplier and consideration by Engineer is set forth in the General Conditions and may be supplemented in the Procurement Specifications.

ARTICLE 11—PREPARATION OF PROPOSAL

11.01 The Proposal Form is included with the Procurement Proposal Documents. Additional copies of Procurement Proposal Documents may be obtained from the Issuing Office.

11.02 All blanks on the Proposal Form must be completed and the Proposal Form must be signed by an individual authorized to act on behalf of the Proposer. Alterations must be initialed by an individual authorized to act on behalf of the Proposer. A proposal price must be indicated for each item in the Proposal Form. In the case of optional alternates, the words “No Proposal” may be entered.

11.03 Proposer must acknowledge all Addenda by filling in the number and date of each Addendum in the Proposal Form and sign where indicated to verify that the Addenda were received. A proposal that does not acknowledge receipt of all Addenda may be considered non-responsive.

11.04 Proposal Form

A. The Proposal Form and attachments are included with the Proposal Documents. No substitution of forms will be allowed.

B. All blanks on the Form must be completed by typing or printing with black ink. All price information shall be shown in both words and figures where required. No changes shall be made in the phraseology of the forms.

C. Proposals by corporations must 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 must be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation must be shown above the signature.

D. Proposals by partnerships must be executed in the partnership name and signed by a partner, whose title must appear on the line below the signature.

E. All names must be typed or printed on the line with the signature.
F. The Proposal shall contain an acknowledgement of receipt of all Addenda (the numbers of which must be filled in on the Proposal Form).

G. The address and telephone number for communications regarding the Proposal must be shown.

11.05 Proposer shall:

A. Sign the Proposal Form as indicated in the Proposal Form.

B. Include evidence of authority to sign.

C. Provide information on the individual to be contacted for any communications regarding the proposal.

D. Provide evidence of the Proposer’s authority and qualification to do business in the locality of the Project, to the extent required, or indicate the ability to obtain such authority and qualification prior to award of the Procurement Contract.

11.06 The responsibilities of each Proposer submitting a proposal are described in the Proposer’s representations and certifications set forth in Article 6 of the Proposal Form.

11.07 Required Proposal Content

A. When preparing proposals, submit responses and information in accordance with all the following requested proposal content. Submit proposal criteria responses in the same order as listed below. Clearly separate and delineate the sections. Provide your responses clearly and provide all requested materials and attachments.

B. Proposals will be evaluated and selected according to responses and information submitted to meet requirements specified herein.

C. The Proposal shall be transmitted electronically or hard copy to the Buyer. All pages shall be 8½” x 11” paper size using 11-point Arial font unless noted otherwise. The Technical Proposal shall be arranged and include content as described below:

1. Cover Letter
   a. Address cover letter to:
      Rebecca Andrus
      Project Manager
      Provo City Public Works Department
      1377 South 350 East
      Provo, UT 84606
   b. Identify any and all addenda.
   c. Do not exceed one (1) page.

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3. Executive Summary
   a. The executive summary shall include a brief description of the approach to the work, understanding of the Project goals and objectives, and understanding of any potential problems or concerns associated with the Project.
   b. It shall also briefly summarize the other sections of the Technical Proposal.
   c. Do NOT present information in the executive summary that is not presented elsewhere in the Technical Proposal.
   d. Do not exceed two (2) pages.

4. Section 1: Company Information
a. Provide a brief history of the company including name and address of PROPOSER and authorized agent with Proposal Form for Procurement Contract.
b. Provide the most recent audited financial statement and bonding capacity.
c. Experience of company in manufacture and provision of return activated sludge (RAS) Pump System Equipment, including the number of years the company has been manufacturing equipment in the field and number of years the proposed system (model) has been in production.
d. Describe the commissioning and ongoing support services available to Owner and identify which services are included in the Proposal. Identify the ability to provide local service or nearest service center to the Provo WATRR Center. Identify the experience, expertise and responsiveness of local equipment representative with respect to startup, testing, commissioning, trial period, and warranty.
e. Do not exceed five (5) pages, excluding resumes.

5. Section 2: Technical Information

a. Technical specifications are provided that cover both the requirements for the supplied equipment and the activities of the installing Contractor. It is intended that the Supplier meet all technical requirements for provision of the equipment and services associated with the provision of their particular equipment/system. Installation requirements and other information is included in these documents to indicate to the Supplier the Owner’s intent concerning the installation, testing, commissioning and other activities that will be required to be conducted. It is intended that the Supplier will design their equipment and coordinate their services to support the installing Contractor in meeting all requirements outlined in these specifications.

b. Technical Information shall be provided and Lump Sum Proposal Pricing Shall be provided for the following RAS Pump System as described in Section 01 33 16

c. In data table provided in the proposal form, provide head corresponding to minimum and maximum static head, hydraulic efficiency corresponding to minimum and maximum static head, shaft power and required Net Positive Suction Head (NPSH_r), discharge tube and discharge flange diameter required to meet the system design requirements in Section 01 33 16, Design Data.

d. For RAS Pump System:

1) Include all required submittal items in accordance with Section 01 33 00, Submittal Procedures. Submittal items shall include items listed within the “Submittals” paragraph of all technical specifications applicable to the proposed RAS Pump System, including completed tables therein.

2) Describe the system operation for all sequences included with the system and what intervention is needed to initiate each operating sequence.

3) Include a detailed scope of supply and services. Include quantities, manufacturer make/model, materials of construction, etc.

e. Provide the total number of RAS pumps required per treatment train and all three treatment trains required to meet the system design requirements in Section 01 33 16, Design Data.
f. Provide pump and motor performance curves for the specified pump.

g. Recommend if Formed Suction Inlet (FSI) is required for satisfactory performance of the specified pump with detailed reasoning for requirement of FSI.

h. Minimum recommended submergence above bell inlet, minimum and maximum recommended depth below bell inlet from floor, for the specified pump, with and without FSI.

i. Include a detailed list of spare parts included with brief description of ongoing maintenance activities required while not in use.

j. Provide a detailed description of system operation and maintenance procedures complete with frequency and duration of required procedures. The following factors will be evaluated in assessing system operability:
   1) Quantity of RAS pumps.
   2) Procedures that can be easily understood and completed.
   3) Evaluation of the time and effort required to perform the prescribed preventative maintenance.
   4) Evaluation of the space and resources required to perform maintenance.
   5) Ease of access to equipment for plant personnel to perform routine tasks without disrupting plant operations and without placing the personnel in harm’s way.
   6) Required spare parts and the availability of replacement parts including the time required in shipping and delivery of parts when ordered.
   7) Submit a detailed standard procedure for the complete removal of Equipment from service, inspection check list, maintenance check list, and removal of system components; and for the placement of equipment back into service.
   8) Include detailed dimensional drawings including plans and sections for the equipment with support elements necessary to evaluate the construction and installation of the system. Include notations to more clearly define scope and unique installation features. Include drawings in Appendix A.
   9) Include cut sheets for equipment included in the scope of supply. Provide cut sheets in Appendix B.

k. There is no page limit for this section; however, proposer is advised to utilize the minimum number of pages to provide the requested content.

6. Exceptions
   a. Each Proposer shall attach a list, with its Proposal, of all exceptions to the specification and bid documents. If the Proposer takes no exceptions, Proposer shall indicate on the proposal that no exceptions are taken. Proposals that do not comply with this requirement will be considered irregular and may be rejected at Owner's discretion. In case of exception not described in the proposal, the requirements of the specification and bid documents shall govern.
   b. If the Proposer takes exception, all such exceptions shall be specific in nature and carefully referenced to the applicable page number, article
number, and article title of the specifications and documents. If the Proposer proposes deletion of language and substitution of revised language, such deletion and substitution shall be carefully presented by typing complete paragraphs or articles of the original specification language and incorporating the substitute language. Proposed deletions shall be set off by brackets, thus: [delete this language], and proposed substitute language shall be indicated by underlining, thus: substitute this language. Exceptions that are general, which make reference to the Proposer's standard terms and conditions, or which make reference to the Proposer's descriptive information as a whole will not be acceptable. Proposals that do not comply with these requirements for the presentation of exceptions will not be acceptable and may be rejected.

c. If a proposal includes express or implied exceptions that are not listed as required, the requirements of the specifications and documents shall govern. The Proposer shall not alter any part of the specifications and documents in any way, except by stating his exceptions.

7. Section 3: Experience & Reference Information
   a. Provide an overview of company experience with RAS Pump Systems.
   b. Provide a summary of five (5) reference installations in sanitary sewage facilities that have been in operation for at least five years (5) years in similar applications and similar wastewater treatment plant capacity. Include pump capacity, head, efficiency, horsepower, installation configuration, and required maintenance. Provide contact information for each facility.
   c. Do not exceed one (1) page for each reference and eight (8) pages total.

8. Disadvantaged Business Enterprises (DBEs)
   a. Include a confirmation that Supplier will adhere to all state revolving fund (SRF) requirements including making the following good faith efforts whenever procuring EQUIPMENT, services and supplies, even if it has achieved its fair share objectives:
      1) Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities. For Indian Tribal, State and Local Government recipients, this will include placing DBEs on solicitation lists and soliciting them whenever they are potential sources.
      2) Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitations for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.
      3) Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs. For Indian Tribal, State and local Government recipients, this will include dividing total requirements when economically feasible into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process.
      4) Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.
      5) Use the services and assistance of the SBA and the Minority Business Development Agency of the Department of Commerce.

9. American Iron and Steel Requirement
   a. Include confirmation that the Supplier 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 Supplier will provide any further verified information, certification or assurance of compliance with the American Iron and Steel Requirement or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Owner or the State.

10. Warranties
   a. Include a confirmation that Supplier will adhere to all warranty provisions required as outlined in these proposal documents.
   b. If necessary, include any exceptions or clarifications to the warranty terms included in the RFP.
   c. Include any Warranties offered above those specified, and time at which warranties become effective.

11. Commercial Terms
   a. Include a confirmation that Supplier will adhere to all commercial terms included in the RFP.
   b. If necessary, include any exceptions or clarifications to the commercial terms included in the RFP.

12. Proposal Form
    a. Include the completed Proposal Form

13. Appendix A: Dimensional Drawings
    a. Drawings may be 11x17.
    b. Drawings in Imperial Units.

14. Appendix B: Equipment Cut Sheets
    a. Include cut sheets for equipment included in the scope of supply. Please remove unnecessary pages to keep page count to a minimum.
    b. Technical information in Imperial Units.

11.08 Equipment Specifications
A. Owner has certain expectations regarding its RAS PUMP SYSTEM EQUIPMENT needs that are reflected in the Technical Specifications. Alternates to these expectations will be considered as proposals are evaluated.
B. The following equipment specifications are given to provide a design, sizing, and performance basis for the required equipment. Submittal of a proposal indicates the Proposer’s representation that proposed equipment meets, or exceeds, all requirements listed in the Volume 2 – Technical Specifications including but not limited to the following:
1. Division 05, Metals
2. Division 43, Process Gas and Liquid Handling, Purification, and Storage Equipment

ARTICLE 12—BASIS OF PROPOSAL; COMPARISON OF PROPOSALS

12.01 Evaluated Proposal
   A. Award of the Contract will be made in accordance with the Owner’s evaluation of the proposals received to determine the best value in meeting the Owner’s project requirements.
   B. If the contract is to be awarded, Owner will give Successful Proposer a Notice of Award within 90 days after the day of the Proposal opening.
   C. In evaluating Proposals, Owner will consider the qualifications of Proposers, whether or not the Proposals comply with the prescribed requirements, and such proposal items, alternates, unit prices, and other data, as may be requested in

EJCDC® P-200, Instructions to Proposers for Procurement Contract.  
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and American Society of Civil Engineers. All rights reserved.  
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the Proposal Form or prior to the Notice of Award. Owner shall have the right to accept neither, either, or both proposal items, and applicable alternates in any order or combination unless otherwise provided in the Proposal Documents.

D. Owner may consider the qualifications and experience of Subcontractors, Suppliers, and other persons and organizations proposed for those portions of the Work for which the identity was required. Owner also may consider the operating costs, maintenance requirements, performance data, and guarantees of major items of materials and equipment proposed for incorporation in the Work when such data are required to be submitted prior to the Notice of Award.

E. Owner may conduct such investigations as Owner deems necessary to assist in Proposal evaluation and to establish responsibility, qualifications, and financial ability of Proposers, proposed Subcontractors, Suppliers, and other persons and organizations to execute Work in accordance with the Proposal Documents to Owner's satisfaction within the prescribed time.

ARTICLE 13—SUBMITTAL OF PROPOSAL

13.01 Proposer shall refer to the advertisement and submittal information for specific identification of the date and time proposals are to be submitted.

13.02 Proposer must submit one (1) complete electronic copy of the completed Proposal, the Proposal Security and the other documents required to be submitted under the terms of Article 4 of the Proposal Form.

13.03 A proposal must be submitted no later than the date and time prescribed and at the place indicated in the advertisement or invitation to propose.

13.04 Only one Proposal from any individual, firm, partnership, or corporation, under the same or different names, will be considered. Should it appear to Owner that any Proposer is interested in more than one Proposal for Work contemplated, all Proposals in which such Proposer is interested will be rejected.

ARTICLE 14—MODIFICATION OR WITHDRAWAL OF PROPOSAL

14.01 A proposal may be modified or withdrawn by a document duly signed in the same manner that a proposal must be signed and delivered to the place where proposals are to be submitted prior to the date and time for the opening of proposals.

14.02 If, within 24 hours after proposals are opened, any Proposer files a duly signed written notice with Buyer and promptly thereafter demonstrates to the reasonable satisfaction
of Buyer that there was a material and substantial mistake in the preparation of its proposal, that Proposer may withdraw its proposal.

ARTICLE 15—OPENING OF PROPOSALS

15.01 Proposals will be opened and evaluated privately.

ARTICLE 16—PROPOSALS TO REMAIN SUBJECT TO ACCEPTANCE

16.01 All proposals will remain subject to acceptance for the period stated in the Proposal Form, but Buyer may, in its sole discretion, release any proposal and return the proposal security prior to the end of this period.

ARTICLE 17—EVALUATION OF PROPOSALS AND AWARD OF PROCUREMENT CONTRACT

17.01 Buyer reserves the right to reject any and all proposals, without limitation, including nonconforming, nonresponsive, unbalanced, or conditional proposals. Buyer also reserves the right to waive all informalities not involving price, time, or changes in the Goods and Special Services.

17.02 Buyer will reject the proposal of any Proposer that Buyer finds, after reasonable inquiry and evaluation to not be responsible.

17.03 In evaluating proposals, Buyer will consider whether the proposals comply with the prescribed requirements, and such alternates, unit prices, and other data as may be requested in the Proposal Form or may be requested from Proposers prior to a Notice of Award.

17.04 If Buyer awards the Procurement Contract, such award will be to the responsible Proposer submitting the best value proposal as determined by the Owner and Engineer.

17.05 If, at the time this Contract is to be awarded, the total of the lowest acceptable Proposal exceeds the funds then estimated by Owner as available, Owner may reject all Proposals or take such other action as best serves Owner’s interests.

17.06 If the Contract is to be awarded, it will be awarded to Proposer whose evaluation by Owner indicates to Owner that the award will be in the best interests of Owner.

17.07 In the event of failure of the Successful Proposer to sign the Agreement and provide an acceptable Performance Bond, insurance certificate(s), and other required documents, Owner may award the Contract to the next most responsive, responsible Proposer.

ARTICLE 18—BONDS AND INSURANCE

18.01 Article 5 of the General Conditions and Article 5 of the Supplementary Conditions set forth Buyer’s requirements as to performance bond and insurance. When the Successful Proposer delivers the signed Procurement Agreement to Buyer, it must be accompanied by such bonds and acceptable evidence of insurance.

ARTICLE 19—SIGNING OF PROCUREMENT AGREEMENT

19.01 When Buyer issues a Notice of Award to the Successful Proposer, it will be accompanied by the unsigned counterparts of the Procurement Agreement along with the other Procurement Contract Documents identified in the Procurement Agreement. Within 15 days thereafter, Successful Proposer must execute and deliver the required number of counterparts of the Procurement Agreement and any bonds and insurance.
documentation required to be delivered by the Procurement Contract Documents to Buyer. Within 10 days thereafter, Buyer will deliver one fully executed counterpart of the Procurement Agreement to Successful Proposer, together with printed and electronic copies of the Procurement Contract Documents as stated in Paragraph 2.02 of the General Conditions.

ARTICLE 20—SALES AND USE TAXES

20.01 All taxes, as required by the laws and statutes of the State of Utah and its political subdivisions, shall be paid by the Supplier. Prices quoted in the Proposal Form shall include all taxes. The local sales tax at time of this procurement is 7.25%.

ARTICLE 21—STATE REVOLVING FUND (SRF) REQUIREMENTS

21.01 The work under these proposal documents is to be paid for with the Utah State Revolving Fund (SRF) administered by the Division of Water Quality (DWQ) Board and must meet the requirements for this funding. These requirements include, but are not limited to, title VI of the Clean Water Act of 1987, the Single Audit Act of 1996, the Utah Wastewater Loan Program Policies and Guidelines, the Utah Local Government Bonding Act, the Utah Money Management Act, the Utah Procurement Code and the State of Utah Legal Compliance Audit Guide. These requirements include but are not limited to Disadvantaged Business Enterprises (DBEs), Federal Davis-Bacon Act prevailing wages, compliance with American Iron & Steel (AIS) provisions, Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – Lower Tier Covered Transactions, and Standard Federal Equal Employment Opportunity Construction Contract Specifications as shown in Exhibit A.

ARTICLE 22—STATUS VERIFICATION SYSTEM

22.01 All Proposers are reminded of the requirements of Utah code annotated 63G-11-103 that Provo City is prohibited from entering into any contract for the performance of services with any successful Proposer who does not provide Owner with proof of registration and participation in a federally approved immigration status verification system. Failure to provide the required proof may be grounds for rejection of a successful Proposer's Proposal.

ARTICLE 23—PROTESTS

23.01 Any party with a direct financial interest adversely affected by any alleged Proposal irregularity at the Proposal opening may file a protest with Owner, where such protest is based on alleged violations of federal, state, or local law or ordinance, or alleged Proposal irregularity. A protest must:
A. be written
B. state the specific basis of the appeal.
C. request a determination of the protest issue, and
D. be filed no later than 72 hours before the scheduled Award of Contract by Owner. Any protest filed after this time will not be considered.

23.02 The party filing the protest must concurrently transmit a copy of all protest documents and any attachments to all other parties with a direct financial interest which may be adversely affected by the determination of the protest appeal.

23.03 Owner will review the protest and make a determination.
# PROPOSAL FORM FOR PROCUREMENT CONTRACT

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PROPOSAL FORM FOR PROCUREMENT CONTRACT

The terms used in this Proposal with initial capital letters have the meanings stated in the Instructions to Proposers, the General Conditions, and the Supplementary Conditions.

ARTICLE 1—BUYER AND PROPOSER

1.01 This Proposal is submitted to:

Alder Construction Company
3939 S. 500 W.
Salt Lake City, Utah 84123

1.02 The undersigned Proposer proposes and agrees, if this Proposal is accepted, to enter into a Procurement Contract with Buyer in the form included in the Procurement Proposal Documents, and to furnish the Goods and Special Services as specified or indicated in the Procurement Proposal Documents, for the prices and within the times indicated in this Proposal, and in accordance with the other terms and conditions of the Procurement Documents.

ARTICLE 2—BASIS OF PROPOSAL

2.01 Lump Sum Proposals

A. Proposer will furnish the Goods and Services in accordance with the Procurement Contract Documents for the following Procurement Contract Price(s):
1. Lump Sum Proposal Price (Base Proposal and Alternates)

<table>
<thead>
<tr>
<th>Proposal Item</th>
<th>Description</th>
<th>Lump Sum PROPOSAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1</td>
<td>Special Engineering Services</td>
<td>$</td>
</tr>
<tr>
<td>1-2</td>
<td>RAS Pump System Equipment and Warranty</td>
<td>$</td>
</tr>
<tr>
<td>1-3</td>
<td>Discharge tube and Warranty</td>
<td>$</td>
</tr>
<tr>
<td>1-4</td>
<td>Spare Parts and Special Tools</td>
<td>$</td>
</tr>
<tr>
<td>1-5</td>
<td>Freight</td>
<td>$</td>
</tr>
<tr>
<td>1-6</td>
<td>Special Support Services</td>
<td>$</td>
</tr>
<tr>
<td>1-7</td>
<td>Approved Operation and Maintenance Manuals</td>
<td>$</td>
</tr>
<tr>
<td>1-8</td>
<td>Taxes and Duties</td>
<td>$</td>
</tr>
<tr>
<td>1-9</td>
<td>Total Lump Sum Price</td>
<td>$ (words)</td>
</tr>
</tbody>
</table>

**PROPOSAL ALTERNATE ADDER**

<table>
<thead>
<tr>
<th>Proposal Item</th>
<th>Description</th>
<th>Lump Sum PROPOSAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-10</td>
<td>Optional Performance Bond</td>
<td>$</td>
</tr>
<tr>
<td>1-11</td>
<td>Formed Suction Inlet (FSI)</td>
<td>$</td>
</tr>
<tr>
<td>1-12</td>
<td>Computational Fluid Dynamics (CFD) analysis and testing</td>
<td>$</td>
</tr>
</tbody>
</table>

**1-13 OPTIONAL DEDUCTIVE OR ADDITIVE ALTERNATES**

<table>
<thead>
<tr>
<th>Description of Alternate</th>
<th>Deductive or Additive Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>$</td>
</tr>
<tr>
<td>B</td>
<td>$</td>
</tr>
<tr>
<td>C</td>
<td>$</td>
</tr>
<tr>
<td>D</td>
<td>$</td>
</tr>
</tbody>
</table>

a. Explanation of Proposal Items in Table above

1) (1-1) The cost of services provided by the RAS Pump System Equipment Supplier (Supplier) for shop drawing preparation in accordance with Agreement between Buyer and Seller for Procurement Contract; Section 01 11 00, Summary of Work; and Section 01 33 00, Submittal Procedures.
2) (1-2) The lump sum price for the RAS pump system equipment as defined herein, including all RAS pump equipment and housings, motors to create a full and complete system. The optional adder Formed Suction Inlet (FSI) cost is to be included in Proposal Alternate Adder (1-9). The optional adder Computational Fluid Dynamics (CFD) analysis and testing cost is to be included in Proposal Alternate Adder (1-10).

3) (1-3) The lump sum price for discharge tube for installation of the RAS Pump.

4) (1-4) The cost to provide the spare parts and special tools identified in each of the listed component specifications. Delivery of spare parts and tools are to be crated and shipped separately from primary components prior to system commissioning. Spare parts will not be accepted with initial equipment delivery.

5) (1-5) The cost of freight to deliver the RAS pump system equipment to the job site.

6) (1-6) The cost of services in support of the installation, startup, commissioning, field-testing, and training as defined in Section 01 79 00 Testing Training Startup.

7) (1-7) The cost to prepare and submit preliminary and final operation and maintenance manuals in accordance with Specification Section 01 78 23, Installation, Operation, and Maintenance Manuals. Payment for this item will not occur until manuals are approved by Engineer.

8) (1-8) Taxes and duties required by the Federal, State of Utah and Local entities on the equipment supplied.

9) (1-9) The Total Proposal Price represents the contract amount to be paid by the Owner as the sum of Proposal items 1-1 through 1-8.

10) (1-10) The Supplier shall include the cost for provision of a performance bond for the RAS Pump System. The bond may be included at the discretion of the Owner.

11) (1-11) Additional price to supply FSI.

12) (1-12) Additional price to provide CFD analysis and testing.

13) (1-13) Supplier is encouraged to provide optional deductive or additive alternates, including any requirements of their system differing from the specified design. If optional alternates are recommended, provide a brief description and associated deductive or additive cost in the space provided in the Proposal Form and provide a thorough explanation of each alternate within the proposal document.

2. Discharge Tube information and Pump Performance
   a. Discharge tube diameter (inches)
   b. Discharge tube’s discharge flange diameter (inches)
   c. Provide pump performance provided in the table below and corresponding calculations.
<table>
<thead>
<tr>
<th>Duty Point</th>
<th>Flow (gpm)</th>
<th>Head corresponding to</th>
<th>% Hydraulic Efficiency corresponding to</th>
<th>Shaft power corresponding to maximum static head (Hp)</th>
<th>NPSH_a corresponding to</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>minimum static head (ft)</td>
<td>maximum static head (ft)</td>
<td>maximum static head</td>
<td>minimum static head</td>
<td>minimum static head (ft)</td>
</tr>
<tr>
<td>Duty Point</td>
<td>6,250</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd Operating Point</td>
<td>9,950</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd Operating Point</td>
<td>3,850</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum Possible flow of the Pump</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**ARTICLE 3—TIME OF COMPLETION**

3.01 Proposer agrees that the furnishing of Goods and Special Services will conform to the schedule of Procurement Contract Times set forth in Article 2 of the Procurement Agreement.

3.02 Proposer accepts the provisions of the Procurement Agreement as to liquidated damages.

**ARTICLE 4—ATTACHMENTS TO THIS PROPOSAL**

4.01 The following documents are attached to and made a condition of this Proposal:

   A. Evidence of authority to do business in the State of Utah; or a written covenant to obtain such authority within the time for acceptance of Proposals.

   B. Required Proposal Documents as outlined in Article 11 of the Instructions to Proposers.

**ARTICLE 5—PROPOSER’S ACKNOWLEDGMENTS**

5.01 Proposer accepts all terms and conditions of the Instructions to Proposers. This Proposal will remain subject to acceptance for 120 days after the Proposal opening, or for such longer period that Proposer may agree to in writing upon request of Buyer.

5.02 Proposer has examined and carefully studied the Procurement Proposal Documents, the related data identified in the Procurement Proposal Documents, and the following Addenda, receipt of which is hereby acknowledged:

<table>
<thead>
<tr>
<th>Addendum No.</th>
<th>Addendum Date</th>
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</tbody>
</table>
ARTICLE 6—PROPOSER’S REPRESENTATIONS AND CERTIFICATIONS

6.01 Proposer’s Representations

A. In submitting this Proposal, Proposer represents that:

1. Proposer has examined and carefully studied the Procurement Contract Documents.

2. If in Proposer’s judgment, any observable local or site conditions may affect the delivery, cost, progress, or furnishing of the Goods and Special Services, then Proposer has visited the Point of Destination and site where the Goods are to be installed or Special Services will be provided (as applicable) and become familiar with and is satisfied as to the observable local and site conditions that may affect delivery, cost, progress, and furnishing of the Goods and Special Services.

3. Proposer is familiar with and is satisfied as to all Laws and Regulations that may affect the cost, progress, and performance of Seller's obligations under the Procurement Contract.

4. Proposer has carefully studied, considered, and correlated the information known to Proposer with respect to the effect of such information on the cost, progress, and performance of Seller's obligations under the Procurement Contract.

5. Proposer has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Proposer has discovered in the Procurement Contract Documents, and the written resolution (if any) thereof by Engineer is acceptable to Proposer.

6. The Procurement Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance of Seller's obligations under the Procurement Contract.

7. The submission of a Proposal will constitute an incontrovertible representation by Proposer that Proposer has complied with every requirement of the Proposal Requirements, that without exception the Proposal (including all Proposal prices) is premised upon furnishing the Goods and Special Services as required by the Procurement Contract Documents.

6.02 Proposer’s Certifications

A. Proposer certifies that:

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

2. Proposer has not directly or indirectly induced or solicited any other Proposer to submit a false or sham Proposal;

3. Proposer has not solicited or induced any individual or entity to refrain from proposing; and

4. Proposer has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Procurement Contract. For the purposes of this Paragraph 6.02.A.4:

5. “corrupt practice” means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the proposal process;
a. “fraudulent practice” means an intentional misrepresentation of facts made (a) to influence the proposal process to the detriment of Buyer, (b) to establish proposal prices at artificial non-competitive levels, or (c) to deprive Buyer of the benefits of free and open competition;

b. “collusive practice” means a scheme or arrangement between two or more Proposers, with or without the knowledge of Buyer, a purpose of which is to establish proposal prices at artificial, non-competitive levels; and

c. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the proposal process.
This Proposal is offered by:

Proposer:

_____________________________________________________________________
(typed or printed name of organization)

By: ___________________________________________________________________
(individual’s signature)

Date: ___________________________________________________________________
(date signed)

Name: ___________________________________________________________________
(typed or printed)

Title: ___________________________________________________________________
(typed or printed)

(If Proposer is a corporation, a partnership, or a joint venture, attach evidence of authority
Attest: ___________________________________________________________________
(individual’s signature)

Title: ___________________________________________________________________
(typed or printed)

Address for giving notices:

_____________________________________________________________________

Designated Representative:

Name: ___________________________________________________________________
(typed or printed)

Title: ___________________________________________________________________
(typed or printed)

Address: ___________________________________________________________________

Phone: ___________________________________________________________________

Email: ___________________________________________________________________

License No.: ___________________________________________________________________

Classification: ___________________________________________________________________

Limitation: ___________________________________________________________________
# AGREEMENT BETWEEN BUYER AND SELLER
## FOR PROCUREMENT CONTRACT

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<td>Seller’s Representations</td>
<td>7</td>
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<td>Seller’s Certifications</td>
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AGREEMENT BETWEEN BUYER AND SELLER
FOR PROCUREMENT CONTRACT

This Agreement is by and between Alder Construction Company ("Buyer") and ____________________________________________________ ("Seller").

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

Buyer and Seller hereby agree as follows:

ARTICLE 1—PROCUREMENT CONTRACT

1.01 Goods and Special Services

A. Seller shall furnish the Goods and Special Services as specified or indicated in the Procurement Contract Documents. The Goods and Special Services are generally described as follows: Provision of a complete and operational RAS pump system for use in the treatment of municipal wastewater, including engineering and all associated equipment, instrumentation, controls, design submittals, operations and maintenance manuals and other items as outlined in the Procurement Contract Documents.

1.02 The Project

A. The Project, of which the Goods and Special Services are a part, is generally described as follows: Provo WATRR Center Phase 1 2020 Construction Project.

1.03 Engineer

A. Buyer has retained Water Works Engineers, LLC ("Engineer"), to prepare Procurement Contract Documents and act as Buyer's representative. Engineer assumes all duties and responsibilities and has the rights and authority assigned to Engineer in the Procurement Contract Documents in connection with Seller's furnishing of Goods and Special Services.

1.04 Point of Destination

A. The Point of Destination is designated as: Provo WATRR Center, 1685 S. East Bay Blvd, Provo, UT 84606.

ARTICLE 2—PROCUREMENT CONTRACT TIMES

2.01 Time of the Essence

A. All time limits for Milestones, including the submittal of Shop Drawings and Samples, the delivery of Goods, and the furnishing of Special Services as stated in the Procurement Contract Documents, are of the essence of the Procurement Contract.

2.02 Schedule of Procurement Contract Times

A. The following schedule sets forth the Procurement Contract Times:
1. Days to Achieve Delivery of Goods

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Notice to Begin Execution of Goods Delivery</th>
<th>Goods</th>
<th>Calendar Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>a1.</td>
<td>Notice to Commence Fabrication (Approved Shop Drawings by Engineer)</td>
<td>Goods, excluding Computer Equipment and Spare Parts delivered to Site</td>
<td>Within 200 days (Coordinate Delivery with General Contractor)</td>
</tr>
<tr>
<td>a2.</td>
<td>Notice of Completed Installation</td>
<td>Computer Equipment</td>
<td>Within 10 days (Coordinate Delivery with General Contractor)</td>
</tr>
<tr>
<td>a3.</td>
<td>Notice of Completed Installation</td>
<td>Spare Parts</td>
<td>Within 30 Days (Coordinate Delivery with General Contractor)</td>
</tr>
</tbody>
</table>

2. Contract Times for Special Engineering Services Submittals
   a. The furnishing of Special Engineering Services will commence upon the execution of the Agreement between Buyer or designated representative and the Seller. The Seller shall deliver all Special Engineering Services required by the Contract Documents based upon the following milestones.

   1) Contract Times for Special Engineering Services
      a) Upon execution of the Agreement, the Seller will begin to provide Special Engineering Services required for Shop Drawings and Submittals. Submittals will be provided within the Calendar days outlined in the following table.

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Services</th>
<th>Initial Submittal</th>
<th>Resubmittal</th>
</tr>
</thead>
<tbody>
<tr>
<td>b1.</td>
<td>Mechanical and Power System Submittals including mechanical piping drawings, equipment layout drawings, mechanical equipment cut sheets, electrical power drawings, instrumentation and power wiring, and electrical equipment technical cut sheets</td>
<td>Within 30 Days of the Effective Date of Agreement</td>
<td>Within 15 Days following receipt of submittal comments</td>
</tr>
<tr>
<td>b2.</td>
<td>Process &amp; Instrumentation Submittal including process and instrumentation drawings and control wiring drawings</td>
<td>Within 30 Days of the Effective Date of Agreement</td>
<td>Within 15 Days following receipt of submittal comments</td>
</tr>
<tr>
<td>B3.</td>
<td>Miscellaneous Submittals (includes anything not covered above)</td>
<td>Within 30 Days of the Effective Date of Agreement</td>
<td>Within 15 Days following receipt</td>
</tr>
</tbody>
</table>
### 2) Contract Times for Special Services

a) The following Contract Times will apply to the Special Services in accordance with the table below.

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Services</th>
<th>Notice to Begin Contract Times</th>
<th>Calendar Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>c1.</td>
<td>Submit Installation Manuals</td>
<td>Notice to Commence Fabrication</td>
<td>Within 150 Days</td>
</tr>
<tr>
<td>c2.</td>
<td>Complete Commissioning</td>
<td>Notice of Completed Installation</td>
<td>Within 30 Days</td>
</tr>
<tr>
<td>c3.</td>
<td>Operator Training</td>
<td>Notice of Completed Commissioning</td>
<td>Within 15 Days</td>
</tr>
<tr>
<td>c4.</td>
<td>Preliminary O&amp;M Manual</td>
<td>Notice of Completed Installation</td>
<td>Within 15 Days</td>
</tr>
<tr>
<td>c5.</td>
<td>Acceptance Testing</td>
<td>Notice of Completed Operator Training</td>
<td>Within 30 Days</td>
</tr>
<tr>
<td>c6.</td>
<td>Final O&amp;M Manual</td>
<td>Notice of Substantial Completion</td>
<td>Within 15 Days</td>
</tr>
<tr>
<td>c7.</td>
<td>Correction Period</td>
<td>Notice of Substantial Completion</td>
<td>Within 365 Days</td>
</tr>
</tbody>
</table>

b) Operational and Maintenance Manuals shall be delivered at the times indicated in Section 01 78 23, Installation, Operations and Maintenance Manuals.

c) In accordance with Section 01 73 19.01, Installation of RAS Pump Equipment, Special Services associated with the installation of the Goods, shall commence with the delivery of the goods and shall be completed when the "Notice of Completed Installation" is issued by the Engineer.

d) In accordance with Section 43 08 00, Commissioning of RAS Pump Equipment, commissioning shall commence after the "Notice of Completed Installation" is issued and associated work has been completed. Upon completion of commissioning, a "Notice of Completed Commissioning" will be issued by the Engineer.

e) In accordance with Section 01 79 00, Testing, Training, and Startup, Operator Training shall commence after the "Notice of Completed Commissioning." Upon completion of Operator Training, a "Notice of Training Completion" will be issued by the Engineer.
f) In accordance with Section 01 79 13, Acceptance Testing of RAS Pump Equipment, acceptance testing shall not commence until after the prerequisite "Notice of Training Completion" is issued. Upon completion of Acceptance Testing and completion of Final Operations and Maintenance manuals, the "Notice of Substantial Completion" will be issued by the Engineer.

g) The Correction Period shall commence on the date when the "Notice of Substantial Completion" is issued.

3) For the purposes of Seller’s warranty and guarantee, the following Project milestones are as follows:

a) The Warranty Period shall commence on the date when the Acceptance Testing first begins.

b) The Correction Period shall commence on the date of the "Notice of Substantial Completion" is issued.

2.03 Shop Drawings and Samples

A. Submittal of Shop Drawings and Samples: Seller shall submit all Shop Drawings and Samples required by the Procurement Contract Documents to Engineer for its review and approval. The requirements for Shop Drawing submittals are listed in Section 01 33 00, Submittal Procedures.

B. Engineer’s Review: It is the intent of the parties that Engineer will conduct its review of Shop Drawings and Samples and issue its approval, or a denial accompanied by substantive comments regarding information needed to gain approval, within 21 calendar days after Seller’s submittal of such Shop Drawings and Samples, or within such longer period that is needed because of the quantity and quality of such submittals. Resubmittals will be limited whenever possible.

2.04 Liquidated Damages

A. The Seller recognizes that time is of the essence of this Agreement and that the Buyer will suffer damages if the Special Engineering Services are not delivered within the times specified in Section 2.02 above. They also recognize that the timely performance of services by other parties involved in the Owner’s Project are materially dependent upon the Seller’s specific compliance with the requirements of Section 2.02 plus any extensions thereof allowed in accordance with the General Conditions. Further, they recognize the delays, expense, and difficulties involved in proving the actual losses or damages suffered by the Owner if complete acceptable submittals are not delivered on time. Accordingly, and instead of requiring proof of such losses or damages, the Buyer and the Seller agree that as liquidated damages for delay (but not as a penalty), the Seller shall pay the Owner $1,000.00 for each day that expires after the times or dates specified in Section 2.02 for deliveries of acceptable submittals. By execution of this Agreement, the Owner and the Seller expressly agree that these liquidated damage amounts are reasonable under the circumstances existing at the time this Agreement is executed.

B. The Buyer and the Seller recognize that time is of the essence of this Agreement and that the Owner will suffer damages if the Goods, associated with the RAS Pump System are not fabricated and ready for delivery to the Owner or designated representative within the time specified in Section 2.02 above. They also recognize that the timely performance by other parties involved in the Owner’s Project are materially dependent upon the Seller’s specific compliance with the requirements of Section 2.02 plus any extensions thereof allowed in accordance with the General Conditions. Further, they recognize the delays, expense, and
difficulties involved in proving the actual losses or damages suffered by the Owner if complete acceptable Goods are not delivered on time. Accordingly, and instead of requiring proof of such losses or damages, the Owner and the Seller agree that as liquidated damages for delay (but not as a penalty) the Seller shall pay Owner $500.00 for each day that expires after the times or dates specified in Section 2.02 for delays involving delivery of the Goods. By execution of this Agreement, the Owner and the Seller expressly agree that these liquidated damage amounts are reasonable under the circumstances existing at the time this Agreement is executed.

C. The Owner and the Seller recognize that time is of the essence of this Agreement and that the Owner will suffer damages if the Special Services are not delivered in a timely manner as stated in Section 2.02 above. They also recognize that the timely performance by other parties involved in the Owner’s Project are materially dependent upon the Seller’s specific compliance with the requirements of Section 2.02 plus any extensions thereof allowed in accordance with the General Conditions. Further, they recognize the delays, expense, and difficulties involved in proving the actual losses or damages suffered by the Owner if complete acceptable Goods, or Special Services are not delivered on time. Accordingly, the Owner and the Seller agree that as liquidated damages for delay (but not as a penalty) the Seller shall pay Owner $1,000.00 for each day that expires after the times or dates specified in Section 2.02 for delays involving delivery of the Special Services. By execution of this Agreement, the Owner and the Seller expressly agree that these liquidated damage amounts are reasonable under the circumstances existing at the time this Agreement is executed.

D. The Owner or designated representative may deduct the amount of liquidated damages from monies due the Seller under this Agreement.

E. Seller’s obligation to pay liquidated damages pursuant to this Section shall be limited to an amount equal to twenty percent (20%) of the price for the Work as set forth in Seller’s contract with the Owner.

ARTICLE 3—PROCUREMENT CONTRACT PRICE

3.01 Procurement Contract Price and Total Price—Based on Attached Proposal

A. For furnishing the Goods and Special Services in accordance with the Procurement Contract Documents, Buyer shall pay Seller the prices stated in Seller’s Proposal, attached hereto as an exhibit, subject to final adjustments for Alternates, if any, and subject to the following Buyer-accepted alternates listed below.

B. Buyer shall pay Seller a Lump Sum of $_________________________ for furnishing the Goods and Services in accordance with the Procurement Contract Documents. Such Lump Sum amount accounts for the following Buyer-accepted Bid Items and Bid Alternates:

1. ___________________________
2. ___________________________
3. ___________________________
4. ___________________________

C. Seller shall pay all applicable taxes and duties.

D. The Contract Price for RAS Pump System Units and Ancillary Equipment shall remain valid for 180 days after the effective date of the Agreement. If the “Notice to Commence Fabrication” is issued after 180 days after the effective date of the
Agreement, the Contract Price will be adjusted through a Change Order by the ratio of the Consumer Price Index (CPI) of the month that the “Notice to Commence Fabrication” is issued to the CPI of the month of 180 days after the Effective Date of the Agreement.

**ARTICLE 4—PAYMENT PROCEDURES**

4.01 **Submital and Processing of Applications for Payment**

   A. Seller shall submit Applications for Payment in accordance with Article 13 of the General Conditions and the following paragraphs. Engineer and Buyer will process such Applications for Payment in accordance with said Article 13.

4.02 **Progress Payments; Final Payment**

   A. Seller may submit an Application for Payment requesting the stated percentage of Procurement Contract Price upon attainment of each of the following Payment Line Items:

<table>
<thead>
<tr>
<th>Payment Line Item</th>
<th>Percentage of Lump Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Completion of Special Engineering Services/Notice to Commence Fabrication</td>
<td>10%</td>
</tr>
<tr>
<td>2. Delivery of Goods to Point of Destination in accordance with the Procurement Contract Documents</td>
<td>40%</td>
</tr>
<tr>
<td>3. Delivery of Spare Parts to Point of Destination in accordance with the Procurement Contract Documents</td>
<td>5%</td>
</tr>
<tr>
<td>4. Notice of Completed Commissioning</td>
<td>20%</td>
</tr>
<tr>
<td>5. Completion of Acceptance Testing</td>
<td>15%</td>
</tr>
<tr>
<td>6. Delivery of Final O&amp;M Manuals and Notice of Substantial Completion</td>
<td>10%</td>
</tr>
</tbody>
</table>

B. Buyer shall pay Seller the amount owed under an Application for Payment within 45 days after Engineer’s presentation to Buyer of the Application for Payment and Engineer’s recommendation.

C. Upon the Owner’s approval of the final Application for Payment, accompanied by the Engineer’s recommendation for payment in accordance with the General Conditions, the Owner shall make the final payment to bring the total payment to 100 percent of the Contract Price as adjusted for changes to the Contract Price or less any prior payments to the Seller. This payment, at the Engineer’s recommendation, may be less such amounts, as Engineer shall determine in accordance with the Agreement or any applicable provisions of the General Conditions.

**ARTICLE 5—PROCUREMENT CONTRACT DOCUMENTS**

5.01 **List of Procurement Contract Documents**

   A. The Procurement Contract Documents consist of the following:

      1. This Procurement Agreement.
      2. General Conditions of the Procurement Contract.
      3. Supplementary Conditions of the Procurement Contract.
5. Procurement Drawings as listed in the Volume 3 Drawings drawing index.
6. Addenda Numbers _____ through _____
7. Bonds:
   a. Performance bond (together with power of attorney).
8. Exhibits to this Procurement Agreement (enumerated as follows):
   a. Exhibit A, Assignment of Contract, Consent to Assignment, and Acceptance of Assignment.
   b. Exhibit B, Surety’s Consent to Assignment.
   c. Proposal submitted by Seller _________________________________
9. The following which may be delivered or issued on or after the Effective Date of the Procurement Contract and are not attached hereto:
   a. Change Orders;
   b. Change Directives; and
   c. Field Orders.
B. The documents listed in Paragraph 6.01.A are attached to this Procurement Agreement (except as expressly noted otherwise above).
C. There are no Procurement Contract Documents other than those listed above.
D. The Procurement Contract Documents may only be amended or supplemented as provided in Paragraph 11.01 of the Procurement General Conditions.

ARTICLE 6—SELLER’S REPRESENTATIONS AND CERTIFICATIONS

6.01 Seller’s Representations
A. In order to induce Buyer to enter into this Procurement Agreement, Seller makes the following representations:
   1. Seller has examined and carefully studied the Procurement Contract Documents.
   2. If required by the Instructions to Bidders to visit the Point of Destination and the site where the Goods are to be installed or Special Services will be provided, or if, in Seller’s judgment, any observable local or site conditions may affect the delivery, cost, progress, or furnishing of the Goods and Special Services, then Seller has visited the Point of Destination and site where the Goods are to be installed or Special Services will be provided (as applicable) and become familiar with and is satisfied as to the observable local and site conditions that may affect delivery, cost, progress, and furnishing of the Goods and Special Services.
   3. Seller is familiar with and is satisfied as to all Laws and Regulations that may affect the cost, progress, and performance of Seller’s obligations under the Procurement Contract.
   4. Seller has carefully studied, considered, and correlated the information known to Seller with respect to the effect of such information on the cost, progress, and performance of Seller’s obligations under the Procurement Contract.
5. Seller has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Seller has discovered in the Procurement Contract Documents, and the written resolution (if any) thereof by Engineer is acceptable to Seller.

6. The Procurement Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance of Seller's obligations under the Procurement Contract.

7. Seller's entry into this Procurement Contract constitutes an incontrovertible representation by Seller that without exception all prices in the Procurement Agreement are premised upon furnishing the Goods and Special Services as required by the Procurement Contract Documents.

6.02 Seller’s Certifications

A. Seller certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Procurement Contract. For the purposes of this Paragraph 7.02:

1. “corrupt practice” means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Procurement Contract execution;

2. “fraudulent practice” means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Procurement Contract to the detriment of Buyer, (b) to establish bid or contract prices at artificial non-competitive levels, or (c) to deprive Buyer of the benefits of free and open competition;

3. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Buyer, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Procurement Contract.

ARTICLE 7—CONFIDENTIALITY

7.01 Confidential Information

A. Confidential information is information in documents submitted by Seller that Seller clearly and prominently labels in writing to be a trade secret, proprietary, or confidential. Such documents, if any, will be maintained in a manner that endeavors to avoid disclosing confidential information to third parties, to the extent allowed by Laws and Regulations.

B. Seller shall clearly and prominently mark confidential information with the word “CONFIDENTIAL” on each page or sheet or on the cover of bound documents. Place “CONFIDENTIAL” stamps or watermarks so that they do not obscure any of the required information on the document, either in the original or in a way that would obscure any of the required information in a photocopy of the document.

7.02 Disclosure of Confidential Information

A. If Buyer is requested to disclose confidential information, or becomes legally compelled (by oral questions, interrogatories, requests for information or documents, subpoena, civil or criminal investigative demand, public information requests, or other requests under Laws and Regulations) to disclose confidential information, or is required by a regulatory body, governing agency, or controlling
authority to disclose confidential information, or make any other disclosure that is prohibited or otherwise constrained by the Procurement Contract, Buyer will provide Seller with prompt notice so Seller may seek an appropriate protective order or other remedy. Seller will be solely responsible for submitting to the regulatory body, governing agency, or controlling authority any arguments, briefs, memoranda, motions, authorities, or other information in opposition to disclosure.

B. Buyer’s obligations with respect to confidential information are nullified by the following exceptions:

1. Confidential information becomes a part of the public domain through publication or otherwise, through no fault of the Buyer;

2. Buyer can demonstrate through suitable documentation that the confidential information was already in the Buyer’s possession, and not previously marked as confidential, or was otherwise publicly available prior to the Effective Date of the Procurement Contract;

3. The confidential information is subsequently and independently disclosed to the Buyer by a third party who has a lawful right to disclose such information;

4. Buyer has a good faith belief that disclosure is required or justified; or

5. Buyer is required to disclose the confidential information by court order or by applicable Laws and Regulations.

7.03 Waiver of Immunity

A. Notwithstanding any other provision of the Procurement Contract, it is stipulated and agreed that by accepting confidential information, Buyer has not and does not waive its legal immunity (if any) from suit or liability.

ARTICLE 8—MUTUAL WAIVER

8.01 Mutual Waiver of Consequential Damages

A. Buyer and Seller waive against each other, and against the other’s officers, directors, members, partners, employees, agents, consultants, and subcontractors, any and all claims for or entitlement to incidental, indirect, or consequential damages arising out of, resulting from, or related to the Procurement Contract. If Buyer assigns this Procurement Contract to a construction contractor (Contractor/Assignee), then the terms of this Paragraph 9.01.A will be binding upon the Contractor/Assignee with respect to Seller and assignor. The terms of this mutual waiver do not apply to or limit any claim by either Buyer or Seller against the other based on any of the following: (a) contribution or indemnification, (b) liquidated damages, (c) costs, losses, or damages attributable to personal or bodily injury, sickness, disease, or death, or to injury to or destruction of the tangible property of others, (d) intentional or reckless wrongful conduct, or (e) rights conferred by any bond provided by Seller under this Procurement Contract.
IN WITNESS WHEREOF, Buyer and Seller have signed this Procurement Agreement. Counterparts have been delivered to Buyer and Seller.

The Effective Date of the Procurement Contract is

Buyer

Alder Construction Company
(typed or printed name of organization)

By: __________________________________________
(individual’s signature)

Date: _________________________________________
(date signed)

Name: _______________________________________
(typed or printed)

Title: _________________________________________
(typed or printed)

Attest: _______________________________________
(individual’s signature)

Title: _________________________________________
(typed or printed)

Address for giving notices:

3939 South 500 West
Salt Lake City, Utah 84123

Designated Representative:

Name: _______________________________________
(typed or printed)

Title: _________________________________________
(typed or printed)

Address:

3939 South 500 West
Salt Lake City, Utah 84123

Phone: (801) 266-8856

Email: _______________________________________

Seller

(typed or printed name of organization)

By: __________________________________________
(individual’s signature)

Date: _________________________________________
(date signed)

Name: _______________________________________
(typed or printed)

Title: _________________________________________
(typed or printed)

Attest: _______________________________________
(individual’s signature)

Title: _________________________________________
(typed or printed)

Address for giving notices:

Address:

Designated Representative:

Name: _______________________________________
(typed or printed)

Title: _________________________________________
(typed or printed)

Address:

Phone: _______________________________________

Email: _______________________________________

(If Buyer is a corporation, attach evidence of authority to sign. If Buyer is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)
## PERFORMANCE BOND FOR PROCUREMENT CONTRACT

<table>
<thead>
<tr>
<th>Seller</th>
<th>Surety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name:</td>
<td>Name:</td>
</tr>
<tr>
<td>Address <em>(principal place of business)</em>:</td>
<td>Address <em>(principal place of business)</em>:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Buyer</th>
<th>Procurement Contract</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name:</td>
<td>Description <em>(name and location)</em>:</td>
</tr>
<tr>
<td>Mailing address <em>(principal place of business)</em>:</td>
<td>Procurement Contract Price:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bond</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bond Amount:</td>
</tr>
<tr>
<td>Date of Bond:</td>
</tr>
<tr>
<td><em>(Date of Bond cannot be earlier than Effective Date of Procurement Contract)</em></td>
</tr>
<tr>
<td>Modifications to this Bond form:</td>
</tr>
<tr>
<td>☐ None ☐ See Paragraph 15</td>
</tr>
</tbody>
</table>

Surety and Seller, 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.

<table>
<thead>
<tr>
<th>Seller as Principal</th>
<th>Surety</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>(Full formal name of Seller)</em></td>
<td>*(Full formal name of Surety) <em>(corporate seal)</em></td>
</tr>
<tr>
<td>By:</td>
<td>By:</td>
</tr>
<tr>
<td><em>(Signature)</em></td>
<td><em>(Signature)</em> <em>(Attach Power of)</em></td>
</tr>
<tr>
<td>Name:</td>
<td>Name:</td>
</tr>
<tr>
<td><em>(Printed or typed)</em></td>
<td><em>(Printed or typed)</em></td>
</tr>
<tr>
<td>Title:</td>
<td>Title:</td>
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<td>Attest:</td>
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</tr>
<tr>
<td>Title:</td>
<td>Title:</td>
</tr>
</tbody>
</table>

**Notes:**
1. Provide supplemental execution by any additional parties, such as joint venturers.
2. Any singular reference to Seller, Surety, Buyer, or other party is considered plural where applicable.
1. The Seller and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Buyer for the performance of the Procurement Contract, which is incorporated herein by reference.

2. If the Seller performs the Procurement Contract, the Surety and the Seller 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 Buyer Default under the Procurement Contract, the Surety’s obligation under this Bond will arise after:

   3.1. The Buyer first provides notice to the Seller and the Surety that the Buyer is considering declaring a Seller Default. Such notice may indicate whether the Buyer is requesting a conference among the Buyer, Seller, and Surety to discuss the Seller’s performance. If the Buyer does not request a conference, the Surety may, within five (5) business days after receipt of the Buyer’s notice, request such a conference. If the Surety timely requests a conference, the Buyer shall attend. Unless the Buyer 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 Buyer’s notice. If the Buyer, the Seller, and the Surety agree, the Seller shall be allowed a reasonable time to perform the Procurement Contract, but such an agreement does not waive the Buyer’s right, if any, subsequently to declare a Seller Default;

   3.2. The Buyer declares a Seller Default, terminates the Procurement Contract, and notifies the Surety; and

   3.3. The Buyer has agreed to pay the Balance of the Procurement Contract Price in accordance with the terms of the Procurement Contract to the Surety or to a seller selected to perform the Procurement Contract.

4. Failure on the part of the Buyer 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 Buyer 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 Seller, with the consent of the Buyer, to perform and complete the Procurement Contract;

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

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

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

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

      5.4.2. Deny liability in whole or in part and notify the Buyer, 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 (7) days after receipt of an additional written notice from the Buyer to the Surety demanding that the Surety perform its obligations under this Bond, and the Buyer shall be entitled to enforce any remedy available to the Buyer. If the Surety proceeds as provided in Paragraph 5.4, and the Buyer refuses the payment, or the Surety has denied liability, in whole or in part, without further notice, the Buyer shall be entitled to enforce any remedy available to the Buyer.

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

   7.1. the responsibilities of the Seller for correction of defective or non-conforming Goods and Special Services, and completion of the Procurement Contract;
   
   7.2. additional legal, design professional, and delay costs resulting from the Seller'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 Procurement Contract, actual damages caused by delayed performance or non-performance of the Seller.

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 Buyer or others for obligations of the Seller that are unrelated to the Procurement Contract, and the Balance of the Procurement 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 Buyer or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Procurement 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 where the Point of Destination is located and must be instituted within two years after a declaration of Seller Default, or within two years after the Seller 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 Buyer, or the Seller 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 of the Point of Destination, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted herefrom 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 Procurement Contract Price*—The total amount payable by the Buyer to the Seller under the Procurement Contract after all proper adjustments have been
made including allowance for the Seller for any amounts received or to be received by the Buyer in settlement of insurance or other claims for damages to which the Seller is entitled, reduced by all valid and proper payments made to or on behalf of the Seller under the Procurement Contract.

14.2. Buyer Default—Failure of the Buyer, which has not been remedied or waived, to pay the Seller as required under the Procurement Contract or to perform and complete or comply with the other material terms of the Procurement Contract.

14.3. Goods and Special Services—The full scope of materials, equipment, other items, and services to be furnished by Seller, as defined in the Procurement Contract.

14.4. Point of Destination—The location where delivery of the Goods shall be made, as stated in the Procurement Contract.

14.5. Procurement Contract—The contractual agreement between the Buyer and Seller identified on the cover page, including all Procurement Contract Documents and changes made to the Procurement Contract.

14.6. Seller Default—Failure of the Seller, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Procurement Contract.

14.7. Procurement Contract Documents—All the documents that comprise the contractual agreement between the Buyer and Seller.

15. Modifications to this Bond are as follows:
# STANDARD GENERAL CONDITIONS OF THE PROCUREMENT CONTRACT

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ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 Defined Terms

A. Whenever used in the Procurement Bidding Requirements or Procurement Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated, which are applicable to the singular or plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Procurement 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 Procurement Contract Documents.

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

3. **Bid**—An offer or proposal of a prospective Seller submitted on the prescribed form setting forth the prices for the Goods and Special Services to be provided.

4. **Bidder**—An individual or entity that, as a prospective Seller, submits a Bid to Buyer.

5. **Buyer**—The individual or entity purchasing the Goods and Special Services.

6. **Change Directive**—A written directive from Buyer to Seller issued on or after the Effective Date of the Procurement Contract, ordering an addition, deletion, or revision in the Goods and Special Services.

7. **Change Order**—A document which is signed by Seller and Buyer and authorizes an addition, deletion, or revision to the Procurement Contract Documents or an adjustment in the Procurement Contract Price or the Procurement Contract Times, issued on or after the Effective Date of the Procurement Contract. Change Orders may be the result of mutual agreement by Buyer and Seller, or of resolution of a Claim.

8. **Claim**—A demand or assertion by Buyer or Seller seeking an adjustment of Procurement Contract Price or Procurement Contract Times, or both, or other relief with respect to the terms of the Procurement Contract. A demand for money or services by a third party is not a Claim.

9. **Contractor/Assignee**—A construction contractor with which Project Owner enters into a construction contract, and to which Project Owner, as initial Buyer, assigns this Procurement Contract.

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

11. **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.

12. **Electronic Means**—Electronic mail (e-mail), upload/download from a secure Project website, or other communications methods that allow: the transmission or communication of Electronic Documents; the documentation...
of transmissions, including sending and receipt; printing of the transmitted
Electronic Document by the recipient; the storage and archiving of the
Electronic Document by sender and recipient; and the use by recipient of the
Electronic Document for purposes permitted by this Procurement 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.

13. **Engineer**—The individual or entity designated as such in the Procurement
Agreement.

14. **Field Order**—A written order issued by Engineer which requires minor changes
in the Goods or Special Services, but which does not involve a change in the
Procurement Contract Price or Procurement Contract Times.

15. **Goods**—The tangible and movable personal property that is described in the
Procurement Contract Documents, regardless of whether the property is to be
later attached to realty.

16. **Goods and Special Services**—The full scope of materials, equipment, other
items, and services to be furnished by Seller, including Goods, as defined
herein, and Special Services, if any, as defined herein. This term refers to
both the Goods and the Special Services, or to either the Goods or the Special
Services, and to any portion of the Goods or the Special Services, as the
context requires.

17. **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.

18. **Milestone**—A principal event specified in the Procurement Contract that Seller
must attain by the date or within the number of days indicated, including but
not limited to the delivery of the Goods and the furnishing of Special Services.

19. **Notice of Award**—The written notice, by Buyer to a Bidder, of Buyer’s
acceptance of the Bid.

20. **Point of Destination**—The specific address of the location where delivery of
the Goods will be made, as stated in the Procurement Agreement.

21. **Procurement Agreement**—The written instrument, executed by Buyer and
Seller, that sets forth the Procurement Contract Price and Procurement
Contract Times, identifies the parties and the Engineer, and designates the
specific items that are Procurement Contract Documents.

22. **Procurement Bidding Documents**—The Procurement Bidding Requirements
and the proposed Procurement Contract Documents (including all Addenda).

23. **Procurement Bidding Requirements**—The advertisement or invitation to bid,
Instructions to Bidders, Bid security of acceptable form, if any, and Bid Form
with any supplements.

24. **Procurement Contract**—The entire and integrated written agreement between
Buyer and Seller concerning the Goods and Special Services.

25. **Procurement Contract Documents**—Those items so designated in the
Procurement Agreement, and which together comprise the Procurement
Contract. Shop Drawings and other Seller submittals are not Procurement
Contract Documents, even if accepted, reviewed, or approved by Engineer or
Buyer.
26. **Procurement Contract Price**—The money that Buyer has agreed to pay Seller for furnishing the Goods and Special Services in accordance with the Procurement Contract Documents.

27. **Procurement Contract Times**—The times stated in the Procurement Agreement by which the Goods must be delivered, Special Services must be furnished, and other Milestones must be attained.

28. **Procurement Drawings**—That part of the Procurement Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Goods and Special Services to be furnished by Seller. Shop Drawings and other Seller submittals are not Procurement Drawings as so defined.

29. **Procurement Specifications**—That part of the Procurement Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the furnishing of the Goods and Special Services, and certain administrative requirements and procedural matters applicable thereto.

30. **Project**—The total undertaking to be accomplished for Project Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Goods and Special Services are a part.

31. **Project Owner**—The entity that has retained (or will retain) engineers, contractors, and others for the planning, study, design, construction, testing, commissioning, and start-up of facilities and improvements. As of the Effective Date of the Procurement Contract, the Project Owner is the Buyer.

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

33. **Schedule of Submittals**—A schedule, prepared and maintained by Seller, of required Submittals and the time requirements for Engineer’s review of the Submittals.

34. **Seller**—The individual or entity furnishing the Goods and Special Services.

35. **Shop Drawings**—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Seller and submitted by Seller to illustrate some portion of the Goods and Special Services. Shop Drawings, whether approved or not, are not Procurement Drawings and are not Procurement Contract Documents.

36. **Special Services**—Services to be performed by Seller (or its agents or subcontractors) in association with the Goods to be furnished by Seller, as required by the Procurement Contract Documents.

37. **Submittal**—A written or graphic document, prepared by or for Seller, which the Procurement Contract Documents require Seller 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; 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; record documents; and other such documents required by the Procurement
Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Procurement Contract Documents. Change proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.

38. **Successful Bidder**—The Bidder whose Bid the Buyer accepts, and to which Buyer makes an award of the Procurement Contract.

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

40. **Unit Price Goods and Special Services**—Goods and Special Services to be paid for on the basis of unit prices (if any).

### 1.02 Terminology

A. The words and terms discussed in Paragraphs 1.02.B and 1.02.C are not defined, but have the indicated meanings when used in the Bidding Requirements or Procurement Contract Documents.

B. **Intent of Certain Terms or Adjectives**

1. The Procurement 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 Goods and Special Services. It is intended that such exercise of professional judgment, action, or determination will be commercially reasonable and will be solely to evaluate, in general, the Goods and Special Services for compliance with the requirements of and information in the Procurement Contract Documents and conformance with the design concept of the completed Project as a functioning whole, as shown or indicated in the Procurement Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective will not be effective to assign to Engineer any duty or authority to supervise or direct the furnishing of Goods or Special Services or any duty or authority to undertake responsibility contrary to any other provision of the Procurement Contract Documents.

2. The word “non-conforming” when modifying the words “Goods and Special Services,” “Goods,” or “Special Services,” refers to Goods and Special Services that are unsatisfactory, faulty, or deficient in that they:
   a. do not conform to or comply with the requirements of the Procurement Contract Documents;
   b. do not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Procurement Contract Documents; or
   c. in the case of Special Services, have not been completed.

3. The word “receipt” when referring to the Goods, means the physical taking and possession by the Buyer under the conditions specified in Paragraph 9.02.B.2.

4. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

5. The word “furnish,” when used in connection with the Goods and Special Services means to supply and deliver said Goods to the Point of Destination.
(or some other specified location) and to perform said Special Services fully, all in accordance with the Procurement Contract Documents.

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

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

**ARTICLE 2—PRELIMINARY MATTERS**

2.01 **Delivery of Bonds and Evidence of Insurance**

A. When Seller delivers the executed counterparts of the Procurement Agreement to Buyer, the Seller also shall deliver to Buyer the performance bond and payment bond (if the Procurement Contract requires Seller to furnish such bonds).

B. **Evidence of Seller’s Insurance:** When Seller delivers the signed counterparts of the Procurement Agreement to Buyer, the Seller also shall deliver to Buyer, with copies to each additional insured (as identified in the Procurement Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Seller in accordance with Article 5. Evidence of insurance to be obtained at a later date, such as insurance relating to transit or storage of the Goods, will be provided to Buyer at the time of such insurance is obtained.

C. **Evidence of Buyer’s Insurance:** After receipt of the signed counterparts of the Procurement Agreement and all required bonds and insurance documentation, Buyer shall promptly deliver to Seller, with copies to each additional insured (as identified in the Procurement Contract), certificates and other evidence of insurance (if any) required to be provided by Buyer.

2.02 **Copies of Documents**

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

2.03 **Electronic Transmittals**

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

B. If the Procurement Contract does not establish protocols for Electronic Means, then Buyer, Seller, and Engineer 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.
2.04 Preliminary Schedules

A. Within 15 days after the Effective Date of the Procurement Contract, Seller shall submit to Buyer and Engineer for timely review:

1. a progress schedule of activities, consistent with the Procurement Contract Times, including at a minimum, Shop Drawing and Sample submittals, tests, and deliveries as required by the Procurement Contract Documents.
   a. The progress schedule will be acceptable to Buyer and Engineer if it provides an orderly progression of the Submittals, tests, and deliveries to completion within the specified Milestones of the Procurement Contract Times.
   b. Such acceptance will not impose on Buyer or Engineer responsibility for the progress schedule, for sequencing, scheduling, or progress of Seller’s performance of its obligations under the Procurement Contract, nor interfere with or relieve Seller from Seller’s full responsibility therefor.
   c. Such acceptance will not be deemed as an acknowledgment of the reasonableness and attainability of the schedule.

2. a preliminary schedule of Submittals.

B. No progress payment will be made to Seller until an acceptable progress schedule and acceptable schedule of Submittals are submitted to Buyer and Engineer (and other conditions applicable to progress payments are met).

2.05 Preliminary Conference

A. Within 20 days after the Procurement Contract Times start to run, a conference attended by Seller, Buyer, Engineer and others as appropriate will be held to establish a working understanding among the parties as to the Goods and Special Services and to discuss the schedules referred to in Paragraph 2.04.A, procedures for handling Shop Drawings and other Submittals, processing Applications for Payment, and maintaining required records.

2.06 Safety

A. Buyer and Seller shall comply with all applicable Laws and Regulations relating to the safety of persons or property, and to the protection of persons or property from damage, injury, or loss.

B. When Seller's personnel, or the personnel of any subcontractor to Seller, are present at the Point of Destination or any work area or site controlled by Buyer, the Seller shall be responsible for the compliance by such personnel with any applicable requirements of Buyer's safety programs that are made known to Seller.

C. If Buyer or its representatives visit the Seller’s manufacturing or storage facilities, for testing, inspection, or other purposes, Seller shall inform Buyer in advance of any safety preparations, standards, or programs with which Buyer and its representatives must comply.

ARTICLE 3—PROCUREMENT CONTRACT DOCUMENTS

3.01 Intent

A. The Procurement Contract Documents are complementary; what is called for by one is as binding as if called for by all.
B. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Procurement Contract Documents or from prevailing custom or trade usage as being required to produce or furnish the indicated Goods and Special Services will be provided, whether or not specifically called for, at no additional cost to Buyer.

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

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

E. Engineer will issue clarifications and interpretations of the Procurement Contract Documents, as provided in Paragraph 3.04.

F. Any provision or part of the Procurement 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 Buyer and Seller.

3.02 Reference Standards

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

B. 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 Buyer, Seller, or Engineer from those set forth in the part of the Procurement Contract Documents prepared by or for Engineer. No such provision or instruction will be effective to assign to Buyer or Engineer any duty or authority to supervise or direct the performance of Seller's obligations, or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Procurement Contract Documents prepared by or for Engineer.

3.03 Reporting and Resolving Discrepancies

A. Reporting Discrepancies

1. Seller's Review of Procurement Contract Documents: If, before or during the performance of Seller's obligations, Seller discovers any conflict, error, ambiguity, or discrepancy within the Procurement Contract Documents, or between the Procurement 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 to Seller, then Seller shall promptly report it to Engineer (or if the Procurement Contract is assigned, then directly to Contractor/Assignee) in writing. Seller shall not proceed with the Goods and Special Services affected thereby until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer (or if the Procurement Contract is assigned, then by Contractor/Assignee) or by an amendment or supplement to the Procurement Contract Documents issued pursuant to Article 11.

2. Seller shall not be liable to Buyer or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Procurement Contract Documents unless Seller had actual knowledge thereof.
B. Resolving Discrepancies: Except as may be otherwise specifically stated in the Procurement Contract Documents, the provisions of the Procurement Contract Documents will take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Procurement Contract Documents and:

1. the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Procurement Contract Documents); or

2. the provisions of any Laws or Regulations applicable to the furnishing of the Goods and Special Services (unless such an interpretation of the provisions of the Procurement Contract Documents would result in violation of such Law or Regulation).

3.04 Requirements of the Procurement Drawings and Procurement Specifications

A. During the performance of Seller’s obligations and until final payment, Seller and Buyer shall submit to the Engineer all matters in question concerning the requirements of the Procurement Drawings and Procurement Specifications (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Goods and Special Services, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Procurement Drawings and Procurement Specifications, and judge of the acceptability of the Goods and Special Services thereunder.

1. After assignment (if any) Seller shall submit such matters directly to Contractor/Assignee for response or administration, and the Procurement Contract provisions in Paragraphs 3.04.B and C will not apply.

B. Engineer will issue with reasonable promptness a written clarification, interpretation, or decision on the issue submitted, and if necessary, initiate an amendment or supplement to the Procurement Drawings or Procurement Specifications. Engineer’s written clarification, interpretation, or decision will be consistent with the overall intent of the Procurement Contract Documents, and will be final and binding on Seller and Buyer. If either Buyer or Seller believes that a written clarification or interpretation justifies an adjustment in the Procurement Contract Price or Procurement Contract Times, either may make a Claim for such adjustment as provided in Article 12.

C. If a submitted matter in question concerns terms and conditions of the Procurement Contract Documents that do not involve (1) the performance or acceptability of the Goods and Services, (2) the design (as set forth in the Procurement Drawings, Procurement Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Buyer and Seller that Engineer is unable to provide a decision or interpretation.

3.05 Reuse of Documents

A. Seller and its subcontractors and suppliers shall not:

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

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

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

ARTICLE 4—COMMENCEMENT AND SCHEDULE

4.01 Commencement of Procurement Contract Times
A. The Procurement Contract Times will commence to run on the Effective Date of the Procurement Contract.

4.02 Continuing Performance
A. Seller shall adhere to the progress schedule established in accordance with Paragraph 2.04.A., as duly adjusted, and the Goods will be delivered and the Special Services furnished within the Procurement Contract Times.

B. Seller shall carry on furnishing of the Goods and Special Services and adhere to the progress schedule during all disputes or disagreements with Buyer. No furnishing of Goods and Special Services will be delayed or postponed pending resolution of any disputes or disagreements, except as expressly permitted herein, or as Buyer and Seller may otherwise agree in writing.

4.03 Adjustments to Progress Schedule
A. The progress schedule established in accordance with Paragraph 2.04 may be adjusted from time to time as provided below.

1. Seller shall submit to Buyer for acceptance (to the extent indicated in Paragraph 2.04) proposed adjustments in the progress schedule that will not result in changing the Procurement Contract Times. Such adjustments will comply with any applicable provisions of the Procurement Specifications.

2. Proposed adjustments in the progress schedule that will change the Procurement Contract Times must be submitted in accordance with the requirements of Article 11. Adjustments in Procurement Contract Times may only be made by a Change Order.

4.04 Delays
A. If Buyer, Engineer, or anyone for whom Buyer is responsible, delays, disrupts, or interferes with Seller’s performance or progress, then Seller shall be entitled to an equitable adjustment in Procurement Contract Price or Procurement Contract Times.

B. Seller shall not be entitled to an adjustment in Procurement Contract Price or Procurement Contract Times for delay, disruption, or interference caused by or within the control of Seller or anyone for whom Seller is responsible.

C. If Seller’s performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Buyer, Seller, and those for which they are responsible, then Seller shall be entitled to an equitable adjustment in Procurement Contract Times. Such an adjustment will be Seller’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 Procurement 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. inspection delays by governmental authorities, and custom delays;
4. international shipping delays;
5. acts or failures to act of third-party entities; and
6. acts of war or terrorism.

D. Adjustments of Procurement Contract Times or Procurement Contract Price—General Provisions: Seller’s entitlement to an adjustment of Procurement Contract Times or Procurement Contract Price is limited as follows:

1. Seller’s entitlement to an adjustment of the Procurement Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of Seller’s obligations, as of the time of the delay, disruption, or interference.

2. Seller shall not be entitled to an adjustment in Procurement 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 Seller. Such a concurrent delay by Seller does not preclude an adjustment of Procurement Contract Times to which Seller is otherwise entitled.

3. Adjustments of Procurement Contract Times or Procurement Contract Price are subject to the provisions of Articles 11 and 12.

E. Each Seller request seeking a delay-related increase in Procurement Contract Times or Procurement 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 Seller’s progress; (3) the date upon which each cause of delay, disruption, or interference ceased to affect Seller’s progress; (4) the number of days’ increase in Procurement Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and (5) the impact on Procurement Contract Price. Seller shall also furnish such additional supporting documentation as Buyer 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.

ARTICLE 5—BONDS AND INSURANCE

5.01 Performance, Payment, and Other Bonds

A. Seller shall furnish a performance bond and a payment bond, each in an amount at least equal to the Procurement Contract Price, as security for the faithful performance and payment of Seller’s obligations under the Procurement 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 9.04, 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 Procurement Contract.

B. Seller shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Procurement Contract.
C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Buyer prior to execution of the Procurement 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. Seller 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 Seller is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Seller shall promptly notify Buyer and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements of this Procurement Contract.

F. If Seller has failed to obtain a required bond, Buyer may exercise Buyer’s termination rights under Article 14.

G. Upon request to Buyer from any subcontractor, supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of Seller’s obligations, Buyer shall provide a copy of the payment bond to such person or entity.

H. Upon request to Seller from any subcontractor, supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of Seller’s obligations, Seller shall provide a copy of the payment bond to such person or entity.

5.02 Insurance

A. Seller shall provide insurance of the types and coverages and in the amounts stipulated in the Supplementary Conditions.

B. Failure of Buyer to demand certificates of insurance or other evidence of Seller’s full compliance with these insurance requirements or failure of Buyer to identify a deficiency in compliance from the evidence provided will not be construed as a waiver of Seller’s obligation to maintain such insurance.

C. Upon assignment of this Procurement Contract, Seller shall name the Contractor/Assignee as an additional insured and comply with the written request of Contractor/Assignee to provide evidence of insurance.

D. Buyer does not represent that insurance coverage and limits established in this Procurement Contract necessarily will be adequate to protect Seller.

E. The insurance and insurance limits required herein will not be deemed as a limitation on Seller’s liability under the indemnities and other rights granted to Buyer in the Procurement Contract.

5.03 Surety or Insurance Companies

A. All bonds and insurance required by the Procurement Contract Documents to be purchased and maintained by Buyer or Seller shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies must also meet such
additional requirements and qualifications as may be provided in the Supplementary Conditions.

ARTICLE 6—LICENSES AND FEES

6.01 Intellectual Property and License Fees

A. Except to the extent stated elsewhere in the Procurement Contract Documents, Seller is not transferring any patent rights, copyrights, or other intellectual property rights for the Goods delivered.

B. To the extent Seller is manufacturing to Buyer’s design, Buyer retains all patent rights, copyrights, and other intellectual property rights in such design.

C. If an invention, design, process, product, or device is specified in the Procurement Contract Documents for incorporation in the Goods or for the performance of Special Services, and if, to the actual knowledge of Buyer or Engineer, its use is subject to patent rights, copyrights, or other intellectual property rights calling for the payment of a license fee or royalty to others, then the existence of such rights and payment obligations will be disclosed to Seller in the Procurement Contract Documents.

D. Seller shall pay all license fees and royalties and assume all costs incident to the use or the furnishing of the Goods, unless specified otherwise by the Procurement Contract Documents.

6.02 Seller’s Infringement

A. Subject to Paragraph 6.01, to the fullest extent permitted by Laws and Regulations, Seller shall indemnify and hold harmless Buyer, Engineer, and their officers, directors, members, partners, employees, agents, consultants, contractors, and subcontractors, from and against all claims, costs, losses, damages, and judgments (including but not limited to all reasonable fees and charges of engineers, architects, attorneys and other professionals and all court or other dispute resolution costs) arising out of or relating to any infringement or alleged infringement of any patent, copyright, or other intellectual property right by any of the Goods as delivered or Special Services as performed.

B. Buyer will promptly notify Seller in writing of any claim, suit, or threat of suit by a third party for any infringement or alleged infringement of any patent, copyright, or other intellectual property right with respect to the Goods as delivered or Special Services as performed.

C. Seller shall promptly defend or settle the claim or suit. Seller shall have control over such claim or suit, bear all expenses, and satisfy any adverse judgment.

1. If Seller fails to defend such suit or claim after written notice by Buyer, Seller will be bound, in any subsequent suit or claim against Seller by Buyer, by any factual determination in the prior suit or claim.

2. If Buyer fails to provide Seller the opportunity to defend such suit or claim, Buyer shall be barred from any remedy against Seller for such suit or claim.

D. If a determination is made that Seller has infringed upon the intellectual property rights of another, Seller may, at Seller’s own expense, obtain the necessary licenses for Buyer’s benefit, or replace the Goods and provide related design and construction, consistent with the requirements of the Procurement Contract Documents, to avoid the infringement.
6.03 **Buyer’s Infringement**

A. Subject to Paragraph 6.01, and to the fullest extent permitted by Laws and Regulations, Buyer shall be responsible to Seller for any infringement or alleged infringement of any patent, copyright, or other intellectual property right caused by Seller’s compliance with the Procurement Drawings or Procurement Specifications, and will reimburse Seller for any license fee or royalties paid by Seller to others if such payment resulted from any invention, design, process, product, or device specified to be furnished or performed in the Procurement Drawings or Procurement Specifications, but not identified as being subject to payment of such license fee or royalty.

B. Seller will promptly notify Buyer in writing of any claim, suit, or threat of suit by a third party for intellectual property infringement arising from Seller’s compliance with the Procurement Drawings or Procurement Specifications.

C. Buyer shall defend or settle the claim or suit. Buyer shall have control over such claim or suit, and satisfy any adverse judgment.

1. If Buyer fails to defend such suit or claim after written notice by Seller, Buyer will be bound, in any subsequent suit or claim against Buyer by Seller, by any factual determination in the prior suit or claim.

2. If Seller fails to provide Buyer the opportunity to defend such suit or claim, Seller shall be barred from any remedy against Buyer for such suit or claim.

**ARTICLE 7—SELLER’S RESPONSIBILITIES**

7.01 **Performance of Obligations**

A. Seller shall be solely responsible for the means, methods, techniques, sequences, and procedures necessary to perform its obligations in accordance with the Procurement Contract Documents.

B. Seller shall supervise, inspect, and direct the furnishing of the Goods and Special Services competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform its obligations in accordance with the Procurement Contract Documents.

C. Seller shall coordinate the provision of Special Services to avoid or limit interference or disruption of other activities at the location where the Special Services are to occur, including but not limited to ongoing facility operations and construction activities.

7.02 **Labor, Materials and Equipment**

A. Seller shall provide competent, qualified and trained personnel in all aspects of its performance of the Procurement Contract.

B. All Goods, and all equipment and material incorporated into the Goods, must be as specified, and unless specified otherwise in the Procurement Contract Documents, must be:

1. new, and of good quality;

2. protected, assembled, connected, cleaned, and conditioned in accordance with the original manufacturer’s instructions; and

3. shop-assembled to the greatest extent practicable.
7.03 Laws and Regulations

A. Seller shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of its obligations in accordance with the Procurement Contract Documents. Except where otherwise expressly required by such Laws and Regulations, neither Buyer nor Engineer shall be responsible for monitoring Seller's compliance with any Laws or Regulations.

B. If Seller furnishes Goods and Special Services knowing or having reason to know that such furnishing is contrary to Laws or Regulations, Seller shall bear 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 other dispute resolution costs) arising out of or relating to such performance. It will not be Seller's responsibility to make certain that the Procurement Specifications and Procurement Drawings are in accordance with Laws and Regulations, but this provision will not relieve Seller of Seller's obligations under Paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Procurement Contract if there were no Bids) that have a direct effect on the cost or time of Seller's performance will be the subject of an adjustment in Procurement Contract Price or Procurement Contract Times. If Buyer and Seller are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Article 12.

7.04 "Or Equals"

A. Whenever an item of material or equipment to be incorporated into the Goods is specified or described in the Procurement Contract Documents by using the names of one or more proprietary items or specific suppliers or manufacturers, the specification or description 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, other items of material or equipment or material or equipment of other suppliers or manufacturers may be submitted to Buyer for Engineer's review.

1. If in Engineer's sole discretion, such an item of material or equipment proposed by Seller is functionally equal to that named and sufficiently similar so that no change in related work will be required, it may be considered by Engineer as an “or equal” item.

2. For the purposes of this paragraph, a proposed item of material or equipment may be considered functionally equal to an item so named only if in the exercise of reasonable judgment, Engineer determines that: 1) it is at least equal in quality, durability, appearance, strength, and design characteristics; 2) it will reliably perform at least equally well the function imposed by the design concept of the completed Project as a functioning whole; 3) it has an acceptable record of performance and availability of responsive service; and (4) Seller certifies that if approved: a) there will be no increase in any cost, including capital, installation or operating costs, to Buyer; and b) the proposed item will conform substantially to the detailed requirements of the item named in the Procurement Contract Documents.

B. Engineer’s Evaluation: Engineer will be allowed a reasonable time within which to evaluate each proposal or Submittal made pursuant to Paragraph 7.04.A. Engineer will be the sole judge of whether to accept or reject such a proposal or Submittal. No “or equal” will be ordered, manufactured or utilized until Engineer’s review is complete, which will be evidenced by an approved Shop Drawing. Engineer will advise Buyer and Seller in writing of any negative determination. Notwithstanding
Engineer’s approval of an “or-equal” item, Seller shall remain obligated to comply with the requirements of the Procurement Contract Documents.

C. Special Guarantee: Buyer may require Seller to furnish at Seller’s expense a special performance guarantee or other surety with respect to any such proposed “or-equal.”

D. Data: Seller shall provide all data in support of any such proposed “or equal” at Seller’s expense.

7.05 Taxes
A. Seller shall pay all taxes and duties arising out of the sale of the Goods and the performance of Special Services. All taxes and duties are included in the Procurement Contract Price, except as noted in the Supplementary Conditions.

7.06 Submittals
A. Shop Drawing and Sample Requirements
1. Before submitting a Shop Drawing or Sample, Seller shall:
   a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Procurement 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; and
      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 Seller’s obligations.
   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 Seller has satisfied its obligations under the Procurement Contract Documents with respect to Seller’s review of that Submittal, and that Seller approves the Submittal.
3. With each Shop Drawing or Sample, Seller shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Procurement Contract Documents. This notice will 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: Seller 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. Seller shall submit the number of copies required in the Procurement 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 Seller proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.06.C.

2. **Samples**
   a. Seller shall submit the number of Samples required in the Procurement Specifications.
   b. Seller 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 7.06.C.

3. Where a Shop Drawing or Sample is required by the Procurement Contract Documents or the Schedule of Submittals, any related work performed by Seller prior to Engineer’s review and approval of the pertinent Submittal will be at the sole expense and responsibility of Seller.

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 Goods, comply with the requirements of the Procurement Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Procurement Contract Documents.

2. Engineer’s review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, manufacturing, fabrication, installation, or shipping, 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 Seller from responsibility for any variation from the requirements of the Procurement Contract Documents unless Seller has complied with the requirements of Paragraph 7.06.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 Procurement Contract Documents in a Field Order or other appropriate Procurement Contract modification.

5. Engineer’s review and approval of a Shop Drawing or Sample will not relieve Seller from responsibility for complying with the requirements of Paragraphs 7.06.A and B.

6. Engineer’s review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Procurement Contract Documents, will not, under any circumstances, change the Procurement Contract Times or Procurement 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 Procurement Contract Document.
8. Seller shall furnish Goods that comply with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.06.C.4.

D. **Resubmittal Procedures for Shop Drawings and Samples**

1. Seller 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. Seller shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.

2. Seller 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 Seller shall be responsible for Engineer’s charges to Buyer for such time. Buyer may impose a set-off against payments due Seller to secure reimbursement for such charges.

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

E. **Submittals Other than Shop Drawings and Samples**

1. The following provisions apply to all Submittals other than Shop Drawings and Samples:
   a. Seller shall submit all such Submittals to the Engineer in accordance with the schedule of Submittals and pursuant to the applicable terms of the Procurement 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 Procurement Contract Documents as to general form and content of the Submittal.
   d. If any such Submittal is not accepted, Seller 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 2.04 and 2.05.

7.07 **Indemnification**

A. To the fullest extent permitted by Laws and Regulations, Seller shall indemnify and hold harmless Buyer, Engineer, Project Owner, and any assignee of Buyer, including Contractor/Assignee, and their officers, directors, members, partners, employees, agents, consultants, contractors, 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 other dispute resolution costs) arising out of or relating to the
performance of Seller’s obligations under the Procurement Contract, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Goods themselves), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Seller, or any individual or entity directly or indirectly employed by Seller or anyone for whose acts Seller may be liable.

B. In any and all claims against Buyer, Engineer, Project Owner, or any assignee of Buyer, including Contractor/Assignee, or their officers, directors, members, partners, employees, agents, consultants, contractors, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Seller, any subcontractor, any supplier, or any individual or entity directly or indirectly employed by any of them to furnish any of the Goods and Special Services, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.07.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 Seller or any such subcontractor, supplier, or other individual or entity under workers’ compensation acts, disability benefit acts, or other employee benefit acts.

7.08 Concerning Subcontractors and Suppliers

A. Seller may retain subcontractors and suppliers for the performance of parts of the furnishing of the Goods and Special Services. The Seller’s retention of a subcontractor or supplier will not relieve Seller’s obligation to Buyer to perform and complete the furnishing the Goods and Special Services in accordance with the Procurement Contract Documents.

ARTICLE 8—SHIPPING AND DELIVERY

8.01 Shipping

A. Seller shall select the carrier and bear all costs of packaging, transportation, insurance, special handling, and all other costs associated with shipment and delivery.

8.02 Delivery

A. Seller shall deliver the Goods free on board (FOB) to the Point of Destination, freight prepaid, in accordance with the Procurement Contract Times set forth in the Procurement Agreement, or other date agreed to by Buyer and Seller.

B. At least 10 days before shipment, Seller shall provide written notice to Buyer of the manner of shipment and the anticipated delivery date. The notice must also include any instructions concerning special equipment or services required at the Point of Destination to unload and care for the Goods. Seller shall also require the carrier to give Buyer at least 24 hours’ notice by telephone prior to the anticipated time of delivery.

C. Buyer will be responsible and bear all costs for unloading the Goods from carrier.

D. Buyer will assure that adequate facilities are available to receive delivery of the Goods at the time established for delivery, or on another date agreed to by Buyer and Seller.

E. No partial deliveries will be allowed, unless permitted or required by the Procurement Contract Documents or agreed to in writing by Buyer.

F. Provisions governing inspection on delivery are set forth in Paragraph 9.02.
8.03  **Risk of Loss**

A. Risk of loss and insurable interests transfer from Seller to Buyer upon Buyer’s receipt of the Goods.

B. Notwithstanding the provisions of Paragraph 8.03.A, if Buyer rejects the Goods as non-conforming, the risk of loss on such Goods will remain with Seller until Seller corrects the non-conformity or Buyer accepts the Goods. If rejected Goods remain at the Point of Destination pending modification and acceptance, then Seller shall be responsible for arranging adequate protection and maintenance of the Goods at Seller’s expense.

**ARTICLE 9—BUYER’S RIGHTS**

9.01  **Seller’s Warranties and Guarantees**

A. Seller warrants and guarantees to Buyer that the title to the Goods conveyed will be proper, its transfer rightful, and free from any security interest, lien, or other encumbrance. Seller shall defend, indemnify, and hold Buyer harmless against any liens, claims, or demands contesting or affecting title of the Goods conveyed.

B. Seller warrants and guarantees to Buyer that all Goods and Special Services will conform with the Procurement Contract Documents, and with the standards established by any Samples approved by Engineer. Engineer shall be entitled to rely on Seller’s warranty and guarantee. If the Procurement Contract Documents do not otherwise specify the characteristics or the quality of the Goods, the Goods must comply with the requirements of Paragraph 7.02.B.

C. Seller’s warranty and guarantee hereunder excludes defects or damage caused by:
   1. abuse, improper modification, improper maintenance, or improper operation by persons other than Seller;
   2. excessive corrosion or chemical attack, unless corrosive or chemically-damaging conditions were disclosed by Buyer in the Procurement Contract Documents and the Procurement Contract Documents required the Goods to withstand such conditions;
   3. use in a manner contrary to Seller's written instructions for installation, operation, and maintenance; or
   4. normal wear and tear under normal usage.

D. Seller’s obligation to furnish the Goods and Special Services in accordance with the Procurement Contract Documents will be absolute. None of the following will constitute an acceptance of Goods and Special Services that are non-conforming, or a release of Seller’s obligation to furnish the Goods and Special Services in accordance with the Procurement Contract Documents:
   1. observations by Buyer, Engineer, or Project Owner;
   2. recommendation by Engineer or payment by Buyer of any progress or final payment;
   3. use of the Goods by Buyer or Project Owner;
   4. any acceptance by Buyer, Engineer, or Project Owner, or any failure to do so;
   5. the end of the correction period established in Paragraph 9.04;
   6. the issuance of a notice of acceptance;
7. any inspection, test or approval by others; or
8. any correction of non-conforming Goods and Special Services by Buyer or Project Owner.

E. Buyer shall promptly notify Seller of any breach of Seller’s warranties or guarantees.

9.02 Inspections and Testing

A. General Provisions

1. The Procurement Contract Documents specify required inspections and tests. Buyer shall have the right to perform, or cause to be performed, reasonable inspections and require reasonable tests of the Goods at Seller’s facility, and at the Point of Destination. Seller shall allow Buyer a reasonable time to perform such inspections or tests.

2. Seller shall reimburse Buyer for all expenses, except for travel, lodging, and subsistence expenses of Buyer’s and Engineer’s representatives, for inspections and tests specified in the Procurement Contract Documents. If as the result of any such specified testing the Goods are determined to be non-conforming, then Seller shall also bear the travel, lodging, and subsistence expenses of Buyer’s and Engineer’s representatives, and all expenses of re-inspection or retesting.

3. Buyer shall bear all expenses of inspections and tests that are not specified in the Procurement Contract Documents (other than any re-inspection or retesting resulting from a determination of non-conformity, as set forth in Paragraph 9.03); provided, however, that if as the result of any such non-specified inspections or testing the Goods are determined to be non-conforming, then Seller shall bear all expenses of such inspections and testing, and of any necessary re-inspection and retesting.

4. Seller shall provide Buyer timely written notice of the readiness of the Goods for all inspections, tests, or approvals which the Procurement Contract Documents specify are to be observed by Buyer prior to shipment.

5. Buyer will give Seller timely notice of all specified tests, inspections, and approvals of the Goods which are to be conducted at the Point of Destination, and a representative of Seller will attend such tests, inspections, and approvals.

6. If, on the basis of inspections or testing, the Goods appear to be conforming, Buyer will give Seller prompt notice thereof. If on the basis of inspections or testing, the Goods appear to be non-conforming, Buyer will give Seller prompt notice thereof and will advise Seller of the remedy Buyer elects under the provisions of Paragraph 9.03.

7. Neither payments made by Buyer to Seller prior to any tests or inspections, nor any tests or inspections, will constitute acceptance of non-conforming Goods, or prejudice Buyer’s rights under the Procurement Contract.

B. Visual Inspection on Delivery

1. Buyer will visually inspect the Goods upon delivery solely for purposes of identifying the Goods, general verification of quantities, and observation of apparent condition. Such visual inspection will not be construed as final or as receipt of any Goods and Special Services that, as a result of subsequent inspections and tests, are determined to be non-conforming.
2. If, on the basis of the visual inspection specified in Paragraph 9.02.B.1, the Goods appear to comply with the requirements of the Procurement Contract Documents as to quantities and condition, then within 10 days of delivery Buyer shall issue to Seller Buyer’s acknowledgment of the receipt of Goods.

C. Final Inspection

1. After all of the Goods have been incorporated into the Project, tested in accordance with such testing requirements as are specified, and are functioning as required, and Seller has performed and completed all Special Services, Buyer will make a final inspection.

2. If, on the basis of the final inspection, Buyer determines that the Goods and Special Services are conforming, Buyer’s notice thereof will constitute Buyer’s acceptance of the Goods and Special Services, subject to any limitations stated in the notice.

3. If, on the basis of the final inspection, the Goods and Special Services are non-conforming, Buyer will identify the non-conformity in writing.

9.03 Non-Conforming Goods and Special Services

A. If, on the basis of inspections and testing prior to delivery, the Goods and Special Services are found to be non-conforming, or if at any time after Buyer has acknowledged receipt of delivery and before the expiration of the correction period described in Paragraph 9.04, Buyer determines that the Goods and Special Services are non-conforming, then Seller shall promptly, without cost to Buyer and in response to written instructions from Buyer, either correct such non-conforming Goods and Special Services, or, if Goods are rejected by Buyer, remove and replace the non-conforming Goods with conforming Goods, including all work required for reinstallation.

B. Buyer’s Rejection of Non-Conforming Goods

1. If Buyer elects to reject the Goods in whole or in part, Buyer’s notice to Seller will describe in sufficient detail the non-conforming aspect of the Goods. If Goods have been delivered to Buyer, Seller shall promptly, and within the Procurement Contract Times, remove and replace the rejected Goods.

2. Seller shall bear all costs, losses and damages attributable to the removal, replacement, reinspection, and retesting of the non-conforming Goods.

3. Upon rejection of the Goods, Buyer retains a security interest in the Goods to the extent of any payments made and expenses incurred in their testing and inspection.

C. Buyer’s Rejection of Non-Conforming Special Services

1. If at any time Buyer elects to reject the Special Services in whole or in part, Buyer’s notice to Seller will describe in sufficient detail the non-conforming aspect of the Special Services.

2. Seller shall promptly provide conforming Special Services acceptable to Buyer.

3. If Seller fails to provide conforming Special Services, Buyer may remove the Special Services from the scope of the Procurement Contract, and equitably reduce the Procurement Contract Price.

D. Remedying Non-Conforming Goods: If Buyer elects to permit the Seller to modify the Goods to correct the non-conformance, then Seller shall promptly provide a schedule for such modifications and shall make the Goods conforming within a reasonable time.
E. Buyer’s Acceptance of Non-Conforming Goods: Instead of requiring correction or removal and replacement of non-conforming Goods discovered either before or after final payment, Buyer may accept the non-conforming Goods. Seller shall bear all reasonable costs, losses, and damages attributable to Buyer’s evaluation of and determination to accept such non-conforming Goods.

F. Seller Obligations: Seller shall pay all claims, costs, losses, and damages, including but not limited to all fees and charges for re-inspection, retesting and for any engineers, architects, attorneys and other professionals, and all court or other dispute resolution costs arising out of or relating to the non-conforming Goods and Special Services. Seller’s obligations will include the costs of the correction or removal and replacement of the non-conforming Goods and the replacement of property of Buyer and others destroyed by the correction or removal and replacement of the non-conforming Goods, and obtaining conforming Special Services from others.

G. Buyer's Rejection of Conforming Goods: If Buyer asserts that Goods and Special Services are non-conforming and such Goods and Special Services are determined to be conforming, or if Buyer rejects as non-conforming Goods and Special Services that are later determined to be conforming, then Seller shall be entitled to reimbursement from Buyer of costs incurred by Seller in inspecting, testing, correcting, removing, or replacing the conforming Goods and Special Services, including but not limited to fees and charges of engineers, architects, attorneys and other professionals, and all court or other dispute resolution costs associated with the incorrect assertion of non-conformance or rejection of conforming Goods and Special Services.

9.04 Correction Period

A. Seller’s responsibility for correcting all non-conformities in the Goods and Special Services will extend for a period of one year after the acceptance of the Goods and Special Services in accordance with Paragraph 9.02.C.2.

B. Where non-conforming Goods and Services (and damage to other work resulting therefrom) have been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Goods and Services will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

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

ARTICLE 10—ENGINEER’S STATUS

10.01 Engineer’s Role Defined

A. Engineer will be Buyer’s representative until assignment (if any) of the Procurement Contract.

B. The duties and responsibilities and the limitations of authority of Engineer prior to assignment, if any, of the Procurement Contract, are set forth in the Procurement Contract Documents.

C. Engineer’s responsibilities, if any, after an assignment (if any) of the Procurement Contract, are set forth in the Procurement Agreement.
10.02 Duties and Responsibilities; Authority; Limitations

A. As set forth in Article 3, Engineer will be the initial interpreter of the Procurement Contract Documents and judge of the acceptability of the Goods and Special Services, and will issue clarifications, interpretations, and decisions regarding such issues.

B. Acting on behalf of Buyer under the provisions of Article 9, Engineer has the authority to disapprove or reject Goods and Special Services that Engineer believes to be non-conforming. Engineer also has the authority to require special inspection or testing of the Goods or Special Services as provided in Paragraph 9.02, whether or not the Goods are fabricated or installed, or the Special Services are completed.

C. Engineer may authorize minor deviations or variations in the Procurement Contract Documents by: 1) written approval of specific variations set forth in Shop Drawings when Seller has duly noted such variations as required in Paragraph 7.06.A.3, or 2) a Field Order.

D. As set forth in Article 12, Engineer will review Claims, and render decisions on Claims.

E. In rendering any interpretations, clarifications, reviews, decisions, disapprovals, acceptances, rejections, authorizations, and judgments, Engineer will not show partiality to Buyer or Seller. Engineer will not be liable to Buyer, Seller, or others in connection with any interpretations, clarifications, reviews, decisions, disapprovals, acceptances, rejections, authorizations, or judgments conducted or rendered by Engineer in good faith.

F. Engineer will not supervise, direct, control, or have authority over or be responsible for the means, methods, techniques, sequences, or procedures used by Seller to perform its obligations under this Procurement Contract, or the safety precautions and programs incident thereto, or for any failure of Seller to comply with Laws and Regulations applicable to the performance of its obligations. Engineer will not be responsible for Seller’s failure to furnish the Goods and Special Services in accordance with the Procurement Contract Documents.

ARTICLE 11—CHANGES

11.01 Amending and Supplementing the Procurement Contract

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

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

C. All changes to the Procurement Contract that involve (1) the conformance or acceptability of the Goods and Special Services, (2) the design (as set forth in the Procurement Drawings, Procurement Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer’s recommendation. Buyer and Seller may amend other terms and conditions of the Procurement Contract without the recommendation of the Engineer.

11.02 Change Orders

A. Buyer and Seller shall execute appropriate Change Orders covering:

1. Changes in Procurement Contract Price or Procurement Contract Times which are agreed to by the parties, including any undisputed sum or amount of time
for Goods and Special Services furnished in accordance with a Change Directive;

2. Changes in Procurement Contract Price resulting from a Buyer set-off, unless Seller has duly contested such set-off;

3. Changes in the Goods and Special Services which are: (a) ordered by Buyer pursuant to Paragraph 11.05, (b) required because of Buyer’s acceptance of non-conforming Goods and Services under Paragraph 9.03 or (c) agreed to by the parties, subject to the need for Engineer’s recommendation if the change in the Goods and Special Services involves the design (as set forth in the Procurement Drawings, Procurement 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 Change Directive; Article 12, Claims; and similar provisions.

B. If Buyer or Seller 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 Change Directives

A. A Change Directive will not change the Procurement Contract Price or the Procurement Contract Times but is evidence that the parties expect that the modification ordered or documented by a Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Change Directive’s effect, if any, on the Procurement Contract Price and Procurement Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Procurement Contract Documents governing adjustments, expressly including Paragraph 11.08 regarding change of Procurement Contract Price.

B. If Buyer has issued a Change Directive and Buyer or Seller believes that an adjustment in Procurement Contract Times or Procurement Contract Price is necessary, then such party shall submit a Claim seeking such an adjustment no later than 30 days after the completion of the Goods and Services set out in the Change Directive.

11.04 Field Orders

A. Engineer may authorize minor changes in the Goods and Services if the changes do not involve an adjustment in the Procurement Contract Price or the Procurement Contract Times and are compatible with the design concept as indicated by the Procurement Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Buyer and also on Seller, which shall perform the Goods and Special Services involved promptly.

B. If Seller believes that a Field Order justifies an adjustment in the Procurement Contract Price or Procurement Contract Times, then before proceeding with the Goods and Special Services at issue, Seller shall submit a Claim as provided herein.

11.05 Buyer-Authorized Changes in the Goods and Special Services

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

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

11.06 Buyer’s Contingency Allowance

A. The Buyer’s Contingency Allowance, if any such is set forth in the Procurement Agreement, is for the sole use of Buyer to cover unanticipated costs.

B. If Buyer exercises its unilateral right to use all or a portion of the Buyer’s Contingency Allowance, Buyer will issue a written directive that documents the costs to which the allowance is applied, Seller’s entitlement to compensation, and the consequent reduction in such allowance.

C. Prior to final payment, the Total Price, as set forth in the Procurement Agreement, will be duly adjusted to account for any unused portion of the Buyer’s Contingency Allowance.

D. The Procurement Agreement, Article 5, addresses the impact on Buyer’s Contingency Allowance of an assignment of the Procurement Contract.

11.07 Unauthorized Changes in the Goods and Special Services

A. Seller shall not be entitled to an increase in the Procurement Contract Price or an extension of the Procurement Contract Times with respect to any work performed that is not required by the Procurement Contract Documents, as amended, modified, or supplemented.

11.08 Change of Procurement Contract Price

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

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

1. For changes in Unit Price Goods and Special Services, by application of the unit prices to the quantities of the items involved;

2. To the extent the cost of the change is not covered by unit prices, then by a mutually agreed lump sum; or

3. To the extent the cost of the change is not covered by unit prices and the parties do not reach mutual agreement to a lump sum, then on the basis of documented costs plus a Seller’s fee for overhead and profit of 15%.

11.09 Change of Procurement Contract Times

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

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 Goods and Special Services or the provisions of
the Procurement Contract (including, but not limited to, Procurement Contract Price or Procurement Contract Times), the giving of any such notice will be Seller’s responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12—CLAIMS, DISPUTES, AND DISPUTE RESOLUTION

12.01 Claims

A. The parties agree to endeavor to avoid or resolve Claims through direct, good faith discussions and negotiations whenever practicable. Such discussions and negotiations should at the outset address whether the parties mutually agree to suspend the Claims process, including the time periods established in this Paragraph 12.01; if so, a written record of such mutual agreement should be made and jointly executed.

B. Claimant shall deliver to Engineer and the other party to the Procurement Contract written notice of each Claim within 15 days after the occurrence of the event giving rise to the Claim.

C. Claimant shall deliver written supporting data to Engineer and the other party within 45 days after such occurrence unless Engineer allows an additional period of time.

D. Engineer will review each such Claim and render a decision in writing within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any.

E. If Engineer does not render a formal written decision on a Claim within the time stated in Paragraph 12.01.D., Engineer shall be deemed to have issued a decision denying the Claim in its entirety 31 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any.

F. The rendering of a decision by Engineer pursuant to this Paragraph 12.01 with respect to any such Claim, dispute, or other matter (except any which have been waived by the making or acceptance of final payment) will be a condition precedent to any exercise by Buyer or Seller of such rights or remedies as either may otherwise have under the Procurement Contract Documents or by Laws or Regulations in respect of any such Claim, dispute, or other matter. If the exercise of such rights or remedies will imminently be time-barred, a party may take actions necessary to preserve such rights and remedies notwithstanding the lack of the condition precedent referred to in this paragraph.

G. If a submitted matter in question concerns terms and conditions of the Procurement Contract Documents that do not involve (1) the performance or acceptability of Goods and Special Services under the Procurement Contract Documents, (2) the design (as set forth in the Procurement Drawings, Procurement Specifications, Addenda, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Buyer and Seller that Engineer is unable to provide a decision or interpretation. If Buyer and Seller are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Paragraph 12.02.

H. Engineer’s written decision on such Claim or a decision denying the Claim in its entirety that is deemed to have been issued pursuant to Paragraph 12.01, will be final and binding upon Buyer and Seller 30 days after it is issued unless within 30 days of issuance Buyer or Seller appeals Engineer’s decision by initiating the mediation of such Claim in accordance with the dispute resolution procedures set forth in Paragraph 12.02.
I. If Article 12 has been amended to delete the mediation requirement, then Buyer or Seller may appeal Engineer's decision within 30 days of issuance by following the alternative dispute resolution process set forth in Article 12, as amended; or if no such alternative dispute resolution process has been set forth, Buyer or Seller may appeal Engineer's decision by 1) delivering to the other party within 30 days of the date of such decision a written notice of intent to submit the Claim to a court of competent jurisdiction, and 2) within 60 days after the date of such decision instituting a formal proceeding in a court of competent jurisdiction.

J. No Claim for an adjustment in Procurement Contract Price or Procurement Contract Times will be valid if not submitted in accordance with Article 12.

K. The effect on Claims of an assignment of the Procurement Contract by Buyer to a Contractor/Assignee is addressed in the Procurement Agreement, Article 5.

12.02 Dispute Resolution Method

A. Either Buyer or Seller may initiate the mediation of (1) any Claim decided in writing by Engineer under Paragraph 12.01 before such decision becomes final and binding, or (2) any other dispute between the parties, including but not limited to any dispute arising after final inspection of the Goods and Services. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Procurement Contract. The request for mediation must be submitted in writing to the American Arbitration Association and the other party to the Procurement Contract. Timely submission of the request will stay Engineer's decision from becoming final and binding.

B. Mediation is a condition precedent to seeking final dispute resolution under Paragraph 12.01.C. Buyer and Seller shall participate in the mediation process in good faith. The process must be concluded within 60 days of filing of the request. The date of termination of the mediation will be determined by application of the mediation rules referenced above.

C. If the mediation process does not result in resolution of the dispute, then Engineer’s written Claim decision under Paragraph 12.01.D or a Claim denial pursuant to Paragraph 12.01.E becomes final and binding, or if applicable such other dispute is deemed resolved in favor of respondent, unless, within 30 days after termination of the mediation, Buyer or Seller:

1. elects in writing to invoke any final dispute resolution process provided for in the Supplementary Conditions, or

2. agrees with the other party to submit the Claim or dispute to another final dispute resolution process, or

3. if no final dispute resolution process has been provided for in the Supplementary Conditions, delivers to the other party written notice of the intent to submit the Claim or dispute to a court of competent jurisdiction, and within 60 days of the termination of the mediation institutes such formal proceeding.

ARTICLE 13—PAYMENT

13.01 Applications for Progress Payments

A. Seller shall submit to Buyer for Engineer’s review Applications for Payment filled out and signed by Seller and accompanied by such supporting documentation as is required by the Procurement Contract Documents and also as Buyer or Engineer may reasonably require.
B. The timing and amounts of progress payments will be as stipulated in the Procurement Agreement.

C. Any Application for Payment that is based in whole or in part on the delivery of Goods must be accompanied by a bill of sale, invoice, or other documentation reasonably satisfactory to Buyer warranting that Buyer has rightfully received good title to the Goods from Seller and that, upon payment, the Goods will be free and clear of all liens. Such documentation will include releases and waivers from all parties with viable lien rights.

D. Buyer shall notify Seller promptly of any deficiency in the required documentation.

13.02 Review of Applications for Progress Payments

A. 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 Buyer, or return the Application to Seller indicating in writing Engineer’s reasons for refusing to recommend payment.

2. Engineer’s recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Buyer, based on Engineer’s observations of Seller’s progress, 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 Goods and Special Services or other obligations of Seller have progressed to the point indicated;
   b. the quality of the Goods and Special Services or other obligations of Seller are generally in accordance with the Procurement Contract Documents; and
   c. the conditions precedent to Seller being entitled to such payment appear to have been fulfilled in so far as it is Engineer’s responsibility to observe the Seller’s progress.

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 Goods and Special Services or other obligations of Seller have been exhaustive, extended to every aspect of the Goods and Special Services or other obligations of Seller in progress, or involved detailed inspections of the Goods and Special Services or other obligations of Seller beyond the responsibilities specifically assigned to Engineer in the Procurement Contract; or
   b. there may not be other matters or issues between the parties that might entitle Seller to be paid additionally by Buyer, or entitle Buyer to withhold payment to Seller.

4. Neither Engineer’s review of Seller’s progress 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 Seller’s performance or furnishing of Goods and Special Services or other obligations of Seller; or
b. for the means, methods, techniques, sequences, or procedures of construction, manufacturing, fabrication, installation, or shipping, or the safety precautions and programs incident thereto; or
c. for Seller’s failure to comply with Laws and Regulations applicable to Seller’s performance under the Procurement Contract; or
d. to make any examination to ascertain how or for what purposes Seller has used the money paid for the Procurement Contract Price; or
e. to determine that title to any of the Goods or component parts have passed to Buyer 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 Buyer stated in Paragraph 13.02.A.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer’s opinion to protect Buyer from loss because:
   a. the Goods and Services are non-conforming, requiring correction or replacement;
   b. the Procurement Contract Price has been reduced by Change Orders;
   c. Buyer has been required to correct non-conforming Goods and Special Services in accordance with Paragraph 9.03.C, or has accepted non-conforming Goods and Special Services pursuant to Paragraph 9.03.E; or
   d. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Seller and therefore justify termination for cause under the Procurement Contract Documents.

13.03 Basis and Amount of Progress Payments

A. The basis and amounts of the progress payments will be as provided in the Procurement Agreement, subject to the provisions of this Article 13 regarding reductions in payment.

13.04 Suspension of or Reduction in Payment

A. Buyer may temporarily cease making progress payments, or reduce the amount of a progress payment, even though recommended for payment by Engineer, under the following circumstances:

1. Buyer has reasonable grounds to conclude that Seller will not furnish the Goods or the Special Services in accordance with the Procurement Contract Documents, and

2. Buyer has requested in writing assurances from Seller that the Goods and Special Services will be delivered or furnished in accordance with the Procurement Contract Documents, and Seller has failed to provide adequate assurances within ten days of Buyer’s written request.

3. In addition to any reductions in payment (set-offs) recommended by Engineer, Buyer is entitled to impose a set-off against payment based on any of the following:
   a. claims have been made against Buyer based on Seller’s conduct in the performance or furnishing of the Goods and Special Services, or has incurred costs, losses, or damages resulting from Seller’s conduct in the performance or furnishing of the Goods and Special Services, 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. Seller has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Point of Destination or the worksite;

c. Seller has failed to provide and maintain required bonds or insurance;

d. Buyer 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;

e. the Goods and Special Services are non-conforming, requiring correction or replacement;

f. Buyer has been required to correct non-conforming Goods and Special Services, in accordance with Paragraph 9.03.C, or has accepted non-conforming Goods and Special Services pursuant to Paragraph 9.03.E;

g. the Procurement Contract Price has been reduced by Change Orders;

h. an event that would constitute a default by Seller and therefore justify a termination for cause has occurred;

i. liquidated or other damages have accrued as a result of Seller’s failure to achieve Milestones, Substantial Completion, or final completion of the Goods and Special Services; or

j. liens have been filed in connection with the Procurement Contract, except where Seller has delivered a specific bond satisfactory to Buyer to secure the satisfaction and discharge of such liens.

B. If Buyer refuses to make payment of the full amount recommended by Engineer, Buyer will provide Seller and Engineer immediate written notice stating the reason for such action and promptly pay Seller any amount remaining after deduction of the amount withheld. Buyer shall promptly pay Seller the amount withheld when Seller corrects the reason for such action to Buyer’s satisfaction.

13.05 Final Payment

A. After Seller has corrected all non-conformities to the reasonable satisfaction of Buyer and Engineer and furnished all Special Services, Seller may submit its final Application for Payment following the procedures for progress payments.

B. The final Application for Payment will be accompanied by all documentation called for in the Procurement Contract Documents (including but not limited to all final operations and maintenance manuals, and any special warranties), a list of all unsettled Claims, and the written consent of surety to the making of final payment.

C. If, on the basis of final inspection and the review of the final Application for Payment and accompanying documentation, Engineer is reasonably satisfied that Seller has furnished the Goods and Special Services in accordance with the Procurement Contract Documents, and that Seller has fulfilled all other obligations under the Procurement Contract Documents, then Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer’s recommendation of final payment subject to the provisions of Paragraph 13.02, and present the final Application for Payment to Buyer. Such recommendation will account for any set-offs against payment that are necessary in Engineer’s opinion to protect Buyer from loss for the reasons stated in Paragraph 13.02.

D. If Engineer does not recommend final payment, Engineer will return the final Application for Payment to Seller, indicating the reasons for refusing to
recommend final payment, in which case Seller shall make the necessary corrections and resubmit the final Application for Payment.

E. In support of its recommendation of final payment Engineer will also give written notice to Buyer and Seller that the Goods and Special Services are acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 13.06.

F. If the final Application for Payment and accompanying documentation are appropriate as to form and substance, Buyer shall, within 30 days after receipt thereof, pay Seller the amount recommended by Engineer, less any sum Buyer is entitled to set off against Engineer's recommendation, pursuant to the provisions of Paragraph 13.04.

G. Buyer will not make final payment, or return or release included retainage (if any) at any time, unless Seller submits written consent of the surety to such payment, return, or release.

13.06 Waiver of Claims

A. By making final payment, Buyer waives its claim or right to liquidated damages or other damages for late completion by Seller, except as set forth in an outstanding Claim, appeal, set-off, or express reservation of rights by Buyer. Buyer reserves all other claims or rights after final payment.

B. The acceptance of final payment by Seller will constitute a waiver by Seller of all claims and rights against Buyer other than those pending matters that have been duly submitted or appealed under the provisions of Article 12.

ARTICLE 14—CANCELLATION, SUSPENSION, AND TERMINATION

14.01 Cancellation

A. Buyer has the right to cancel the Procurement Contract, without cause, at any time prior to delivery of the Goods by written notice. Cancellation pursuant to the terms of this paragraph will not constitute a breach of contract by Buyer. Upon cancellation:

1. Buyer shall pay Seller for the direct costs incurred in producing any Goods that Seller has specially manufactured for the Project, plus a fair and reasonable amount for overhead and profit.

2. For Goods that are not specially manufactured for the Project, Seller shall be entitled to a restocking charge of 10 percent of the unpaid Procurement Contract Price of such Goods.

14.02 Suspension of Performance by Buyer

A. Buyer has the right to suspend performance of the Procurement Contract for up to 90 days, without cause, by written notice. Upon suspension under this paragraph, Seller shall be entitled to an increase in the Procurement Contract Times and Procurement Contract Price caused by the suspension, provided that performance would not have been suspended or delayed for causes attributable to Seller.

14.03 Suspension of Performance by Seller

A. Seller may suspend the furnishing of the Goods and Special Services only under the following circumstance:

1. Seller has reasonable grounds to conclude that Buyer will not perform its future payment obligations under the Procurement Contract; and
2. Seller has requested in writing assurances from Buyer that future payments will be made in accordance with the Procurement Contract, and Buyer has failed to provide such assurances within ten days of Seller’s written request.

14.04 Breach and Termination

A. Buyer’s Breach

1. Seller shall have the right to terminate the Procurement Contract for cause by declaring a breach if Buyer fails to comply with any material provision of the Procurement Contract. Upon termination, Seller shall be entitled to all remedies provided by Laws and Regulations.

2. If Seller believes Buyer is in breach of its obligations under the Procurement Contract, Seller shall provide Buyer with reasonably prompt written notice setting forth in sufficient detail the reasons for declaring that it believes a breach has occurred. Buyer shall have 7 days from receipt of the written notice declaring the breach (or such longer period of time as Seller may grant in writing) within which to cure or to proceed diligently to cure such alleged breach.

B. Seller’s Breach

1. Buyer may terminate Seller’s right to perform the Procurement Contract for cause by declaring a breach should Seller fail to comply with any material provision of the Procurement Contract Documents. Upon termination, Buyer shall be entitled to all remedies provided by Laws and Regulations.

2. In the event Buyer believes Seller is in breach of its obligations under the Procurement Contract, Buyer shall provide Seller with reasonably prompt written notice setting forth in sufficient detail the reasons for declaring that it believes a breach has occurred. Seller shall have 7 days from receipt of the written notice declaring the breach (or such longer period of time as Buyer may grant in writing) within which to cure or to proceed diligently to cure such alleged breach.

3. If and to the extent that Seller has provided a performance bond under the provisions of Paragraph 5.01, the notice and cure procedures of that bond, if any, will supersede the notice and cure procedures of Paragraph 14.04.B.2.

ARTICLE 15—MISCELLANEOUS

15.01 Giving Notice

A. Whenever any provision of the Procurement Contract requires the giving of written notice to Buyer, Seller, or Engineer, it will be deemed to have been validly given 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.

15.02 Controlling Law

A. This Procurement Contract is to be governed by the law of the state in which the Goods are to be installed.
B. In the case of any conflict between the express terms of this Procurement Contract and the Uniform Commercial Code, as adopted in the state whose law governs, it is the intent of the parties that the express terms of this Procurement Contract will apply.

15.03 Computation of Time

A. When any period of time is referred to in the Procurement Contract by number of 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.

15.04 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 Procurement Contract, and the provisions of this paragraph will be as effective as if repeated specifically in the Procurement Contract in connection with each particular duty, obligation, right, and remedy to which they apply.

15.05 Survival of Obligations

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

15.06 Entire Agreement

A. Buyer and Seller agree that this Procurement Contract is the complete and final agreement between them, and supersedes all prior negotiations, representations, or agreements, either written or oral. This Procurement Contract may not be altered, modified, or amended except in writing signed by an authorized representative of both parties.

15.07 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 Procurement Contract.

15.08 Headings

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

15.09 Successors and Assigns

A. Buyer and Seller each binds itself, its partners, successors, assigns, and legal representatives to the other party hereto, its partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Procurement Contract.
# SUPPLEMENTARY CONDITIONS OF THE PROCUREMENT CONTRACT

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</tr>
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<td>Miscellaneous</td>
<td>6</td>
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SUPPLEMENTARY CONDITIONS OF THE PROCUREMENT CONTRACT

These Supplementary Conditions amend or supplement EJCDC® P-700, Standard General Conditions of the Procurement Contract (2019). The General Conditions remain in full force and effect except as amended.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added—for example, “Paragraph SC-4.05.”

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

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

1. Notice of Acceptability—The written notice issued by the Engineer that the Seller has furnished all Goods and Special Services, and delivered all maintenance and operating instructions, schedules, guarantees, certificates of inspection, and other documents as required by the Contract Documents.

2. Notice to Commence Fabrication—A written notice given by Buyer to Seller fixing the date(s) on which the Contract Times for the production and delivery of Goods commence to run and on which Seller shall start to perform under the applicable portion of the Contract.

3. Notice of Completed Commissioning—The written notice issued by the Engineer indicating that the Seller has completed the commissioning of the RAS Pump System. The notice shall indicate that the Engineer has reviewed the status of RAS Pump System commissioning to its satisfaction, identified items to be corrected, and that those items that require correction by the Seller have been successfully completed as to allow training of the Owner’s Operational and Maintenance Personnel to commence.

4. Notice of Completed Installation—The written notice issued by the Engineer that the Seller has reviewed the installation of the Goods and identified all items to be corrected and that those items that require correction by the Contractor have been completed as to allow Commissioning of the RAS Pump System to commence.

5. Notice of Completed Training—The written notice issued by the Engineer that the Seller has completed training of the Owner’s as a prerequisite to Acceptance Testing of the RAS Pump System.

6. Notice of Contract Completion—The written notice signed by both parties that effectively ends the contractual arrangement for the supply and delivery of the RAS Pump equipment but retains the continuing obligations (e.g. provisions of the warranty) established in the Procurement Documents.

7. Notice to Proceed—A written notice given by Construction Manager the Owner to Seller fixing the date on which the Contract Times commence to run and on which the Seller shall start to perform under the Contract.

8. Notice of Substantial Completion—The written notice issued by the Engineer to the Seller that Acceptance Testing has been successfully completed.
9. Special Engineering Services—Services to be performed by Seller (or its agents or subcontractors) as required by the Procurement Contract Documents, that are in association with the design, fabrication, installation, materials of construction or other information concerning the Goods to be furnished by Seller and must be coordinated with the Engineer for approval and coordination of the facility design.

10. System—RAS Pump equipment. The RAS Pump System is comprised of components supplied by the system supplier.

11. Train—A grouping of treatment units that work in concert to treat wastewater.

12. Work—A general description for providing Goods, Special Engineering Services and Special Services as required by the Contract Documents.

ARTICLE 2—PRELIMINARY MATTERS

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

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

ARTICLE 3—PROCUREMENT CONTRACT DOCUMENTS

NOT USED

ARTICLE 4—COMMENCEMENT AND PROGRESS OF WORK

NOT USED

ARTICLE 5—BONDS AND INSURANCE

SC-5.02 Add the following new paragraphs immediately after Paragraph 5.02.E:

F. Seller shall purchase and maintain such liability and other insurance as is appropriate for the furnishing of Goods and Special Services and as will provide protection from claims set forth below which may arise out of or result from Seller's furnishing of the Goods or Special Services and Seller's other obligations under the Procurement Contract Documents, whether the furnishing of Goods and Special Services or other obligations are to be performed by Seller, any subcontractor or supplier, or by anyone directly or indirectly employed by any of them to furnish the Goods and Special Services, or by anyone for whose acts any of them may be liable:

1. claims under workers’ compensation, disability benefits, and other similar employee benefit acts;

2. claims for damages because of bodily injury, occupational sickness or disease, or death of Seller's employees;

3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Seller’s employees;

4. claims for damages insured by reasonably available personal injury liability coverage which are sustained: (a) by any person as a result of an offense directly or indirectly related to the employment of such person by Seller, or (b) by any other person for any other reason;
5. claims for damages, other than to the Goods, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and

6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

G. The policies of insurance so required by this Paragraph 5.02 to be purchased and maintained must:

1. with respect to insurance required by Paragraphs SC-5.02.F.3 through SC-5.02.F.6 inclusive, include as additional insureds (subject to any customary exclusion in respect of professional liability) Buyer, Engineer and their consultants all of whom must be listed as additional insureds, and include coverage for the respective officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds must provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided below or required by Laws or Regulations, whichever is greater;

3. include completed operations insurance;

4. include contractual liability insurance covering Seller’s indemnity obligations under Paragraph 7.07;

5. 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 will provide a copy of the notice to the other party, each other insured, and Engineer;

6. remain in effect at least until final payment and at all times thereafter when Seller may be correcting, removing, or replacing non-conforming Goods in accordance with Paragraph 9.03 and 9.04; and

7. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment (and Seller shall furnish Buyer and each other additional insured identified in these Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Buyer and any such additional insured of continuation of such insurance at final payment and one year thereafter).

H. The limits of liability for the insurance required by Paragraph SC-5.02.F must provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Workers’ Compensation, and related coverages under Paragraphs SC-5.02.F.1 and F.2:

<table>
<thead>
<tr>
<th>Workers’ Compensation and Related Policies</th>
<th>Policy limits of not less than</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers’ Compensation</td>
<td>Statutory</td>
</tr>
<tr>
<td>State</td>
<td>Statutory</td>
</tr>
<tr>
<td>Applicable Federal (e.g., Longshoreman’s)</td>
<td>Statutory</td>
</tr>
<tr>
<td><strong>Workers’ Compensation and Related Policies</strong></td>
<td><strong>Policy limits of</strong></td>
</tr>
<tr>
<td>------------------------------------------------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Foreign voluntary workers’ compensation (employer’s responsibility coverage), if applicable</td>
<td>Statutory</td>
</tr>
<tr>
<td><strong>Employer’s Liability</strong></td>
<td></td>
</tr>
<tr>
<td>Each accident</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>Each employee</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>Policy limit</td>
<td>$1,000,000</td>
</tr>
<tr>
<td><strong>Stop-gap Liability Coverage</strong></td>
<td></td>
</tr>
<tr>
<td>For work performed in monopolistic states, stop-gap liability coverage must be endorsed to either the worker’s compensation or commercial general liability policy with a minimum limit of:</td>
<td>$2,000,000</td>
</tr>
</tbody>
</table>

2. Seller’s General Liability under Paragraphs SC-5.02.F.3 through F.6 which must include completed operations and product liability coverages and eliminate the exclusion with respect to property under the care, custody and control of Seller:

<table>
<thead>
<tr>
<th><strong>Commercial General Liability</strong></th>
<th><strong>Policy limits of</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>General Aggregate</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>Products—Completed Operations Aggregate</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>Personal and Advertising Injury</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>Bodily Injury and Property Damage—Each Occurrence</td>
<td>$1,000,000</td>
</tr>
</tbody>
</table>

3. Automobile Liability under Paragraph SC-5.02.F.6:

<table>
<thead>
<tr>
<th><strong>Automobile Liability</strong></th>
<th><strong>Policy limits of</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bodily Injury</strong></td>
<td></td>
</tr>
<tr>
<td>Each Accident</td>
<td>$2,000,000</td>
</tr>
<tr>
<td><strong>Property Damage</strong></td>
<td></td>
</tr>
<tr>
<td>Each Accident</td>
<td>$2,000,000</td>
</tr>
</tbody>
</table>

4. Professional Liability (if the Special Services include professional services):

<table>
<thead>
<tr>
<th><strong>Seller’s Professional Liability</strong></th>
<th><strong>Policy limits of</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Each Claim</td>
<td>$1,000,000</td>
</tr>
</tbody>
</table>

I. Seller shall deliver to Buyer, with copies to each additional insured identified in these Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Buyer or any other additional insured) which Seller is required to purchase and maintain.

**ARTICLE 6—LICENSES AND FEES**

NOT USED

**ARTICLE 7—SELLER’S RESPONSIBILITIES**

SC-7.03 Add the following new paragraph after Paragraph 7.03 C
D. Seller shall meet the project specific regulations to meet the requirements of the Utah State Revolving Fund as outlined in the Procurement Contract Documents for the following:
   - Minority Business Enterprises
   - Woman-Owned Business Enterprises
   - Other Diverse Business Certification Requirements
   - Buy American Steel Requirements
   - Davis Bacon Wage Requirements

ARTICLE 8—SHIPPING AND DELIVERY

SC-8.02 Replace Paragraph 8.02 with the following:

8.02 Delivery

A. Seller shall deliver the Goods free on board (FOB) to the Point of Destination, freight prepaid, in accordance with the Procurement Contract Times set forth in the Procurement Agreement, or other date agreed to by Buyer and Seller.

B. At least 10 days before shipment, Seller shall provide written notice to Buyer of the manner of shipment and the anticipated delivery date. The notice must also include any instructions concerning special equipment or services required at the Point of Destination to unload and care for the Goods. Seller shall also require the carrier to give Buyer at least 24 hours’ notice by telephone prior to the anticipated time of delivery.

C. Contractor/Assignee will be responsible and bear all costs for unloading the Goods from carrier.

D. Contractor/Assignee will assure that adequate facilities are available to receive delivery of the Goods at the time established for delivery, or on another date agreed to by Buyer and Seller.

E. Partial deliveries will be allowed as agreed to in writing by Contractor/Assignee.

F. Provisions governing inspection on delivery are set forth in Paragraph 9.02.

ARTICLE 9—BUYER’S RIGHTS

SC-9.05 Add the following new paragraph after Paragraph 9.04:

9.05 Limitation of Seller’s Liability

A. Buyer and Seller agree that the total liability of Seller to Buyer for claims, costs, losses, and damages arising from this Procurement Contract will be limited to the amount established in the Procurement Agreement as the Procurement Contract Price.

B. Upon assignment the terms of this Paragraph 9.05 will be binding upon both the assignor and assignee with respect to Seller’s liability. The terms of this limitation do not apply to or limit any claim by Buyer against Seller based on any of the following: (a) contribution or indemnification with respect to third-party claims, losses, and damages; (b) costs, losses, or damages attributable to personal or bodily injury, sickness, disease, or death, or to injury to or destruction of the tangible property of others, (c) intentional or reckless wrongful conduct, or (d) rights conferred by any bond provided by Seller under this Contract.
ARTICLE 10—ENGINEER’S STATUS
NOT USED

ARTICLE 11—CHANGES
NOT USED

ARTICLE 12—CLAIMS, DISPUTES, AND DISPUTE RESOLUTION

SC-12.01 G  Replace Paragraph 12.01 G with the following:

G. If a submitted matter in question concerns terms and conditions of the Procurement Contract Documents that do not involve (1) the performance or acceptability of Goods and Special Services under the Procurement Contract Documents, (2) the design (as set forth in the Procurement Drawings, Procurement Specifications, Addenda, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Buyer and Seller that Engineer is unable to provide a decision or interpretation. If Buyer and Seller are unable to agree on resolution of such a matter in question, either party may pursue resolution by submitting the Claim or dispute to a court of competent jurisdiction.

SC-12.01 H Replace Paragraph 12.01 H with the following:

H. Engineer’s written decision on such Claim or a decision denying the Claim in its entirety that is deemed to have been issued pursuant to Paragraph 12.01, will be final and binding upon Buyer and Seller 30 days after it is issued unless within 30 days of issuance Buyer or Seller appeals Engineer’s decision by initiating a Claim or dispute to a court of competent jurisdiction.

SC-12.02 Delete Paragraph 12.02 in its entirety

ARTICLE 13—PAYMENT
NOT USED

ARTICLE 14—CANCELLATION, SUSPENSION, AND TERMINATION
NOT USED

ARTICLE 15—MISCELLANEOUS
NOT USED

+ + END OF SECTION + +
UTAH DWQ SRF REQUIREMENTS
Submit this check sheet to SRF along with your documents to affirm and show where all the items discussed above have been addressed.

**SRF Boilerplate Checklist**

**Project: Provo WATRR Center**

<table>
<thead>
<tr>
<th>Addressed? (Yes/No/NA)</th>
<th>Page #s</th>
<th>Abbreviated description of requirement (Add your notes or explanations if needed.)</th>
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<tbody>
<tr>
<td></td>
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<td>Advertise for bids at least twice in a newspaper published or of general circulation in the local entity at least (5) days prior to the opening of bids (Utah Code 11-39-103) or local requirements if more stringent..</td>
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<tr>
<td></td>
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<td>Was it possible for bid to be advertised 30 days prior to bid opening, per DBE Good Faith Effort Requirements (40 CFR 33.301).</td>
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<td>5% bid bonds; only bonds most projects (not certified checks, etc.).</td>
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<td>Contract performance and payment bonds.</td>
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<td>Final settlement and payment to contractor provisions.</td>
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<td>Retainage.</td>
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<td>Suspension and Debarment</td>
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<td>Certification of Non-Segregated Facilities</td>
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<td>DBE Good Faith Effort.</td>
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<td>Additional items to submit with bid.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SRF Special Conditions section inserted into the bid document on Blue Paper.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SRF Special Conditions are identified as part of contract.</td>
</tr>
<tr>
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<td>Insert the name of the County where the work is located.</td>
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<td>American Iron and Steel Requirement and Guidance</td>
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<td>Davis-Bacon Wage Category included in the contract.</td>
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<tr>
<td></td>
<td></td>
<td>Davis-Bacon Mixed Project</td>
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</tbody>
</table>
REQUIRED SIGNS AND POSTERS

The following signs and posters required for the project, include but are not limited to:

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<thead>
<tr>
<th></th>
<th>Description</th>
<th>Link</th>
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</table>
SRF SPECIAL CONDITIONS

CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION
LOWER TIER COVERED TRANSACTIONS

Instructions for Certification

1. By signing and submitting this proposal, the prospective lower tier participant is providing the certification set out below.

2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

3. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous when submitted or had become erroneous by reason of changed circumstances.

4. The terms covered transaction, debarred, suspended, ineligible, lower tier covered transaction, participant, person, primary covered transaction, principal, proposal, and voluntarily excluded, as used in this clause, have the meaning set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.

5. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is proposed for debarment under 48 CFR part 9, subpart 9.4, debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

6. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

7. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not proposed for debarment under 48 CFR part 9, subpart 9.4, debarred, suspended, ineligible, or voluntarily excluded from covered transactions, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals.
not required to, check the List of Parties Excluded from Federal Procurement and Nonprocurement Programs.

8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

9. Except for transactions authorized under paragraph 5 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is proposed for debarment under 48 CFR part 9, subpart 9.4, suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Covered Transactions

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

__________________________________________
Organization Name

__________________________________________
Name and Title of Authorized Representative

__________________________________________
Signature

Date
EQUAL EMPLOYMENT OPPORTUNITY and AFFIRMATIVE ACTION REQUIREMENTS on FEDERALLY ASSISTED CONSTRUCTION CONTRACTS

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

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

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

   Goal for female participation in each trade: 6.9%

   Minority participation goals in each trade:

<table>
<thead>
<tr>
<th>County</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beaver, Garfield, Iron, Kane, Washington</td>
<td>12.6</td>
</tr>
<tr>
<td>Utah, Provo-Orem</td>
<td>2.4</td>
</tr>
<tr>
<td>Davis, Salt Lake, Tooele, Weber, Salt Lake City - Ogden</td>
<td>6.0</td>
</tr>
<tr>
<td>Box Elder, Cache, Carbon, Daggett, Duchesne, Emery, Juab, Millard, Morgan, Piute, Rich, Sanpete, Sevier, Summit, Uintah, Wasatch, Wayne</td>
<td>5.1</td>
</tr>
</tbody>
</table>

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

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from contractor to contractor or from project to project for the sole purpose of meeting the contractor's goals shall be a violation of the contract, the Executive Order, and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.
3. The contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number for the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed. An example notification letter is available on the next page.

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

This notice shall be included in, and shall be a part of, all solicitations for offers and bids on all Federal and federally assisted construction contracts or subcontracts in excess of $10,000 to be performed in geographical areas designated by the Director pursuant to 41 CFR 60-4.6.
Per our obligation under 41 CFR 60-4.2, we are submitting the following information regarding our subcontractor(s) whose contract is in excess of $10,000 on our Federal or federally assisted construction project:

**CONTRACT INFORMATION**

<table>
<thead>
<tr>
<th>Dollar Amount of Contract</th>
<th>Estimated Start Date</th>
<th>Estimated Completion Date</th>
<th>Contract No.</th>
<th>Geographical Area</th>
</tr>
</thead>
</table>

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

<table>
<thead>
<tr>
<th>Subcontractor’s Name, Address, &amp; Phone Number</th>
<th>Employer ID Number of Subcontractor</th>
<th>Estimated $ Amount of Subcontract</th>
<th>Estimated Start Date</th>
<th>Estimated Completion Date</th>
</tr>
</thead>
</table>

Provo WATRR Center
CM/GC PreConstruction Services
Attachment F
EQUAL OPPORTUNITY CLAUSES

A. The Equal Opportunity Clause published at 41 CFR 60-1.4(b) is required to be included in, and is part of, all nonexempt federally assisted construction contracts and subcontracts (including this Contract). The Equal Opportunity Clause shall be considered to be a part of every contract and subcontract required by the regulations to include such a clause, whether or not it is physically incorporated in such contracts. The notices required to be posted by paragraphs (1) and (3) of the Equal Opportunity Clause shall be the "Equal Employment Opportunity is the Law" poster approved by the Office of Federal Contract Compliance Programs and available on the internet at http://www.dol.gov/oasam/programs/osdbu/sbrefa/poster/matrix.htm.

EQUAL OPPORTUNITY CLAUSE (41 CFR 60-1.4(b))

During the performance of this contract, the contractor agrees as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive considerations for employment without regard to race, color, religion, sex, or national origin.

(3) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
(6) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(7) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency the contractor may request the United States to enter into such litigation to protect the interests of the United States.

B. The Standard Federal Equal Employment Opportunity Construction Contract Specifications published at 41 CFR 60-4.3(a) are required to be included in, and are part of, all federal and federally assisted construction contracts and subcontracts (including this Contract) in excess of $10,000 to be performed in geographical areas designated by the Director pursuant to 41 CFR 60-4.6 and in construction subcontracts in excess of $10,000 necessary in whole or in part to the performance of non-construction Federal contracts and subcontracts covered under Executive Order 11246. These Specifications shall be considered to be a part of every contract and subcontract required by the regulations to include such a clause, whether or not it is physically incorporated in such contracts.
STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS (EXECUTIVE ORDER 11246)

1. As used in these specifications:
   a. "Covered Area" means the geographical area described in the solicitation from which this contract resulted;
   b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;
   d. "Minority" includes:
      (i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
      (ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
      (iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands);
      (iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the contractor, or any subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

11. The contractor shall not enter into any subcontract with any person or firm debarred from government contracts pursuant to Executive Order 11246.

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

13. The contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph (7) of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.
14. The contractor shall designate a responsible official to monitor all employment-related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).
Attachment 1

SRF Required Front-End Specifications
(This form must be completed and signed by Prime Contractor and Submitted with the bid.)

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

(Applicable to contracts, subcontracts, and agreements with applicants who are themselves performing Federally assisted construction contracts, exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause.)

By the submission of this bid, the bidder, offeror, applicant, or subcontractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. He certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The bidder, offeror, applicant, or subcontractor agrees that a breach of this certification is a violation of the Equal Opportunity clause in this contract. As used in this certification, the term “segregated facilities” means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national original, because of habit, local custom, or otherwise. He further agrees that (except where he has obtained identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause; that we will retain such certifications in his files; and that he will forward the following notice to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific time periods):

NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENT FOR CERTIFICATION OF NON-SEGREGATED FACILITIES

A Certification of Non-segregated Facilities, as required by the May 9, 1967, order (33 F.R. 7808, May 28, 1968) on Elimination of Segregated Facilities, by the Secretary of Labor must be submitted prior to the award of the subcontract exceeding $10,000 which is not exempt from the provisions of the Equal Opportunity clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

Signature ____________________________ Date ____________________________

Name and Title of Signer (Please Type)

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

Date: ____________________________ EPA-7 5720-4.2

Provo WATRR Center
CM/GC PreConstruction Services
Attachment F
A. REQUIREMENTS

(1) To comply with all the requirements of section 114 of the Clean Air Act, as amended (42 U.S.C. 1857, et seq., as amended by Pub. L. 92-604) and section 308 of the Clean Water Act (33 U.S.C. 1251, as amended), respectively, which relate to inspection, monitoring, entry, reports, and information, as well as other requirements specified in section 114 and section 308 of the Air Act and the Water Act, respectively, and all regulations and guidelines issued thereunder before the award of this contract.

(2) That no portion of the work required by this prime contract will be performed in a facility listed on the Environmental Protection Agency list of violating facilities on the date when this contract was awarded unless and until the EPA eliminates the name of such facility or facilities from the listing.

(3) To use his best efforts to comply with clean air and clean water standards at the facilities in which the contract is being performed.

(4) To insert the substance of the provisions of this clause, including this paragraph (4), in any nonexempt subcontract.

B. DEFINITIONS

(1) Air Act means the Clean Air Act, as amended (42 U.S.C. 1857 et seq.).

(2) Water Act means the Clean Water Act, as amended (33 U.S.C. 1251 et seq.).

(3) Clean Air Standards means any enforceable rules, regulations, guidelines, standards, limitations, orders, controls, prohibitions, or other requirements which are contained in, issued under, or otherwise adopted under the Air Act or Executive Order 11738, an applicable implementation plan as described in section 110 (d) of the Air Act (42 U.S.C. 1857c-5(d)), an approved implementation procedure or plan under section 111 (c) or section 111(d), or an approved implementation procedure under section 112(d) of the Air Act (42 U.S.C. 1857c-7(d)).

(4) Clean Water Standards means any enforceable limitation, control, condition, prohibition, standard, or other requirement which is promulgated under the Water Act or contained in a permit issued to a discharger by the Environmental Protection Agency or by a State under an approved program, as authorized by section 402 of the Water Act (33 U.S.C. 1342), or by a local government to ensure compliance with pretreatment regulations as required by section 307 of Water Act (33 U.S.C. 1317).

(5) Compliance means compliance with clean air or water standards. Compliance shall also mean compliance with a schedule or plan ordered or approved by a court of competent
The Environmental Protection Agency in accordance with the requirements of the Air Act or Water Act and regulations.

(6) **Facility** means any building, plant, installation, structure, mine, vessel, or other floating craft, location, or site of operations, owned, leased, or supervised by a contractor or subcontractor, to be used in the performance of a contract or subcontract. Where a location or site of operations contains or includes more than one building, plant, installation, or structure, the entire location or site shall be deemed to be a facility except where the Director, Office of Federal Activities, Environmental Protection Agency, determines that independent facilities are located in one geographical area.

**WILLIAMS-STEIGER OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970**

**A. AUTHORITY**

(1) The contractor is subject to the provisions of the Williams-Steiger Occupational Safety and Health Act of 1970.

(2) These construction documents and the joint and several phases of construction hereby contemplated are to be governed, at all times, by applicable provisions of the Federal law(s), including but not limited to the latest amendment of the following:

   a. Williams-Steiger Occupational Safety and Health Act of 1970, Public Law 94-596;

   b. Part 1910 - Occupational Safety and Health Standards, Chapter XVII of Title 29, Code of Federal Regulations;


**B. SAFETY AND HEALTH PROGRAM REQUIREMENTS**

(1) This project, its prime contractor and its subcontractors, shall at all times be governed by Chapter XVII of Title 29, Code of Federal Regulations, Part 1926 - Safety and Health Regulations for Construction (29 CFR 22801), as amended to date.

(2) To implement the program and to provide safe and healthful working conditions for all persons, general project safety meetings will be conducted at the site at least once each month during the course of construction, by the construction superintendent or his/her designated safety officer. Notice of such meeting shall be issued not less than three (3) days prior, stating the exact time, location, and agenda to be included. Attendance by the owner, architect, general foreman, shop steward(s), and trades, or their designated representatives, witnessed in writing as such, shall be mandatory.
(3) To further implement the program, each trade shall conduct a short gang meeting, not less than once a week, to review project safety requirements mandatory for all persons during the coming week. The gang foreman shall report the agenda and specific items covered to the project superintendent, who shall incorporate these items in his/her daily log or report.

(4) The prime contractor and all subcontractors shall immediately report all accidents, injuries, or health hazards to the owner and architect, or their designated representatives, in writing. This shall not obviate any mandatory reporting under the provisions of the Occupational Safety and Health Act of 1970.

(5) This program shall become a part of the contract documents and the contract between the owner and prime contractor, prime contractor and all subcontractors, as though fully written therein.

**ANTI-KICKBACKS**

Contractor shall comply with the Copeland "Anti-Kickback" Act (18 U.S.C. 874) as supplemented in the Department of Labor Regulations (29 CFR, Part 3). This Act provides that Contractor is prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he is otherwise entitled.

Contractor certifies and warrants that no gratuities, kickbacks and contingency fees were paid in connection with this contract, nor were any fees, commissions, gifts, or other considerations made contingent upon the award of this contract.

Contractor certifies that, to Contractor's knowledge, no state employee has any personal or beneficial interest whatsoever in the services described in this Contract.

No staff member of Contractor, compensated either partially or wholly with funds disbursed pursuant to the Contract, shall engage in any Contract or activity which would constitute a conflict of interest as related to this Contract.

**DISCOVERY OF ARCHAEOLOGICAL AND OTHER HISTORICAL ITEMS**

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

1. Construction shall be halted, with as little disruption to the archaeological site as possible.
2. Contractor shall notify Owner who shall contact the State Historic Preservation Officer.
3. The State Historic Preservation Officer may decide to have an archaeologist inspect the site and make recommendations about the steps needed to protect the site, before construction is resumed.
4. The entire event should be handled as expeditiously as possible in order to hold the loss in construction time to a minimum while still protecting archaeological finds.
A similar procedure should be followed with regard to more recent historical resources. Should any artifacts, housing sites, etc., be uncovered, the same procedure should be followed as for an archaeological find.

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

ACCESS

Contractor and loan recipient shall insure that authorized representatives of the Utah DEQ, State Historic Preservation Office, US EPA, Comptroller General, Inspector General, and other applicable federal and state agencies and officials will have access to the project work whenever it is in preparation or progress and shall provide proper facilities for such access and inspection. Contractor shall allow these representatives to have access to any books, documents, plans, reports, papers, and other records of Contractor which are pertinent to the project for the purpose of making audit, examination, excerpts, copies and transcriptions thereof and to interview any officer or employee. Contractor shall insure that all subagreements will also afford access to such project work, sites, documents, records, and persons.

SITE EROSION AND SEDIMENT CONTROL MEASURES

Every effort shall be made by Contractor and subcontractors to prevent and correct problems associated with erosion and runoff processes which could occur during and after project construction. The efforts should be consistent with applicable local ordinances and the Nonpoint Source Pollution Control Guidance. Whenever appropriate, Contractor's efforts shall reflect the following engineering principles:

(a) When appropriate, land grading and excavating should be kept at a minimum to reduce the possibility of creating runoff and erosion problems which require extensive control measures.
(b) Whenever possible, topsoil should be removed and stockpiled before grading begins.
(c) Land exposure should be minimized in terms of area and time.
(d) Exposed areas subject to erosion should be covered as quickly as possible by means of mulching or vegetation.
(e) Natural vegetation should be retained whenever feasible.
(f) Early completion of stabilized drainage systems (temporary and permanent systems) will substantially reduce erosion potential.
(g) Roadways and parking lots should be paved or otherwise stabilized as soon as feasible.
(h) Clearing and grading should not be started until a firm construction schedule is known and can be effectively coordinated with grading and clearing activity.
UPDES CONSTRUCTION RELATED DISCHARGE PERMITS

Construction projects which will disturb one or more acres will require coverage under the State of Utah General Permit for Storm Water Discharges Associated with Large Construction Activities. Contractor is responsible for obtaining coverage under the appropriate permit and maintaining compliance until Owner accepts the Work as complete. For additional information see http://www.waterquality.utah.gov/UPDES/stormwatercon.htm.

Certain construction activities such as dewatering, flushing, testing, and disinfection require coverage under the State of Utah General Permit for Temporary Discharges or under a separate discharge permit. Contractor is responsible for obtaining any necessary coverage and maintaining compliance. For more information see http://www.waterquality.utah.gov/UPDES/stormwatercon.htm.

AIR QUALITY PROTECTION MEASURES

Contractor shall adhere to effective dust control procedures as required under the Utah Air Quality Standards and Regulations UAC R307. If asbestos is encountered during this project, Contractor shall follow standards for handling according to UAC R307-801. Contractor shall adhere to proper trade waste and materials disposal.

PRESERVATION OF OPEN COMPETITION AND GOVERNMENT NEUTRALITY TOWARDS GOVERNMENT CONTRACTORS' LABOR RELATIONS ON FEDERAL AND FEDERALLY FUNDED CONSTRUCTION PROJECTS


Amend 48 CFR Part 36.202 by adding paragraph (d) to read as follows:

(d) In accordance with Executive Order 13202, of February 17, 2001, Preservation of Open Competition and Government Neutrality Towards Government Contractors' Labor Relations on Federal and Federally Funded Construction Projects, as amended on April 6, 2001—

(1) The Government, or any construction manager acting on behalf of the Government, must not—
(i) Require or prohibit offerors, contractors, or subcontractors to enter into or adhere to agreements with one or more labor organizations (as defined in 42 U.S.C. 2000e(d)) on the same or other related construction projects; or

(ii) Otherwise discriminate against offerors, contractors, or subcontractors for becoming, refusing to become, or remaining signatories or otherwise adhering to agreements with one or more labor organizations, on the same or other related construction projects.

(2) Nothing in this paragraph prohibits offerors, contractors, or subcontractors from voluntarily entering into project labor agreements.

(3) The head of the agency may exempt a construction project from this policy if the agency head finds that, as of February 17, 2001—

(i) The agency or a construction manager acting on behalf of the Government had issued or was a party to bid specifications, project agreements, agreements with one or more labor organizations, or other controlling documents with respect to that particular project, which contained any of the requirements or prohibitions in paragraph (d)(1) of this section; and

(ii) One or more construction contracts subject to such requirements or prohibitions had been awarded.

(4) The head of the agency may exempt a particular project, contract, or subcontract from this policy upon a finding that special circumstances require an exemption in order to avert an imminent threat to public health or safety, or to serve the national security. A finding of "special circumstances" may not be based on the possibility or presence of a labor dispute concerning the use of contractors or subcontractors who are nonsignatories to, or otherwise do not adhere to, agreements with one or more labor organizations, or concerning employees on the project who are not members of or affiliated with a labor organization.
AMERICAN IRON AND STEEL REQUIREMENT

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.) shall be used for a project for the construction, alteration, maintenance, or repair of a public treatment works unless all of the iron and steel products used in the project are produced in the United States.

The Contractor acknowledges to and for the benefit of Provo City Corporation (“Purchaser”) and the Utah Division of Water Quality (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 (CWSRF) and/or Drinking Water State Revolving Fund (DWSRF) that have statutory requirements commonly known as “American Iron and Steel;” that requires all of the iron and steel products used in the project to be produced in the United States (“American Iron and Steel Requirement”) including iron and steel products provided by the Contractor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that:

(a) the Contractor has reviewed and understands the American Iron and Steel Requirement,
(b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and
(c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the State.

Notwithstanding any other provision of this Agreement, any failure to comply with this requirement 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.

The full American Iron and Steel Guidance can be found at:
Covered American Iron and Steel (AIS) Products

1. What is an iron or steel product?
For purposes of the CWSRF 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 project:
- Lined or unlined pipes or fittings;
- Manhole Covers;
- Municipal Castings (defined in more detail later in this guidance);
- Hydrants;
- Tanks;
- Flanges;
- Pipe clamps and restraints;
- Valves;
- Structural steel (defined in more detail later in this guidance);
- Reinforced precast concrete; and
- Construction materials (defined in more detail later in this guidance).

2. 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. For example, the iron portion of a fire hydrant would likely be the bonnet, body and shoe, and then the cost 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 provenance is not required. An exception to this definition is reinforced precast concrete, which is addressed later in this guidance.

3. 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.

4. 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.

5. **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.

6. **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.

7. **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 or scaffolding, which are removed from the project site upon completion of the project, are not required to be made of U.S. Iron or Steel.

8. **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;
• Steel Hinged Hatches, Square and Rectangular;
• Steel Riser Rings;
• Trash receptacles;
• Tree Grates;
• Tree Guards;
• Trench Grates; and
• Valve Boxes, Covers and Risers.

9. 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.

10. 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,
• stationary screens

11. 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 filtrations 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,
• dewatering equipment

12. 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.

13. 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 rebar 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 with AIS Requirements
1. 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 (bond, grant agreement), all the way down to the subcontractor and purchase agreements. Language for
contracts should be similar to the American Iron and Steel Requirement provision in this contract.

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 adherence to AIS requirements 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. A sample certification is located in this section. These certifications should be collected and maintained by the 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 does 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.

2. **How will the State will ensure assistance recipients are complying with the AIS requirement?**

   In order to ensure compliance with the AIS requirement, the State must include specific AIS contract language in the assistance agreement (i.e. bond, grant agreement, etc.). The assistance recipient must include specific AIS contract language in the project’s contract documents.

   The State will also conduct site visits of projects during construction and review documentation demonstrating proof of compliance which the assistance recipient has gathered.

3. **What happens if a State or EPA finds a non-compliant iron and/or steel product permanently incorporated in the project?**

   If a potentially noncompliant product is identified, the State will 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 and 40 CRF 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 fraudulent activities are 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.

4. 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.

AIS Requirement 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 later in this guidance will allow States to apply for waiver, on the behalf of the assistance recipients, to apply for waivers of the AIS requirement directly to EPA Headquarters. Pursuant to the Act, EPA has the responsibility to make findings as to the issuance of waivers to the AIS requirements.

• Reasonably Available Quantity means 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 means the quality of iron or steel products, as specified in the project plans and designs.
• Assistance Recipient means a borrower or grantee that receives funding from a State CWSRF program.
**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 waiver applicants 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.

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<tr>
<th>General</th>
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<th>Notes</th>
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<tr>
<td>• Waiver request includes the following information:</td>
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<tr>
<td>— Description of the foreign and domestic construction materials</td>
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<td>— Unit of measure</td>
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<td>— Quantity</td>
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<td>— Price</td>
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<td>— Time of delivery or availability</td>
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<td>— Location of the construction project</td>
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<td>— Name and address of the proposed supplier</td>
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<tr>
<td>— A detailed justification for the use of foreign construction materials</td>
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<tr>
<td>• Waiver request was submitted according to the instructions in the memorandum</td>
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<td>• 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</td>
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<tr>
<th>Cost Waiver Requests</th>
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<tr>
<td>• Waiver request includes the following information:</td>
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<tr>
<td>— Comparison of overall cost of project with domestic iron and steel products</td>
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<tr>
<td>— Relevant excerpts from the bid documents used by the contractors to complete the comparison</td>
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<tr>
<td>— 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</td>
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<th>Availability Waiver Requests</th>
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<td>• 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:</td>
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<tr>
<td>— Supplier information or pricing information from a reasonable number of domestic suppliers indicating availability/delivery date for construction materials</td>
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<td>— 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.</td>
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<tr>
<td>— Project schedule</td>
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<tr>
<td>— Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of construction materials</td>
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<td>• Waiver request includes a statement from the prime contractor confirming the non-availability of the domestic construction materials for which the waiver is sought</td>
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<tr>
<td>• Has the State received other waiver requests for the materials described in this waiver request, for comparable projects?</td>
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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.

<table>
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<tr>
<th>Review Items</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
<th>Comments</th>
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<tr>
<td><strong>Cost Waiver Requests</strong></td>
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<td>• Does the waiver request include the following information?</td>
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<td>– Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products</td>
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<td>– Relevant excerpts from the bid documents used by the contractors to complete the comparison</td>
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<td>– A sufficient number of bid documents or pricing information from domestic sources to constitute a reasonable survey of the market</td>
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<td>• Does the Total Domestic Project exceed the Total Foreign Project Cost by more than 25%?</td>
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<td><strong>Availability Waiver Requests</strong></td>
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<td>• 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?</td>
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<tr>
<td>– Supplier information or other documentation indicating availability/delivery date for materials</td>
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<td>– Project schedule</td>
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<tr>
<td>– Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of materials</td>
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<tr>
<td>• 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?</td>
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<td>• 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)</td>
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<td>• Is EPA aware of any other evidence indicating the non-availability of the materials for which the waiver is requested? Examples include:</td>
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<tr>
<td>– Multiple waiver requests for the materials described in this waiver request, for comparable projects in the same State</td>
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<tr>
<td>– Multiple waiver requests for the materials described in this waiver request, for comparable projects in other States</td>
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<tr>
<td>– Correspondence with construction trade associations indicating the non-availability of the materials</td>
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<tr>
<td>• Are the available domestic materials indicated in the bid documents of inadequate quality compared those required by the project plans, specifications, and/or permits?</td>
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Sample Step Certification Letter

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

Date
Company Name
Company Address
City, State Zip

Subject: Buy America Step Certification for Project (Provo WATRR Center)

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
Sample Certification Letter

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

Date
Company Name
Company Address
City, State Zip

Subject: Buy America Certification for Project (Provo WATRR Center)

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
DAVIS BACON PREVAILING WAGE REQUIREMENTS

“Notwithstanding any other provision of law and in a manner consistent with other provisions in this Act, all laborers and mechanics employed by contractors and subcontractors on projects funded directly by or assisted in whole or in part by and through the Federal Government pursuant to this Act shall be paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by the Secretary of Labor in accordance with subchapter IV of chapter 31 of title 40, United States Code. With respect to the labor standards specified in this section, the Secretary of Labor shall have the authority and functions set forth in Reorganization Plan Numbered 14 of 1950 (64 Stat. 1267; 5 U.S.C. App.) and section 3145 of title 40, United States Code.”

Federal Labor Standards Provisions (from 29 CFR 5.5)

(a) (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 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 (a)(1)(ii) of this section) and the Davis-Bacon poster (WH–1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(ii) (A) The 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 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 contracting officer agree on the
classification and wage rate (including the amount designated for fringe benefits
where appropriate), a report of the action taken shall be sent by the contracting
officer to the Administrator of the Wage and Hour Division, Employment
Standards Administration, U.S. Department of Labor, Washington, DC 20210. The
Administrator, or an authorized representative, will approve, modify, or disapprove
every additional classification action within 30 days of receipt and so advise the
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 questions,
including the views of all interested parties and the recommendation of the
contracting officer, to the Administrator for determination. The Administrator, or
an authorized representative, will issue a determination within 30 days of receipt
and so advise the contracting officer or will notify the contracting officer within the
30-day period that additional time is necessary.

(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 project owner (the SRF loan recipient) or the Utah SRF Program shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the project owner or the Utah SRF Program 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 project owner. Project owner will provide copies to the Utah SRF Program upon request. 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 US Department of Labor/Wage and Hour Division Web site at http://www.dol.gov/whd/programs/dbra/wh347.htm. 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 project owner. Project owner shall provide such information, upon request, to the Utah SRF Program 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 project owner or other government agencies.

(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 project owner, the Utah SRF Program, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make 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 project owner and/or the Utah SRF Program 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 contracting agency, 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).


(b) **Contract Work Hours and Safety Standards Act.** 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 project owner or the Utah SRF Program 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 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.

**Other related requirements and information**

1. Based on 29 CFR 5.6(a)(3): Owner shall make such investigations as may be necessary to assure compliance with the labor standards provisions and related statutes and regulations. Investigations shall be made with such frequency as may be necessary to assure compliance. Such investigations shall include interviews with employees, which shall be taken in confidence, and examinations of payroll data and evidence of registration and certification with respect to apprenticeship and training plans. In making such examinations, particular care shall be taken to determine the correctness of classifications and to determine whether there is a disproportionate employment of laborers and of apprentices or trainees registered in approved programs. Such investigations shall also include evidence of fringe benefit plans and payments thereunder. Complaints of alleged violations shall be given priority.

2. A brief summary of required Davis Bacon compliance checking activities by Owner:
   - Make sure the Davis-Bacon poster and the wage determination are posted at the job site in a prominent and accessible place where both can be easily seen by the workers.
   - Review the weekly payrolls for compliance with the requirements.
   - Interview employees to cross check the payrolls and to help ensure compliance with the requirements.
3. The regulations do not require a specific interval and number of employee interviews; however, Owner shall make the interval and number of interviews commensurate with the size and complexity of the project so as to provide a reasonable check on Contractor's compliance.

4. The regulations do not require a specific interview format. Owner can use or adapt other agencies' Davis-Bacon interview forms, such as the one provided by the US Department of Housing and Urban Development, form HUD-11, which can be found at [http://www.hud.gov/offices/olr/olrform.cfm](http://www.hud.gov/offices/olr/olrform.cfm) or Standard Form -1445 which can be found at [http://www.gsa.gov/portal/forms/download/12BF5D0E2DC4484685256CBC0062F375](http://www.gsa.gov/portal/forms/download/12BF5D0E2DC4484685256CBC0062F375).

5. Owner shall maintain the payrolls, interview records, and other compliance related records for a minimum of three years after completion of the contract and shall provide them upon request to the Utah SRF Program or to applicable federal agencies.

6. Additional compliance information and assistance is available at [http://www.dol.gov/compliance/guide/dbra.htm](http://www.dol.gov/compliance/guide/dbra.htm) and other related websites.

7. Following are the identifier codes used to reference the various craft unions. Examples of classifications for which their local unions commonly negotiate wage and fringe benefit rates are shown in parentheses.

- **ASBE** = International Association of Heat and Frost Insulators and Asbestos Workers
- **BOIL** = International Brotherhood of Boiler Makers, Iron Shipbuilders, Blacksmiths, Forgers and Helpers
- **BRXX** = International Union of Bricklayers, and Allied Craftsmen (bricklayers, cement masons, stone masons, tile, marble and terrazzo workers)
- **CARP** = United Brotherhood of Carpenters and Joiners of America (carpenter, millwright, piledrivermen, soft floor layers, divers)
- **ELEC** = International Brotherhood of Electrical Workers (electricians, communication systems installers, and other low voltage specialty workers)
- **ELEV** = International Union of Elevator Constructors
- **ENGI** = International Union of Operating Engineers (operators of various types of power equipment)
- **IRON** = International Association of Bridge, Structural and Ornamental Iron Workers
- **LABO** = Laborers' International Union of North America
PAIN = International Brotherhood of Painters and Allied Trades (painters, drywall finishers, glaziers, soft floor layers)

PLAS = Operative Plasterers' and Cement Masons' International Association of the United States and Canada (cement masons, plasterers)

PLUM = United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry of the United States and Canada (plumbers, pipefitters, steamfitters, sprinkler fitters)

ROOF = United Union of Roofers, Waterproofers and Allied Workers

SHEE = Sheet Metal Workers International Association

SU.... = The "SU..." identifier is for rates derived from survey data where the union rate(s) were not determined to be prevailing for the classification(s) listed. (The data reported for such a classification and used in computing the prevailing rate may have included both union and non-union wage data.) Note that various classifications, for which non-union rates have been determined to be prevailing, may be listed in alphabetical order under this identifier, which the computer places into the wage determination in alphabetical order, as listed here.

TEAM = International Brotherhood of Teamsters
NAME OF CONTRACTOR: [ ] O M S No.: 215-0149

ADDRESS: Expires: 12/31/2011

PAYROLL NO.: 0,000,000,000,000,000,000

PROJECT A-D LOCATION:

P. PROJECT OR CONTRACT #: 0

NAME AND IDENTIFYING NUMBER: [ ]

DATE OF PERSONAL IDENTIFICATION:

WEEKLY NET WAGES:

DEPARTMENT/HEAVY

TOTAL HOURS:

ACCOUNT CODE:

FICA:

HOLDING TAX:

OTHER:

TOTAL DEBITI ON:

Net Wages

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(b) WHERE FRINGE BENEFITS ARE PAID IN CASH

D - 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

<table>
<thead>
<tr>
<th>EXCNP TKN (CRAFT)</th>
<th>EXPLANATION</th>
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REMARKS:

Exception 9

AUE: AND TITLE SIGNATURE

HE WILLFUL FALSIFICATION OF ANY OF THE ABOVE STATEMENTS MAY SUBJECT THE CONTRACTOR OR SUBCONTRACTOR TO CRIMINAL PROSECUTION SEE SECTION 18 U.S.C. § 1001 AND SECTION 23-1 0F TITLE 18, THE UNITED STATES CODE.
Insert (in place of this page) the applicable Davis-Bacon Wage Decision. Current wage decisions for Utah are available at [http://www.gpo.gov/davisbacon/UT.html](http://www.gpo.gov/davisbacon/UT.html). Use the wage decision that applies to the type of construction. Most water and sewer line projects are classified as "heavy." Treatment plants may be "heavy" or "building" or both, depending on circumstances. Notice further that the "heavy" classification is broken into two subcategory decisions, one for water and sewer main construction and one for plants. Water and sewer mains constructed in conjunction with a UDOT project may be "highway." Discuss with the SRF program if necessary, especially if multiple types seem to apply. We may need to consult EPA or the US Department of Labor in some cases. Check the wage decision(s) again right before going to bid to make sure you are using the most up to date decision(s) as they get updated regularly.
PART 1 - GENERAL

1.1 LOCATION AND DESCRIPTION OF WORK

A. The Work covers the responsibilities of the RAS Pump System Equipment Supplier (Supplier) and its relation to Owner, Engineer, Program Manager (PM) and Contractor in the construction of the Provo Water Advanced Treatment and Resource Recovery (WATRR) Center and performing related required work, and Specifications.

B. The Project features pre-purchase of the major equipment. Contractor shall be responsible for the acceptance, handling, installation and startup of this and all other equipment for the Project.

C. The Work is located at the Provo City Water Reclamation Facility, which is located at 1685 South East Bay Boulevard, Provo Utah 84606.

D. The Work will consist of designing and furnishing wastewater RAS pump equipment and appurtenances required for the Phase 1 2020 Construction with an initial three (3) secondary process trains for the Provo WATRR Center. The Work will include furnishing manufacturer-trained personnel for the installation, commissioning, acceptance testing, training, and operations assistance as specified.

E. Project Background
   1. The following provides a general description of the project background and goals. Design or operating parameters and proposed improvements beyond those that relate to this Project are provided as information based upon the current understanding of the Project and shall not constitute the final basis of design and/or operation of the current or proposed facilities.
   2. In Phase 1, the Provo WATRR Center will have a nominal average hydraulic capacity of 16 million gallons per day (mgd) with three (3) secondary process trains. The plant is designed to be expanded in the future to approximately 21 mgd nominal average biological loading capacity, and 24 mgd average hydraulic design capacity with five (5) secondary process trains.
   3. The secondary treatment process will consist of advanced biological nutrient removal to achieve phosphorus and nitrogen limits with chemical addition as needed. Each bioreactor will have a dissolved oxygen (DO) depletion channel, return activated sludge (RAS) fermentation zone, anaerobic zone, anoxic zones, and aerobic zones.
   4. Mixed liquor from the bioreactors will be delivered to the membrane filtration system by gravity.
   5. Permeate pumps will draw water through the membrane system and pump it to the existing UV system.
   6. Return flow (RAS) from the membrane tanks to the bioreactor will be provided using return pumps. The pumps will be rated to provide a range of flows from two (2) times the minimum flow to four (4) times the average day maximum month flow for the bioreactor system.

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7. The existing Aeration Basins will be repurposed to provide tankage for flow equalization.
8. Metal salt (ferric chloride, ferric sulfate, or alum) solutions may be fed at multiple locations upstream of the membrane system to improve phosphorous reduction. The metal salt liquid chemical storage and feed equipment will be provided by others to meet the requirements of the proposed system.
9. The waste activated sludge (WAS) will be pumped from the end of the bioreactors, upstream of the membrane tanks. Surface wasting will be employed to reduce foaming.
10. The Project will be executed using the Construction Manager/General Contractor (CM/GC) delivery method. Supplier is required to coordinate with Owner, Program Manager (PM), Engineer and Contractor (CM/GC).

F. Covenant of Good Faith and Fair Dealing
1. The Work imposes an obligation of good faith and fair dealing in its performance and enforcement.
2. Supplier, Contractor, Engineer, PM and Owner, with a positive commitment to honesty and integrity, agree to the following mutual duties:
   a. Each will function within the laws and statutes applicable to their duties and responsibilities.
   b. Each will assist in the other’s performance.
   c. Each will avoid hindering the other’s performance.
   d. Each will proceed to fulfill its obligations diligently.
   e. Each will cooperate in the common endeavor of the Work.

G. Owner’s Intent:
1. Owner intends to encourage the foundation of a cohesive partnership with Engineer, Supplier and Contractor and its principal Subcontractors and suppliers.
2. This partnership will be structured to draw on the strengths of each organization to identify and achieve reciprocal goals.
3. The objectives are effective and efficient contract performance and completion within budget, on schedule, and in accordance with the Contract Documents.

1.2 EQUIPMENT SUPPLIER RESPONSIBILITIES

A. Supplier shall have “unit responsibility” for the RAS pump system and will be solely responsible for coordination of all of the Work of this Contract.

B. Supplier shall supervise, direct and cooperate fully with all Subcontractors, manufacturers, fabricators, suppliers, distributors, installers, testing agencies and all others whose services, materials or equipment are required to ensure completion of the Work within the Contract Time.

C. The Special Engineering Services performed by Supplier shall include but are not limited to the following:
   1. Refer Section 01 33 16 Design Data and Section 43 21 39 Submersible Propeller Pumps
   2. Design of the RAS pump system and appurtenances provided by Supplier including individual RAS pumps, piping systems, discharge tubes, soleplates, cable suspension system for individual RAS pump, accessories, and formed suction inlet (FSI) for individual RAS pump as an optional adder, as applicable to the RAS pump technology proposed by Supplier.
3. Supplier will be required to coordinate with Engineer and will provide all necessary information to support design decisions. This will include the development and submittal of various documents and performance of work including but not limited to the following:
   a. Equipment Shop Drawings and Specifications.
   b. General arrangement drawings
   c. Supplier will participate in meetings and provide assistance to Owner, PM, Engineer and Contractor during the design
4. Communication of any changes required by Supplier for coordination of design with Owner, PM, Engineer and Contractor.
5. Participation in meetings and assistance to Owner, PM, Engineer and Contractor during the design, construction, commissioning and acceptance testing of the RAS pump system and appurtenances
6. Support for the process logic control and human machine interface system (PLC/HMI) for the RAS pump system including but not limited to:
   a. Coordination between Supplier’s and other Owner equipment interfaces
   b. Cooperation and coordination with Owner in the development of the SCADA control system
7. Operation and Maintenance Manuals for all equipment provided
8. Scheduling of equipment delivery, witnessing unloading and unpacking of supplied equipment, and inspecting/inventorying equipment
9. Equipment and services for demonstration/performance testing
10. Training of Contractor
11. Supervision of the setting and anchoring of equipment supplied by Supplier
12. Review of equipment installation
13. Calibration of supplied instrumentation
14. Commissioning of the system
15. Acceptance Testing
16. Operator Training
17. Correction Period Assistance
18. System Warranty

D. The Provision of Goods
   1. The scope of supply for goods to be provided by the Supplier includes all equipments, submersible pumps/motors, discharge tubes, soleplates, cable suspension system for individual RAS pump, accessories, FSI as an optional adder for individual RAS pump, and all necessary appurtenances for the installation and operation of the RAS pump system.

E. The Scope will be provided under one contract. The Contract Documents include the following:
   2. Volume 2 – Technical Specifications

1.3 WORK BY OTHERS

A. Engineer(s) responsibilities
   1. Facility Design:
      a. Overall facility design
      b. Design and specification of yard piping (wastewater, treated water, solids)
c. Design of liquid stream process (in-plant lift station, influent pump station, primary clarification, fine screens, equalization, RAS fermentation, secondary treatment, and disinfection)
d. Design of solids stream (thickening, digestion, dewatering, sidestream treatment).
e. Design of bulk chemical feed facilities
f. Design of electrical system (motor control centers (MCCs), conduit schedules, electrical/control rooms) etc.
g. Design of structural elements of facility
h. Design of heating, ventilation, and air conditioning (HVAC) and plumbing (potable water, equipment drains and sanitary lines) for facility
i. Preparation of Bidding Documents
j. Design of operator interface screens outside of RAS pump system equipment supplier’s scope of work
k. Design of regional supervisory control and data acquisition (SCADA) system

2. Project Responsibility
   a. Review and approval of Shop Drawing submittals
   b. Review of applicable building codes
   c. Assist OWNER to obtain operation and discharge permits
   d. Observation of Supplier activities
   e. Observation during installation, commissioning and acceptance testing

B. Contractor(s) responsibilities:
   1. Coordination during the design and construction phases
   2. Administer Supplier Contract
   3. Construction of buildings and facilities to house the liquid and solid stream process units
   4. Unloading and storage of all equipment at the Point of Destination
   5. Installation of all equipment provided by Supplier
   6. Submittal preparation for, and purchase and installation of other equipment specified by Engineer and denoted on the drawings
   7. Installation of piping
   8. Installation of electrical systems and operator interfaces
   9. Corrective assistance during demonstration, field, and acceptance testing of the system

C. Owner(s) responsibilities:
   1. Provide directions and make decisions as needed to support progress of work.
   2. Payment of interested parties.

1.4 SITE CONDITIONS

A. Site Investigation and Representation
   1. Supplier acknowledges that it has satisfied itself as to the nature and location of the work, the general and local conditions, particularly those related to availability of transportation, disposal, handling and storage of materials, availability of labor, water, electric power, roads, and uncertainties of weather, or similar physical conditions at the site, the conformation and conditions of the ground, the character of equipment and facilities needed preliminary to and during the prosecution of the work and all other matters which can in any way affect the work or the cost thereof under this Contract.
PART 1 - GENERAL

1.1 GENERAL

A. General:
1. This Section outlines in general the items that Supplier must prepare or assemble for submittal during the progress of the work.
2. There is no attempt herein to state in detail all the procedures and requirements for each submittal.
3. Supplier's attention is directed to the individual Specification Sections in these Contract Documents, which may contain additional and special submittal requirements.
4. Owner reserves the right to direct and modify the procedures and requirements for submittals as necessary to accomplish the specific purpose of each submittal.
5. Supplier shall anticipate resubmitting submittals for major pieces of equipment.
6. Should Supplier be in doubt as to the procedure, purpose, or extent of any submittal, inquiries shall be directed to Engineer.

B. Schedule of Submittals:
1. Within 20 days of the effective date of the Agreement Notice to Proceed, Supplier shall submit a complete list of anticipated submittals, including specification/drawing references.
2. Any additional submittals shall also be included in updates.

1.2 TECHNICAL SUBMITTALS

A. General:
1. Requirements in this Section are in addition to any specific requirements for submittals specified in other Divisions and Sections of these Contract Documents.
2. Submittal Contents and Numbering:
   a. Each submittal shall contain material pertaining to no more than one equipment or material item and shall have the specification Section and applicable paragraph number clearly identified on the front of the submittal transmittal form.
   b. Each submittal shall be numbered based on the specification number relating to that piece of equipment. For multiple pieces of equipment under one specification section, numbering shall be sequential in order that they are received (e.g. 40 05 13-00 followed by 40 05 13-01).
   c. Resubmittals shall include the number of the original submittal plus the suffix "01" for the first resubmittal, "02" for the second resubmittal, etc. (e.g. submittal 40 05 13-01-01, 40 05 13-01-02, etc.).
   d. Submittals not conforming to these requirements will be rejected.
3. Submitted data shall be fully sufficient in detail for determination of compliance with the provisions and intent of the Contract Documents.
4. Coordination Responsibilities:
   a. Shop drawing submittal and coordination are the responsibility of Supplier; this responsibility shall not be delegated in whole or in part to Subcontractors or suppliers.
b. Designation of work "by others," if shown on shop drawings, shall mean that the work will be the responsibility of Supplier rather than the Subcontractor or supplier who has prepared the shop drawings.

5. No equipment or material requiring listings, drawings, or descriptive material shall be fabricated, purchased, or installed until Engineer has reviewed and accepted such lists, final shop drawings, or other descriptive material. Installation of such equipment or material without accepted submittals will be considered defective work.

6. Submittal Review Time:
   a. Submittals will be acted upon by Engineer as promptly as possible and returned to Supplier not later than the time allowed for review in Paragraph B.2 below.
   b. This required time for Owner review shall not be a cause for delay in contract completion nor shall it be a reason for an extension of contract time.
   c. If Supplier is required by Owner to resubmit data, then neither the time required for Supplier to prepare and resubmit such data, nor the required time for Owner review, shall be a cause for delay in contract completion or for an extension of contract time.
   d. Responsibility for time required for preparing and submitting required data shall be assigned solely to Supplier.

7. Excessive Submittal Review:
   a. It is considered reasonable that Supplier shall make a complete and acceptable submittal to Engineer by the second submission of a submittal item.
   b. Additional costs of Engineer's review beyond the second submission shall be the responsibility of Supplier and may be deducted from the monthly progress payments.
   c. This applies to all submittals including shop drawings.

8. Changes After Review:
   a. After a submittal has been reviewed and accepted, no changes or substitutions in that submittal will be allowed without Engineer's approval.
   b. If allowed, Supplier will be responsible for the additional costs for engineering, administrative, clerical or other work required for additional review.

9. Intent of Review:
   a. Shop drawings will be reviewed for general conformance with the drawings and specifications.
   b. The intent of the review is to determine if Supplier is submitting materials and equipment which are in general conformance with the Contract Documents.
   c. Detailed review of dimensions, sizes, space requirements, coordination with other equipment, and other construction details is not performed.
   d. Additional work and costs, resulting from errors in the shop drawings shall be Supplier's responsibility and liability.
   e. Accuracy, coordination, and completeness of shop drawings shall be the sole responsibility of Supplier, including responsibility to backcheck comments, corrections, and modifications from Engineer's review before fabrication.

10. Supplier shall indicate on the submittal transmittal form if and how the submittal deviates from the contract requirements.

11. Shop drawings, layout diagrams, catalog cuts and data, test reports, and information in sufficient detail to show complete compliance with all specified requirements shall be furnished to Engineer, covering but not limited to the following items:
   a. Equipment provided by Supplier
   b. Hardware
   c. Instrumentation
   d. Miscellaneous fabricated metals
   e. Motors, starters and controls
f. Paints, coatings and finishes

g. Pipe supports and anchors

h. Pumps

B. Submittal Procedure:

1. Supplier shall submit to Engineer for review one (1) electronic copy of each submittal (shop drawings, electrical diagrams, and catalog cuts for fabricated items and manufactured items furnished under this Contract, etc.)

2. Shop drawings shall be submitted in sufficient time to allow Engineer not less than twenty (20) working days for examining the shop drawings except for designs for turnkey items for which thirty (30) working days will be allowed, and substitutions for which (40) working days will be allowed.

3. Shop drawings shall be accurate, distinct, and complete, and shall contain all required information, including satisfactory identification of items, units, and assemblies in relation to the Contract Drawings and Specifications.

4. Supplier Certification:
   a. Shop drawings shall be submitted only by Supplier, who shall indicate by a signed stamp on the shop drawings, or other approved means, that Supplier has checked and approved the shop drawings, and that the work shown is in accordance with Contract requirements and has been checked for dimensions and relationship with work of all other trades involved.

   b. Submitting incomplete or unchecked shop drawings for Engineer to correct or finish will not be acceptable, and shop drawings that, in the opinion of Engineer, indicate that they have not been checked by Supplier will be rejected and returned to Supplier for resubmission in the proper form.

5. Return of Reviewed Submittals:
   a. When the shop drawings have been reviewed by Engineer, the appropriate number of submittals will be returned to Supplier appropriately stamped.

   b. If major changes or corrections are necessary, the shop drawing will be rejected and returned to Supplier with the need for such changes or corrections indicated.

   c. Supplier shall correct and resubmit rejected shop drawings in the same manner and quantity as specified for the original submittal.

   d. If changes are made by Supplier (in addition to those requested by Engineer) on the resubmitted shop drawings, such changes shall be clearly explained in a transmittal letter accompanying the resubmitted shop drawings.

6. The review of such shop drawings and catalog cuts by Engineer shall not relieve Supplier from responsibility for correctness of dimensions, fabrication details, coordination with other work, and space requirements, or for deviations from the Contract Drawings or Specifications, unless Supplier has called attention to such deviations in writing by a letter accompanying the shop drawings and Engineer approves the change or deviation in writing at the time of submission; nor shall review by Engineer relieve Supplier from the responsibility for errors in the shop drawings.

7. Supplier agrees that shop drawing submittals processed by Engineer do not become Contract Documents and are not Change Orders; that the purpose of the shop drawing review is to establish a reporting procedure and to permit Engineer to monitor Supplier’s progress and understanding of the design.

C. Shop Drawing Requirements: Shop drawings referred to herein shall include shop drawings, catalog cuts and information schematic diagrams, and other submittals for
both shop and field-fabricated items. Supplier shall submit, as applicable, the following for all prefabricated or manufactured structural items, material, and equipment:

1. General:
   a. For equipment which requires electrical service, submit detailed information to show power supply requirements, MCC and control panel, elevations, wiring diagrams, control and protection schematics, shop test data, operation and maintenance procedures, outline drawings, and Manufacturer's recommendation of the interface/interlock among the equipment.
   b. For mechanical equipment submit all data pertinent to the installation and maintenance of the equipment including shop drawings, anchorage requirements, Manufacturer's recommended installation procedure, detailed installation drawings, test data and curves, operation and maintenance manuals, and other details necessary.
   c. For shop drawings or equipment drawings, include dimensions, size and location of connections to other work, and weight of equipment.
   d. Installation or placing drawings for equipment, drives, and bases.
   e. Supporting calculations for equipment and associated supports, or hangers required or specified to be designed by equipment Manufacturers, including seismic restraint information and details.
   f. Complete coating Manufacturer's specifications, including materials description and paint system.
   g. Performance data and head vs. flow curves for compressors and pumps.
   h. Suggested spare parts list with current price information.
   i. List of special tools required for checking, testing, parts replacement, and maintenance. (Special tools are those which have been specially designed or adapted for use on parts of the equipment, and which are not customarily and routinely carried by maintenance mechanics.)
   j. List of special tools furnished with the equipment.
   k. List of materials and supplies required for the equipment prior to and during startup.
   l. Installation instructions.
   m. List of materials and supplies furnished with the equipment.
   n. Samples of finish colors for selection.
   o. Special handling instructions.
   p. Requirements for storage and protection prior to installation.
   q. Requirements for routine maintenance required prior to plant startup.
   r. Startup and operating instructions.

2. Seismic design calculations and restraint details for equipment and piping supports. Calculations shall be stamped by a Civil or Structural Engineer registered in the State of Utah.

3. Electrical:
   a. Wiring and control diagrams of systems and equipment. Local control panel details.
   b. List of special motor features being provided (e.g., space heaters, altitude corrections, thermal protectors, mounting arrangement, etc.).
   c. Complete motor rating for all motors, including motor no-load, starting, and full-load current at rated voltage; full-load speed and full-load current at 110 percent voltage; motor service factor; motor efficiency and power factor at 1/2, 3/4, and full-load at rated voltage; recommended maximum kVAR of power factor correction capacitors when capacitors are switched with motor.

4. Instrumentation and Control:
   a. See Technical Sections for additional specific submittal requirements.
b. The submittals shall include satisfactory identification of items, units, and assemblies in relation to the Specification Section number, and the system or equipment identification or tag number shown on the Drawings, the Process and Instrumentation Diagram (P&ID), or as provided in applicable Specification Section.

D. Submittals required for foreign-manufactured items:
   1. In addition to the submittal requirements stated above, suppliers of foreign-manufactured items shall submit the names and addresses of companies within the United States that maintain technical service representatives and a complete inventory of spare parts and accessories for each foreign-made item proposed for incorporation into the work. Failure to provide the foregoing capabilities shall be just cause for rejection of the foreign-manufactured items.

E. Final shop drawings to be submitted to Owner:
   1. Complete electronic sets of reproducible final shop drawings shall be submitted to Owner before, or at the time of, delivery of equipment onto the site.

F. Seismic loading design provisions:
   1. All equipment supports that are not specifically detailed on the Drawings or specified herein shall be the responsibility of the equipment Manufacturers and shall be designed by a Civil or Structural Engineer registered in the State of Utah.
   2. The design shall be in accordance with the seismic provisions International Building Code (IBC) 2018 and of the seismic design requirements listed in Section 01 61 00, Common Product Requirements, in addition to all other loading conditions.

G. Submittal of interface information (connection and correlation with other work):
   1. Where called for in the Specifications, and as determined necessary by Engineer to provide proper correlation with other equipment, complete interface information shall be submitted.
   2. This interface information shall be accurate and contain all information necessary to allow the completion of detailed design and construction of the interfacing or connecting work.
   3. Supplier shall include in their negotiation for subcontract work, such agreements as may be necessary to ensure the accuracy of Supplier’s interface submittal information.
   4. In the event additional costs are incurred due to subsequent changes to information given in said interface information, such additional costs shall be borne by Supplier.

H. Operation and Maintenance (O&M) Manuals:
   1. O&M manuals shall be submitted in accordance with Section 01 78 23, Installation, Operation and Maintenance Manuals.
   2. All equipment Manufacturers shall be made aware of these requirements and all associated costs shall be included in the costs for furnishing the equipment or system.
   3. O&M Submittal Review Checklist:
      a. Contractor shall include a completed O&M Manual Submittal Review Checklist (copy included at the end of this Section) with each O&M manual submittal.
      b. The checklist shall indicate that the O&M manual as submitted complies in all respects to the contract requirements.
      c. Any O&M manual submitted without a completed checklist will be rejected.
4. The manuals shall be furnished to Engineer upon the delivery of the respective equipment.
5. No payment will be made for equipment or materials or equipment installation before the respective O&M manuals have been approved by Engineer.
6. Each O&M manual shall be complete in all respects for all equipment, controls, accessories, and associated appurtenances.
7. Each O&M manual shall include, but not be limited to, the following:
   a. Diagrams and illustrations, including pump curves indicating operating points.
   b. Detailed description of the function of each principal component of the system.
   c. Performance and nameplate data.
   d. Installation instructions.
   e. Starting procedure
   f. Proper adjustment procedure.
   g. Test procedures.
   h. Operating procedure.
   i. Shutdown instructions.
   j. Emergency operating instructions and troubleshooting guide.
   k. Safety instructions.
   l. Maintenance and overhaul instructions which shall include detailed assembly drawings with part numbers, parts list, instructions for ordering spare parts, and complete preventive maintenance instructions required to ensure satisfactory performance and longevity of the equipment.
   m. Lubrication instructions which shall list points to be greased or oiled, shall recommend type, grade, and temperature range of lubricants, and shall recommend frequency of lubrication.
   n. List of electrical relay settings and control and alarm contact settings.
   o. Electrical interconnection wiring diagram for equipment furnished, including all control and lighting systems.
   p. Recommendations for spare parts and special tools.
8. Manuals shall be transmitted to Engineer upon delivery of the equipment and all equipment shall be serviced in accordance with the Manufacturer's recommendations prior to operation. A service record shall be maintained on each item of equipment and shall be delivered to Engineer prior to final acceptance of the project.

I. Manufacturers' certificates and proper installation:
   1. Contractor shall submit Manufacturers' certificates of proper installation for items of equipment as specified under Section 01 79 00, Testing, Training and Startup.

J. Samples and test specimens:
   1. Where required in the Specifications, and as determined necessary by Engineer, test specimens or samples of materials, appliances, and fittings to be used or offered for use in connection with the work shall be submitted to Engineer at Supplier's expense, with information as to their sources, with all cartage charges prepaid, and in such quantities and sizes as may be required for proper examination and tests to establish the quality or equality thereof, as applicable.
   2. All samples and test specimens shall be submitted in ample time to enable Engineer to make any tests or examinations necessary, without delay to the work. Supplier will be held responsible for any loss of time due to their neglect or failure to deliver the required samples to Engineer, as specified.
   3. Supplier shall submit additional samples as required by Engineer to ensure equality with the original approved sample and/or for determination of Specification compliance.
4. Laboratory tests and examinations that Owner elects to make in its own laboratory will be made at no cost to Supplier, except that, if a sample of any material or equipment proposed for use by Supplier fails to meet the Specifications, the cost of testing subsequent samples shall be borne by Supplier.

5. All tests required by the Specifications to be performed by an independent laboratory shall be made by a laboratory approved by Engineer. Certified test results of all specified tests shall be submitted in duplicate to Engineer. The samples furnished and the cost for the laboratory services shall be at the expense of Supplier and included in the prices bid for the associated work.

6. Approved sample items (fixtures, hardware, etc.) may be incorporated into the work upon approval, and when no longer needed by Engineer for reference.

K. Material and equipment colors:
   1. Engineer will provide a schedule of selected colors within 30 days after approval of materials and equipment, and after receiving samples of the Manufacturer’s standard colors for those items requiring Owner's selection.

L. Certificates of Compliance:
   1. A Certificate of Compliance shall be furnished for materials specified to a recognized standard or code prior to the use of any such materials in the work.
   2. Engineer may permit the use of certain materials or assemblies prior to sampling and testing if accompanied by a Certificate of Compliance.
   3. The certificate shall be signed by the manufacturer of the material or the manufacturer of assembled materials and shall state that the materials involved comply in all respects with the requirements of the Specifications.
   4. A Certificate of Compliance shall be furnished with each lot of material delivered to the work and the lot so certified shall be clearly identified in the certificate.

M. Quality Assurance
   1. Source limitations: To the greatest extent possible for each unit of work, Supplier shall provide products, materials, or equipment of a singular generic kind from a single source.
   2. Compatibility of options:
      a. Where more than one choice is available as options for Supplier's selection of a product, material, or equipment, Supplier shall select an option which is compatible with other products, materials, or equipment already selected.
      b. Compatibility is a basic general requirement of product/material selections.

N. Review by Engineer
   1. After review by Engineer of each of Supplier's submissions, the material will be returned to Supplier with actions defined as follows:
      a. NO EXCEPTIONS TAKEN: Accepted subject to its compatibility with further submittals and additional partial submittals for portions of the work not covered in this submittal. Does not constitute approval or deletion of specified or required items not shown in the partial submittal.
      b. MAKE CORRECTIONS NOTED: Same as 1.a., except that minor corrections as noted shall be made by Supplier.
      c. REVISE AND RESUBMIT: Rejected because of major inconsistencies or errors which shall be resolved or corrected by Supplier prior to subsequent review by Engineer.
d. **REJECTED - RESUBMIT:** Submitted material does not conform to Plans and Specifications in major respect, e.g., wrong item, wrong size, model, capacity, or material.

2. Review actions (a) and (b) above constitute acceptance by Engineer of the submittal.

O. **Requests for Information**

1. Requests for Information about the Contract Documents shall be directed by Supplier to Engineer using a Request for Information (RFI) form as agreed to by Owner and Engineer. Such requests shall not be transmitted directly to Engineer from a Subcontractor or Supplier.

2. A separate form shall be used for each specific item for which information is required. Requests for Information for more than one item using a single RFI form will be permitted only when the items are so functionally related that expediency indicates review of the group of items as a whole.

3. Engineer will reply to Supplier's Request for Information as soon thereafter as practicable.

**PART 2 - PRODUCTS (NOT USED)**

**PART 3 - EXECUTION (NOT USED)**

+ + END OF SECTION + +
## O&M MANUAL REVIEW CHECKLIST

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<thead>
<tr>
<th>DESCRIPTION</th>
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<td><strong>HARD-COPY O&amp;M MANUALS</strong></td>
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<td>- Minimum three (3) copies</td>
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<td>- Cover Label and Title Page:</td>
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<td>- Project title and Project number</td>
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<td>- Sections parallel equipment specifications</td>
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<td>- Pages punched for 3 ring binder (punching does not obliterate data)</td>
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<td>- Info larger than 8-1/2&quot;x11&quot; folded showing title block, or included in binder pockets</td>
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</tr>
<tr>
<td><strong>ELECTRONIC O&amp;M MANUALS</strong></td>
<td></td>
</tr>
<tr>
<td>- Minimum one (1) copy on USB Drive</td>
<td></td>
</tr>
<tr>
<td>- Full version of O&amp;M manual in PDF format</td>
<td></td>
</tr>
<tr>
<td>- Separate text and drawing files used to create PDF O&amp;M manual</td>
<td></td>
</tr>
<tr>
<td>- Index on USB Drive as separate file titled “index”</td>
<td></td>
</tr>
<tr>
<td><strong>TECHNICAL CONTENT</strong></td>
<td></td>
</tr>
<tr>
<td>- Diagrams and Illustrations, including pump curves and all parts list</td>
<td></td>
</tr>
<tr>
<td>- Detailed description of function of principal components</td>
<td></td>
</tr>
</tbody>
</table>

---

**ACCEPTABLE PROJECT TITLE:** Provo WATRR Center Phase 1 2020 Construction

**UNACCEPTABLE PROJECT NO.:** 19-002
<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>ACCEPTABLE?</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Performance and nameplate data .........................................................................................................................................................................................</td>
<td>YES NO NA</td>
</tr>
<tr>
<td>▪ Installation instructions...............................................................................................................................................................................................</td>
<td>YES NO NA</td>
</tr>
<tr>
<td>▪ Starting procedure .................................................................................................................................................................................................</td>
<td>YES NO NA</td>
</tr>
<tr>
<td>▪ Proper adjustment procedure ...................................................................................................................................................................................</td>
<td>YES NO NA</td>
</tr>
<tr>
<td>▪ Test procedures .................................................................................................................................................................................................</td>
<td>YES NO NA</td>
</tr>
<tr>
<td>▪ Operating procedure ............................................................................................................................................................................................</td>
<td>YES NO NA</td>
</tr>
<tr>
<td>▪ Shutdown instructions .........................................................................................................................................................................................</td>
<td>YES NO NA</td>
</tr>
<tr>
<td>▪ Emergency operating instructions &amp; troubleshooting .....................................................................................................................................</td>
<td>YES NO NA</td>
</tr>
<tr>
<td>▪ Safety instructions ............................................................................................................................................................................................</td>
<td>YES NO NA</td>
</tr>
<tr>
<td>▪ Maintenance and overhaul instructions ..........................................................................................................................................................</td>
<td>YES NO NA</td>
</tr>
<tr>
<td>▪ Lubrication instructions ......................................................................................................................................................................................</td>
<td>YES NO NA</td>
</tr>
<tr>
<td>▪ List of electrical relay settings and control and alarm contact settings .......................................................................................................</td>
<td>YES NO NA</td>
</tr>
<tr>
<td>▪ Electrical interconnection wiring diagrams, including control and lighting systems ..................................................................................</td>
<td>YES NO NA</td>
</tr>
<tr>
<td>▪ Recommended spare parts and special tools ..................................................................................................................................................</td>
<td>YES NO NA</td>
</tr>
<tr>
<td>▪ Project specific warranty statement ..............................................................................................................................................................</td>
<td>YES NO NA</td>
</tr>
</tbody>
</table>

+ + END OF SECTION + +
PART 1 - GENERAL

1.1 PLANT DESIGN CRITERIA

A. The system shall be designed to meet the following requirements.

1. The system must be capable of treating the following influent flows:

<table>
<thead>
<tr>
<th>Flow Description</th>
<th>Phase 1 Design Flow (mgd)</th>
<th>Buildout Design Flow (mgd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Daily Flow (ADF)</td>
<td>16.0</td>
<td>24</td>
</tr>
<tr>
<td>Average Day Maximum Month Flow (ADMM)</td>
<td>19.1</td>
<td>25.3</td>
</tr>
<tr>
<td>Peak Daily Flow (PDF)</td>
<td>28.7</td>
<td>37.9</td>
</tr>
<tr>
<td>Peak Hourly Flow (PHF)</td>
<td>38.3 (PHF will be equalized to ADMM)</td>
<td>50.6 (PHF will be equalized to ADMM)</td>
</tr>
</tbody>
</table>

2. Influent Wastewater Characteristics

a. The membrane bioreactor system will be downstream of coarse screens, grit removal, fine screens and primary sedimentation. The membrane bioreactor system must be capable of treating primary effluent wastewater with the following wastewater characteristics:

<table>
<thead>
<tr>
<th>Water Quality Parameters</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD, (mg/L)</td>
<td>180</td>
</tr>
<tr>
<td>COD, (mg/L)</td>
<td>415</td>
</tr>
<tr>
<td>TSS, (mg/L)</td>
<td>200</td>
</tr>
<tr>
<td>NH₃-N, (mg/L)</td>
<td>20</td>
</tr>
<tr>
<td>TKN-N, (mg/L)</td>
<td>40</td>
</tr>
<tr>
<td>Total Phosphorus, (mg/L)</td>
<td>5</td>
</tr>
<tr>
<td>Alkalinity, (mg/L)</td>
<td>300</td>
</tr>
<tr>
<td>Hardness, (mg/L as CaCO₃)</td>
<td>425</td>
</tr>
<tr>
<td>pH</td>
<td>6.8 - 7.2</td>
</tr>
<tr>
<td>Minimum Temperature</td>
<td>10°C</td>
</tr>
<tr>
<td>Maximum Temperature</td>
<td>20°C</td>
</tr>
<tr>
<td>Jobsite Elevation, ft above MSL</td>
<td>4,500</td>
</tr>
</tbody>
</table>

3. Effluent Quality Requirements

a. Effluent (permeate) from the membrane system must meet the following water quality limits:

<table>
<thead>
<tr>
<th>Water Quality Parameters</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD, (mg/L)</td>
<td>Current – 25.0</td>
</tr>
<tr>
<td></td>
<td>Future – 10.0</td>
</tr>
<tr>
<td>TSS, (mg/L)</td>
<td>25.0</td>
</tr>
<tr>
<td>NH₃, (mg/L)</td>
<td>Summer – 3.0</td>
</tr>
<tr>
<td></td>
<td>Winter – 5.0</td>
</tr>
<tr>
<td>pH</td>
<td>6.5 – 9.0</td>
</tr>
<tr>
<td>Turbidity</td>
<td>0.2</td>
</tr>
</tbody>
</table>
b. A plant discharge phosphorus limit of 1.0 mg/L is required, and a future limit of 0.1 mg/L is anticipated. A chemical coagulant such as alum or ferric chloride will be added to achieve 0.1 mg/L phosphorus levels.

B. Bioreactor Design
1. The biological treatment system shall consist of three (3) parallel treatment trains in Phase 1 2020 Construction and five (5) parallel treatment trains in Buildout. Each train will contain dissolved oxygen (DO) depletion, return activated sludge (RAS) fermentation, anaerobic, anoxic, and aerobic zones.
2. Bioreactor size, layout, and configuration can be seen in the Mixing System procurement drawings. A summary of bioreactor design data are as follows:

<table>
<thead>
<tr>
<th>Facility</th>
<th>Length, ft</th>
<th>Width, ft</th>
<th>No. of Units</th>
<th>Zone Covering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bioreactor&lt;sup&gt;1,2&lt;/sup&gt;</td>
<td>636.7</td>
<td>10 – 31.5</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>DO Depletion</td>
<td>101.2</td>
<td>10.0</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>RAS Fermentation</td>
<td>83.0</td>
<td>19.3</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>Anaerobic Zone</td>
<td>41.0</td>
<td>31.5</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>Anoxic Zone 1</td>
<td>72.0</td>
<td>20.0</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>Anoxic Zone 2</td>
<td>72.0</td>
<td>20.0</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>Aerobic Zone 1</td>
<td>89.0</td>
<td>20.0</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>Aerobic Zone 2</td>
<td>89.0</td>
<td>20.0</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>Aerobic Zone 3</td>
<td>89.5</td>
<td>20.0</td>
<td>3</td>
<td>None</td>
</tr>
</tbody>
</table>

1. Flow to the bioreactors will be equally split between all bioreactors during normal operation.
2. Each bioreactor includes one DO depletion channel, one RAS fermentation zone, one anaerobic zone, two anoxic zones, and three aerobic zones.
3. The expected bioreactor RAS recycle flow rates are shown below:

<table>
<thead>
<tr>
<th>Phase 1</th>
<th>3 Bioreactors</th>
<th>Influent</th>
<th>RAS Flow (Total)</th>
<th>RAS Flow (Per Basin)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>2Q</td>
<td>3Q</td>
</tr>
<tr>
<td></td>
<td></td>
<td>mgd</td>
<td>mgd</td>
<td>mgd</td>
</tr>
<tr>
<td>ADF</td>
<td>16.0</td>
<td>5.3</td>
<td>32.0</td>
<td>48.0</td>
</tr>
<tr>
<td>ADMM</td>
<td>19.1</td>
<td>6.4</td>
<td>38.2</td>
<td>57.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Build-Out</th>
<th>5 Bioreactors</th>
<th>Influent</th>
<th>RAS Flow (Total)</th>
<th>RAS Flow (Per Basin)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>2Q</td>
<td>3Q</td>
</tr>
<tr>
<td></td>
<td></td>
<td>mgd</td>
<td>mgd</td>
<td>mgd</td>
</tr>
<tr>
<td>ADF</td>
<td>24</td>
<td>4.8</td>
<td>48.0</td>
<td>72.0</td>
</tr>
<tr>
<td>ADMM</td>
<td>25.3</td>
<td>5.1</td>
<td>50.6</td>
<td>75.9</td>
</tr>
</tbody>
</table>

C. Equalization Basin Design
1. Flow to the bioreactors shall be equalized. Flow equalization will occur during periods of higher than ADMM and lower than ADF. Flows in excess of ADMM shall overflow to the equalization basin upstream of the bioreactors. Excess flow shall flow by gravity to the equalization basin. The equalization basin is a modified existing aeration basin with three passes separated by a wall with a 48” circular
opening between passes. During periods of flow lower than ADF, valves on the effluent piping will control return gravity flow to the influent pump station to supplement low influent flows and reduce flow fluctuations to the bioreactors.

2. Equalization Minimum and Maximum volumes shall be as follows:

<table>
<thead>
<tr>
<th>Facility</th>
<th>Length, ft</th>
<th>Width, ft</th>
<th>Depth, ft</th>
<th>Total Volume, MG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equalization Basin Pass 1</td>
<td>200</td>
<td>25</td>
<td>2-16</td>
<td>0.06-0.48</td>
</tr>
<tr>
<td>Equalization Basin Pass 2</td>
<td>200</td>
<td>25</td>
<td>2-16</td>
<td>0.06-0.48</td>
</tr>
<tr>
<td>Equalization Basin Pass 3</td>
<td>200</td>
<td>25</td>
<td>2-16</td>
<td>0.06-0.48</td>
</tr>
<tr>
<td>TOTAL BASIN</td>
<td>600</td>
<td>25</td>
<td>2-16</td>
<td>0.06-0.48</td>
</tr>
</tbody>
</table>

1.2 RAS PUMP SYSTEM PERFORMANCE REQUIREMENTS

A. The RAS Pump System shall be designed to meet the following performance requirements.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Mixed Liquor Suspended Solids Concentration (mg/L)</td>
<td>3,800-12,000</td>
</tr>
<tr>
<td>Pumping Cycle</td>
<td>Continuous</td>
</tr>
<tr>
<td>Minimum static head (ft)</td>
<td>Refer Section 43 21 39, 2.2 B Figure 1</td>
</tr>
<tr>
<td>Maximum static head (ft)</td>
<td>Refer Section 43 21 39, 2.2 B Figure 1</td>
</tr>
<tr>
<td>Design Points for a pump</td>
<td></td>
</tr>
<tr>
<td>Duty Point</td>
<td></td>
</tr>
<tr>
<td>Flow (gpm)</td>
<td>6,250</td>
</tr>
<tr>
<td>% Minimum Efficiency</td>
<td>75</td>
</tr>
<tr>
<td>2nd Operating Point</td>
<td></td>
</tr>
<tr>
<td>Flow (gpm)</td>
<td>9,950</td>
</tr>
<tr>
<td>% Minimum Efficiency</td>
<td>70</td>
</tr>
<tr>
<td>3rd Operating Point</td>
<td></td>
</tr>
<tr>
<td>Flow (gpm)</td>
<td>3,850</td>
</tr>
<tr>
<td>% Minimum Efficiency</td>
<td>70</td>
</tr>
<tr>
<td>Drive Type</td>
<td>Direct</td>
</tr>
<tr>
<td>Liquid Temperature (°C)</td>
<td>10 – 20</td>
</tr>
<tr>
<td>Drive</td>
<td>Variable frequency drive</td>
</tr>
<tr>
<td>Power Supply</td>
<td>480-volt, 3-phase, 60 Hz.</td>
</tr>
</tbody>
</table>
PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

++ END OF SECTION ++
REFERENCE STANDARDS AND ABBREVIATIONS

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

A. The standards referred to, except as modified, shall have full force and effect as though printed in this Specification, and shall be the latest edition or revision thereof in effect on the bid opening date, unless a particular edition or issue is indicated. Copies of these standards are not available from Owner.

B. Engineer will furnish, upon request, information as to how copies may be obtained.

C. Abbreviations and terms, or pronouns in place of them, shall be interpreted as follows:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAMA</td>
<td>Architectural Aluminum Manufacturer's Association</td>
</tr>
<tr>
<td>AAN</td>
<td>American Association of Nurserymen</td>
</tr>
<tr>
<td>AAR</td>
<td>Association of American Railroads</td>
</tr>
<tr>
<td>AASHTO</td>
<td>American Association of State Highway and Transportation Officials, Standard Specifications</td>
</tr>
<tr>
<td>AATCC</td>
<td>American Association of Textile Chemists and Colorists</td>
</tr>
<tr>
<td>ACI</td>
<td>American Concrete Institute, Standards</td>
</tr>
<tr>
<td>AFBMA</td>
<td>Anti-Friction Bearing Manufacturer's Association, Inc.</td>
</tr>
<tr>
<td>AGA</td>
<td>American Gas Association</td>
</tr>
<tr>
<td>AGC</td>
<td>Associated General Contractors</td>
</tr>
<tr>
<td>AGMA</td>
<td>American Gear Manufacturer's Association</td>
</tr>
<tr>
<td>AHAM</td>
<td>Association of Home Appliance Manufacturer's</td>
</tr>
<tr>
<td>AI</td>
<td>The Asphalt Institute</td>
</tr>
<tr>
<td>AIA</td>
<td>American Institute of Architects</td>
</tr>
<tr>
<td>AISI</td>
<td>American Iron and Steel Institute</td>
</tr>
<tr>
<td>AITC</td>
<td>American Institute of Timber Construction</td>
</tr>
<tr>
<td>AMCA</td>
<td>Air Moving and Conditioning Association, Standards</td>
</tr>
<tr>
<td>ANS</td>
<td>American Nuclear Society</td>
</tr>
<tr>
<td>ANSI</td>
<td>American National Standards Institute</td>
</tr>
<tr>
<td>APA</td>
<td>American Plywood Association</td>
</tr>
<tr>
<td>API</td>
<td>American Petroleum Institute</td>
</tr>
<tr>
<td>APWA</td>
<td>American Public Works Association, Standard Specifications for Public Works Construction</td>
</tr>
<tr>
<td>ASA</td>
<td>Acoustical Society of America</td>
</tr>
<tr>
<td>ASAE</td>
<td>American Society of Agriculture Engineers</td>
</tr>
<tr>
<td>ASCE</td>
<td>American Society of Civil Engineers</td>
</tr>
<tr>
<td>ASHRAE</td>
<td>American Society of Heating, Refrigeration and Air Conditioning Engineers</td>
</tr>
<tr>
<td>ASLE</td>
<td>American Society of Lubricating Engineers</td>
</tr>
<tr>
<td>Abbr.</td>
<td>Full Name</td>
</tr>
<tr>
<td>-------</td>
<td>-----------</td>
</tr>
<tr>
<td>ASME</td>
<td>American Society of Mechanical Engineers</td>
</tr>
<tr>
<td>ASQC</td>
<td>American Society of Quality Control</td>
</tr>
<tr>
<td>ASSE</td>
<td>American Society of Sanitary Engineers</td>
</tr>
<tr>
<td>ASTM</td>
<td>American Society for Testing and Materials, Standards</td>
</tr>
<tr>
<td>AWG</td>
<td>American Wire Gauge</td>
</tr>
<tr>
<td>AWPA</td>
<td>American Wood-Preservers’ Association, Standards</td>
</tr>
<tr>
<td>AWPI</td>
<td>American Wood Preservers Institute</td>
</tr>
<tr>
<td>AWS</td>
<td>American Welding Society</td>
</tr>
<tr>
<td>AWWA</td>
<td>American Water Works Association, Standards</td>
</tr>
<tr>
<td>BBC</td>
<td>Basic Building Code, Building Officials and Code Administrators International</td>
</tr>
<tr>
<td>BHMA</td>
<td>Builders Hardware Manufacturer’s Association</td>
</tr>
<tr>
<td>CBM</td>
<td>Certified Ballast Manufacturer’s</td>
</tr>
<tr>
<td>CEMA</td>
<td>Conveyors Equipment Manufacturer’s Association</td>
</tr>
<tr>
<td>CGA</td>
<td>Compressed Gas Association</td>
</tr>
<tr>
<td>CISPI</td>
<td>Cast Iron Soil Pipe Institute, Standards</td>
</tr>
<tr>
<td>CLFMI</td>
<td>Chain Link Fence Manufacturer's Institute</td>
</tr>
<tr>
<td>CMAA</td>
<td>Crane Manufacturers’ Association of America</td>
</tr>
<tr>
<td>CMA</td>
<td>Concrete Masonry Association</td>
</tr>
<tr>
<td>CRSI</td>
<td>Concrete Reinforcing Steel Institute, Standards</td>
</tr>
<tr>
<td>DCDMA</td>
<td>Diamond Core Drill Manufacturer’s Association</td>
</tr>
<tr>
<td>EIA</td>
<td>Electronic Industries Association</td>
</tr>
<tr>
<td>ETL</td>
<td>Electrical Test Laboratories</td>
</tr>
<tr>
<td>FED/OSHA</td>
<td>Federal Occupational Safety and Health Administration, Standards</td>
</tr>
<tr>
<td>FM</td>
<td>Factory Mutual</td>
</tr>
<tr>
<td>HI</td>
<td>Hydraulic Institute Standards</td>
</tr>
<tr>
<td>ICBO</td>
<td>International Conference of Building Officials</td>
</tr>
<tr>
<td>ICEA</td>
<td>Insulated Cable Engineers Association</td>
</tr>
<tr>
<td>IEEE</td>
<td>Institute of Electrical and Electronic Engineers</td>
</tr>
<tr>
<td>IES</td>
<td>Illuminating Engineering Society</td>
</tr>
<tr>
<td>IME</td>
<td>Institute of Makers of Explosives</td>
</tr>
<tr>
<td>IP</td>
<td>Institute of Petroleum (London)</td>
</tr>
<tr>
<td>IPC</td>
<td>Institute of Printed Circuits</td>
</tr>
<tr>
<td>IPCEA</td>
<td>Insulated Power Cable Engineers Association</td>
</tr>
<tr>
<td>ISA</td>
<td>Instrument Society of America</td>
</tr>
<tr>
<td>ISO</td>
<td>International Organization of Standardization</td>
</tr>
<tr>
<td>ITE</td>
<td>Institute of Traffic Engineers</td>
</tr>
<tr>
<td>MBMA</td>
<td>Metal Building Manufacturer's Association</td>
</tr>
<tr>
<td>MPTA</td>
<td>Mechanical Power Transmission of Association</td>
</tr>
<tr>
<td>MTI</td>
<td>Marine Testing Institute</td>
</tr>
<tr>
<td>EQUIPMENT SUPPLIER:</td>
<td>Manufacturers Standardization Society</td>
</tr>
<tr>
<td>NAAM</td>
<td>National Association of Architectural Metal Manufacturers</td>
</tr>
<tr>
<td>NACE</td>
<td>National Association of Corrosion Engineers, Standards</td>
</tr>
<tr>
<td>NBS</td>
<td>National Bureau of Standards</td>
</tr>
<tr>
<td>NCCLS</td>
<td>National Committee for Clinical Laboratory Standards</td>
</tr>
<tr>
<td>NEC</td>
<td>National Electric Code</td>
</tr>
<tr>
<td>NEMA</td>
<td>National Electrical Manufacturers' Association, Standards</td>
</tr>
<tr>
<td>NFPA</td>
<td>National Fire Protection Association</td>
</tr>
</tbody>
</table>
NFPA: National Forest Products Association
NGLI: National Lubricating Grease Institute
NMA: National Microfilm Association
NWMA: National Woodwork Manufacturers Association
OSHA: Occupational Safety and Health Administration
PCA: Portland Cement Association
PCI: Prestressed Concrete Institute
RIS: Redwood Inspection Service, Standard Specifications
RVIA: Recreational Vehicle Industry Association
RWMA: Resistance Welder Manufacturer’s Association
SAE: Society of Automotive Engineers
SAMA: Scientific Apparatus Makers Association
SDI: Steel Door Institute
SIS: Swedish Standards Association
SMA: Screen Manufacturer’s Association
SMACNA: Sheet Metal and Air Conditioning Contractors National Association
SPR: Simplified Practice Recommendation
SSBC: Southern Standard Building Code, Southern Building Code Congress
SSPC: Steel Structures Painting Council, Specifications
SSPWC: Standard Specifications for Public Works Construction
TAPPI: Technical Association of the Pulp and Paper Industry
TFI: The Fertilizer Institute
UBC: Uniform Building Code of the International Conference of Building Officials
UPC: Uniform Plumbing Code
UL: Underwriters Laboratories
WCLA: West Coast Lumbermen’s Association, Standard Grading and Dressing Rules
WCLIB: West Coast Lumber Inspection Bureau
WCRSI: Western Concrete Reinforcing Steel Institute
WRI: Wire Reinforcement Institute, Inc.
WWPA: Western Wood Products Association

1.2 OTHER ABBREVIATIONS

A. Other common abbreviations that may be found in the Specifications are, but may not be limited to:

- acrylonitrile butadiene styrene (ABS)
- alternating current (a-c, AC)
- American wire gauge (AWG)
- ante meridiem (am)
- ampere (A, amp)
- average (avg)
- biochemical oxygen demand (BOD)
- brake horsepower (bhp)
- British thermal unit (Btu)

- Centigrade (°C)
- chlorinated polyvinyl chloride (CPVC)
- company (Co)
- cubic inch (cu in, in³)
- cubic foot (cu ft, CF, ft³)
- cubic yard (cu yd, CY, yd³)
- cubic feet per minute (cfm, ft³/min)
- cubic feet per second (cfs, ft³/s)
- decibel (dB)
- decibels, A-weighted (dBa)
<table>
<thead>
<tr>
<th>Term</th>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>reinforced concrete pipe</td>
<td>RCP</td>
<td>total dynamic head</td>
</tr>
<tr>
<td>reinforced concrete cylinder pipe</td>
<td>RCCP</td>
<td>totally enclosed, fan-cooled</td>
</tr>
<tr>
<td>relative humidity</td>
<td>RH</td>
<td>totally enclosed, non-ventilated</td>
</tr>
<tr>
<td>revolutions per minute</td>
<td>rpm</td>
<td>twisted shielded</td>
</tr>
<tr>
<td>second</td>
<td>sec, s</td>
<td>ultraviolet</td>
</tr>
<tr>
<td>specific gravity</td>
<td>sp gr</td>
<td>United States</td>
</tr>
<tr>
<td>square foot</td>
<td>sq ft, SF, ft²</td>
<td>variable frequency drive</td>
</tr>
<tr>
<td>square inch</td>
<td>sq in, in²</td>
<td>volt</td>
</tr>
<tr>
<td>square yard</td>
<td>sq yd, SY, yd²</td>
<td>volts alternating current</td>
</tr>
<tr>
<td>stainless steel</td>
<td>SS</td>
<td>volts direct current</td>
</tr>
<tr>
<td>standard</td>
<td>std</td>
<td>water to cement</td>
</tr>
<tr>
<td>standard cubic feet per minute</td>
<td>scfm</td>
<td>water column</td>
</tr>
<tr>
<td>symmetrical</td>
<td>sym.</td>
<td>W/C, wc</td>
</tr>
<tr>
<td>total dynamic head</td>
<td>tdh</td>
<td></td>
</tr>
<tr>
<td>totally enclosed, fan-cooled</td>
<td>TEFC</td>
<td></td>
</tr>
<tr>
<td>totally enclosed, non-ventilated</td>
<td>TENV</td>
<td></td>
</tr>
<tr>
<td>twisted shielded</td>
<td>TWSH</td>
<td></td>
</tr>
<tr>
<td>ultraviolet</td>
<td>UV</td>
<td></td>
</tr>
<tr>
<td>United States</td>
<td>US, USA</td>
<td></td>
</tr>
<tr>
<td>variable frequency drive</td>
<td>VFD, AFD</td>
<td></td>
</tr>
<tr>
<td>volt</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>volts alternating current</td>
<td>VAC</td>
<td></td>
</tr>
<tr>
<td>volts direct current</td>
<td>VDC</td>
<td></td>
</tr>
<tr>
<td>water to cement</td>
<td>W/C, wc</td>
<td></td>
</tr>
<tr>
<td>water column</td>
<td>W.C.</td>
<td></td>
</tr>
</tbody>
</table>

**PART 2 - PRODUCTS (NOT USED)**

**PART 3 - EXECUTION (NOT USED)**

++ END OF SECTION ++
PART 1 - GENERAL

1.1 DESCRIPTION

A. Description of Work
   1. Provide a non-corrosive permanently engraved identification tag for each piece of equipment provided.
   2. The equipment number used by the Manufacturer shall be consistent with the number used to identify the equipment in parts listings and other O&M documentation. The tagging scheme will be finalized with the final design of the facility and will follow the standards currently being developed by Engineer and Owner. Where possible, equipment tags shall be affixed to the equipment by the equipment Manufacturer prior to delivery to Contractor.
   3. The Supplier shall be responsible for providing all identification tags for equipment provided loose for installation by Contractor.
   4. For all tagged devices supplied, the Supplier shall develop an “Equipment Cross Reference Schedule” that matches the tag to the equipment. Separate Schedules shall be provided for Equipment, Instruments, Valves, and Appurtenances. The schedule shall include the pertinent information associated with the equipment including tag number, description, functional name location, component equipment model, part number, size, materials, accessories and range and other pertinent information. The Equipment Cross-Reference Schedule shall be provided in the form of a Microsoft Excel (.XLS) spreadsheet.

B. Reference Specifications
   1. Division 01, General Requirements
   2. Division 05, Metals
   3. Division 43, Process Gas and Liquid Handling, Purification, and Storage Equipment

C. Coordination
   1. Coordinate the tagging of all equipment provided with Owner’s asset tagging and management system.

1.2 QUALITY CONTROL / QUALITY ASSURANCE (QA/QC) – NOT USED

1.3 SUBMITTALS

A. Shop Drawings
   1. Drawings and Samples
      a. Provide tagging information as part of the Second Shop Drawing Submittal
      b. Submit a complete listing of all equipment furnished along with both equipment Manufacturer’s (SKU) identification number and tag number for approval.
c. Submit the “Cross Reference Schedule” approved equipment Manufacturer's (SKU) identification number and tag number for each piece of equipment furnished in electronic format for records.

1.4 SUBMIT THE PRODUCT DELIVERY STORAGE AND HANDLING
1. Refer to Section 01 66 00, Transportation and Handling of Goods

PART 2 - PRODUCTS

2.1 PROCESS SYSTEM DESIGN AND PERFORMANCE – NOT USED

2.2 EQUIPMENT DESIGN AND FABRICATION

A. General
1. Tagging
  a. Tagging is used to identify facility, location / area, process, relative position within a process, and related systems. The purpose of tagging is for operations and maintenance personnel to be able to identify the equipment in the field.
  b. Tag numbers are assigned to the placement of the equipment and remain if the actual equipment is replaced.
  c. All process equipment, valves, instruments and controls will be given a tag.
  d. Equipment numbers are assigned to a specific equipment item for the life of the item. When the equipment item is moved from the process, the equipment tag goes with the equipment item. Example shown below in table.

<table>
<thead>
<tr>
<th>Equipment Code</th>
<th>Facility ID</th>
<th>Equipment Type</th>
<th>Loop ID</th>
<th>Unit or Device Designator</th>
</tr>
</thead>
<tbody>
<tr>
<td>55 P- 10- 1A</td>
<td>55</td>
<td>P-</td>
<td>10-</td>
<td>1A</td>
</tr>
</tbody>
</table>

e. All Component, Sequence Numbers, and Sub-Process Sequence Numbers for equipment contained as part of a duplicated process shall be the same component, sequence and sub-process designation. For example, all the permeate pumps will carry a final designation similar to 55-P-10. The designator for the units of a parallel system is contained in numeric portion of the Unit Designator (e.g. -1, -2, -3). Similar devices (e.g indicator lamps or push buttons) associated with the Unit are differentiated with the alphabetic portion of the Device Designator (-2A, -2B, -2C)

f. The Sequence Number and Sub Process Sequence Number that are wired to the PLC shall not be duplicated for different components. For example a Flow Indicating Transmitter FIT-2020 shall not have a corresponding automatic butterfly Valve BFV-2020.

g. Branches from the primary process stream containing manual valves or rotometers may have the same designator as the loop instrument. In the event that 2 or more instruments are located on the branch stream, the loop shall use the lower loop designator. Different instruments shall be identified
by different Loop ID’s. Multiple outputs from the same instrument shall carry
the same Loop ID.

2. Equipment identification tags shall be provided for all equipment furnished by
Supplier including:
   a. Supplier Equipment (i.e. Units)
   b. Component Equipment (i.e. Pumps, Blowers, Compressors, Tanks)
   c. Control Panel and Enclosures
   d. Miscellaneous items shown on the P&ID’s

3. Each device shall be tagged to identify its number in text format. Identification
   numbers shall be displayed on the outside of equipment enclosures and panels.
   The tag size shall be a minimum of 1.5 inches by 3.5 inches. The tag number
   shall be engraved into the tags and shall have a minimum of 3/16-inch high
   alpha-numeric characters.

4. Tags shall be attached using stainless steel self-tapping machine screws where
   possible. If the use of a stainless steel screw is not possible, provide a stainless
   steel chain or stainless steel wire (18 gauge min) and affix to a non-removable
   part of the device.

B. Equipment Design Requirements (for equipment and processes designed by others)

1. Equipment Tags
   a. Information to be permanently engraved onto the tag shall include the
      identifying tag number, equipment, Manufacturer, model number, and part
      number.
   b. For valves, where applicable, include the valve model and the actuator
      model.
   c. Use 1/8-inch thick stainless steel for engraving. Edges are to be rounded.
      Engrave numbers and letters using 3/16” minimum height to a depth of
      1/16-inch and fill with white lettering compound.
   d. Affix the bar-code, on the front of the tag.
   e. Mounting holes to be centered on width and 1/4 inch from each end.

2. Control Panel Tagging:
   a. All sensors and field instruments mounted on or within control panels and
      enclosures shall have the identification tag installed so that the engravings
      are easily visible to service personnel.
   b. Equipment Asset tagging shall be provided for instrumentation located in
      control panel enclosures. Equipment Information shall be located on the
      front of the panels.
   c. Tagging shall also be used to denote the function of all panel enclosure
      electrical devices including switches, lamp indicators, potentiometers and
      panel mounted instruments.
   d. Control Panel Tags shall be constructed as follows:
      1) 1/8-inch thick laminated phenolic for engraving composed of core,
         laminated on both sides with a matte (non-glare) finish cover sheet.
      2) Core to be black; cover sheet to be white
      3) Tags shall be engraved with 3/16-inch letters, minimum
      4) Mounting holes to be centered on width and 1/4 inch from each end.
      5) Information to be permanently engraved onto the tag shall include the
         identifying tag number, Manufacturer, model number, and part number
      6) The tags shall be fastened to the control panel device with self-tapping
         stainless steel screws. Where fastening with screws is not permitted or

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March 2020
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impractical, the tags shall be attached to the device using permanent adhesive.

PART 3 - EXECUTION

3.1 GENERAL

A. Verify the tagging of equipment as part of the Commissioning of the Goods, Refer to Section 43 08 00, Commissioning of RAS Pump Equipment.

B. Provided custom labels as required to identify equipment and piping within the facility supplied by the Supplier. Coordinate colors with Owner, however the general rules apply
   1. Wastewater – Tan and white lettering
   2. ML/RAS/WAS – Tan and white lettering
   3. Sludge – Brown with white lettering
   4. Permeate – Blue with white lettering
   5. Chemical Hazard – Yellow with black Lettering
   6. Compressed Air – Green with white lettering
   7. Non Potable Water – Light Blue with white lettering

C. Label all piping at each unit termination point. Denote direction of flow for single direction lines.

+ + END OF SECTION + +
SECTION 01 61 00
COMMON PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SCOPE

A. All products furnished and installed under this contract shall conform to the general stipulations set forth in this Section except as otherwise specified in other Sections.

1.2 COORDINATION

A. The RAS PUMP SYSTEM EQUIPMENT SUPPLIER (Supplier) shall coordinate all details of the products and equipment with other related parts of the work, including verification that all structures, piping, wiring, and equipment components are compatible. Supplier shall be responsible for all structural and other alterations in the work required to accommodate products or equipment differing in dimensions or other characteristics from that contemplated in the Contract Drawings or Specifications.

1.3 DESIGN REQUIREMENTS

A. Where Supplier design is specified, design and installation of systems, equipment, and components, including supports and anchorage, shall be in accordance with provisions in the references and requirements listed in the tables below:

<table>
<thead>
<tr>
<th>Design Codes and Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018 International Building Code</td>
</tr>
<tr>
<td>2018 International Mechanical Code</td>
</tr>
<tr>
<td>2018 International Plumbing Code</td>
</tr>
<tr>
<td>2018 International Fire Code</td>
</tr>
<tr>
<td>2017 National Electrical Code</td>
</tr>
<tr>
<td>ACI 318-14 Building Code Requirements for Structural Concrete</td>
</tr>
<tr>
<td>ACI 350-06 Code Requirements for Environmental Engineering Concrete Structures</td>
</tr>
<tr>
<td>ACI 350.3-06 Seismic Design of Liquid-Containing Concrete Structures</td>
</tr>
<tr>
<td>AISC 341-16 Seismic Provisions for Structural Steel Buildings</td>
</tr>
<tr>
<td>AISC 360-16 Specification for Structural Steel Buildings</td>
</tr>
<tr>
<td>AISI S100-16 North American Specification for the Design of Cold-Formed Steel Structural Members</td>
</tr>
<tr>
<td>ASCE 7-16 Minimum Design Loads for Buildings and Other Structures</td>
</tr>
<tr>
<td>AWS D1.1 2015 Structural Welding Code Steel</td>
</tr>
<tr>
<td>AWS D1.2 2014 Structural Welding Code Aluminum</td>
</tr>
<tr>
<td>AWS D1.6 0217 Structural Welding Code Stainless Steel</td>
</tr>
<tr>
<td>ICC A117.1-09 Accessible and Usable Buildings and Facilities</td>
</tr>
<tr>
<td>OSHA Title 8, Division 4, Subchapter 7, General Safety Orders</td>
</tr>
<tr>
<td>SDI RD-2017 Standard for Steel Roof Deck</td>
</tr>
<tr>
<td>SJI 100-15 Standard Specification for Open Web Steel Joists</td>
</tr>
<tr>
<td>TMS 402-2016 Building Code for Masonry Structures</td>
</tr>
</tbody>
</table>
### Structural Loading Criteria

**Risk Category = III for Wastewater Treatment Facilities**

<table>
<thead>
<tr>
<th><strong>Roof Load</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Roof Live Load = 20 psf</td>
</tr>
<tr>
<td></td>
<td>• Roof Snow Load = Calculated based on ground snow load and ASCE 7-16 factors</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Snow Load</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Ground Snow Load = 43 psf</td>
</tr>
<tr>
<td></td>
<td>• Exposure Factor, $C_e = 1.0$</td>
</tr>
<tr>
<td></td>
<td>• Thermal Factor, $C_t = $ Facility specific</td>
</tr>
<tr>
<td></td>
<td>• Importance Factor, $I_s = 1.10$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Floor Live Load</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Light manufacturing = 125 psf</td>
</tr>
<tr>
<td></td>
<td>• Heavy manufacturing = 250 psf</td>
</tr>
<tr>
<td></td>
<td>• Stairs and Exits = 100 psf</td>
</tr>
<tr>
<td></td>
<td>• Catwalks for maintenance = 40 psf</td>
</tr>
<tr>
<td></td>
<td>• HL-93 for vehicle traffic areas</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Wind Load</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Basic Wind Speed = 109 mph (ASCE 7-16)</td>
</tr>
<tr>
<td></td>
<td>• Exposure Category = C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Seismic Load</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Importance Factor, $I_e = 1.25$</td>
</tr>
<tr>
<td></td>
<td>• Site Class = F</td>
</tr>
<tr>
<td></td>
<td>• Mapped Spectral Response $S_s = 1.413$</td>
</tr>
<tr>
<td></td>
<td>• Mapped Spectral Response $S_1 = 0.525$</td>
</tr>
<tr>
<td></td>
<td>• Risk Targeted Design Spectral Response $PGA = 0.568$</td>
</tr>
<tr>
<td></td>
<td>• Risk Targeted Design Spectral Response $S_{DS} = 0.889$</td>
</tr>
<tr>
<td></td>
<td>• Risk Targeted Design Spectral Response $S_{D1} = 0.864$</td>
</tr>
<tr>
<td></td>
<td>• Seismic Design Category = D</td>
</tr>
</tbody>
</table>

### B. Proof of Compliance:

1. Structural integrity and anchorage shall be certified by an approved calculation that demonstrates the adequacy of the anchorage system for seismic forces. This calculation may be based on principles of structural analysis and engineering mechanics or based on similarity to approved shake-table tests.

2. Supplier shall submit for review and approval test data or calculations certified by a Civil or Structural Engineer registered in the State of Utah to show compliance with the above requirements.

### 1.4 ENVIRONMENTAL REQUIREMENTS

**A. Altitude:** Provide materials and equipment suitable for installation and operation under rated conditions at 4,500 feet above mean sea level.

**B. Provide equipment and devices installed outdoors or in unheated enclosures capable of continuous operation within an ambient temperature range of -10 degrees F to 110 degrees F.**

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1.5 WORKMANNSHIP AND MATERIALS

A. Supplier shall guarantee all equipment against faulty or inadequate design, improper assembly or erection, defective workmanship or materials, and leakage, breakage, or other failure. Materials shall be suitable for service conditions.

B. All equipment shall be designed, fabricated, and assembled in accordance with recognized and acceptable engineering and shop practice. Individual parts shall be manufactured to standard sizes and gages so that repair parts, furnished at any time, can be installed in the field. Like parts of duplicate units shall be interchangeable. Equipment shall not have been in service at any time prior to delivery, except as required by tests.

C. Except where otherwise specified, structural and miscellaneous fabricated steel used in equipment shall conform to AISC standards. All structural members shall be designed for shock or vibratory loads. Unless otherwise specified, all steel which will be submerged, all or in part, during normal operation of the equipment shall be at least 1/4 inch thick.

D. Except where otherwise specified, all metal which will be exposed to weather, submerged or otherwise exposed to moisture shall be either non-ferrous or stainless steel, as the application may require.

1.6 LUBRICATION

A. Equipment shall be adequately lubricated by systems which require attention no more frequently than weekly during continuous operation. Lubrication systems shall not require attention during startup or shutdown and shall not waste lubricants.

B. Lubricants of the type recommended by the equipment Manufacturer shall be provided in sufficient quantity to fill all lubricant reservoirs and to replace all consumption during testing, startup, and operation prior to acceptance of equipment by Owner. Unless otherwise specified or permitted, the use of synthetic lubricants will not be acceptable.

C. Lubrication facilities shall be convenient and accessible. Oil drains and fill openings shall be easily accessible from the normal operating area or platform. Drains shall allow for convenient collection of waste oil in containers from the normal operating area or platform without removing the unit from its normal installed position.

1.7 ELECTRIC MOTORS

A. Unless otherwise specified, motors furnished with equipment shall meet the following requirements:
   1. Designed and applied in accordance with NEMA, ANSI, IEEE, AFBMA, and NEC for the duty service imposed by the driven equipment, such as frequent starting, intermittent overload, high inertia, mounting configuration, or service environment.
   2. Rated for continuous duty at 40 degrees C ambient, unless the application is well recognized for intermittent duty service as a standard industry practice.
   3. Insulated with Class F insulation and designed for a service factor of 1.15, or greater.
4. Three phase motors used in conjunction with variable speed drives shall have Class F insulation with a Class B temperature rise at rated nameplate horsepower, and 1.15 service factor.

5. When operating at service factor load, maximum observable temperature rise of insulation and motor parts, as determined by resistance or thermometer methods, shall not exceed the NEMA allowable limits for the type of motor, the type of enclosure, and the particular application with regard to continuous or intermittent duty.

6. To ensure long motor life, nameplate horsepower, regardless of service factor, shall be at least 115 percent of the maximum load imposed by the driven equipment.

7. Designed for full voltage starting.

8. Designed to operate from an electrical system that may have a maximum of 5 percent voltage distortion per IEEE Standard 519.

9. Derated, if required, for the altitude at which the equipment is installed.

10. Clamp-type grounding terminal shall be inside motor conduit box.

11. External conduit boxes shall be oversized at least one size larger than NEMA standard.

12. Totally enclosed motors shall have a continuous moisture drain which also excludes insects.

13. Bearings shall be either oil or grease lubricated.

14. Manufacturer's standard motor may be supplied on integrally constructed, packaged assemblies such as appliances, tools, unit heaters, and similar equipment specified by model number, in which case a redesign of the unit would be required to furnish motors of other than the Manufacturer's standard design. However, in all cases, totally enclosed motors are preferred and shall be furnished if offered by the Manufacturer as a standard option.

15. Totally enclosed motors shall be furnished on:
   a. Equipment for installation below grade.
   b. Equipment operating in wet or dust-laden locations.

16. Drip-proof motors, or totally enclosed motors at the Supplier's option, shall be furnished on equipment in indoor, above-grade, clean, and dry locations.

17. Explosion-proof or submersible motors shall be furnished as required by applicable codes, as specified in other Sections, or at the Supplier's option.

18. Motors shall be rated and constructed as follows:
   a. Below 1/2 hp:
      1) 115 volts, 60 Hz, single phase.
      2) Built-in manual-reset thermal protector, or integrally mounted stainless steel enclosed manual motor starter.
   b. 1/2 hp and above:
      1) 460 volts, 60 Hz, 3 phase.
      2) Where specified or required by the drawings, motors used on 240 volt systems shall be 230 volts, 60 Hz, 3 phase.

1.8 DRIVE UNITS

A. The nominal input horsepower rating of each gear or speed reducer shall be at least equal to the nameplate horsepower of the drive motor. Drive units shall be designed for 24 hours continuous service.

B. Unless otherwise specified, the use of gearmotors will not be acceptable.
C. Gear reducers:
   1. Each gear reducer shall be a totally enclosed unit with oil or grease lubricated antifriction, rolling element bearings throughout.
   2. Helical, spiral bevel, combination bevel-helical, and worm gear reducers shall have a service factor of at least 1.50 based on the nameplate horsepower of the drive motor. Shaft-mounted and flange-mounted gear reducers shall be rated AGMA Class II. Helical gear reducers shall have a gear strength rating to catalog rating of 1.5. Each gear reducer shall bear an AGMA nameplate.
   3. The thermal horsepower rating of each unit shall equal or exceed the nameplate horsepower of the drive motor. During continuous operation, the maximum sump oil temperature shall not rise more than 100°F above the ambient air temperature in the vicinity of the unit and shall not exceed 200°F.
   4. Bearings:
      a. Each grease lubricated bearing shall be installed in a bearing housing designed to facilitate periodic regreasing of the bearing by means of a manually operated grease gun.
      b. Each bearing housing shall be designed to evenly distribute new grease, to properly dispose of old grease, and to prevent overgreasing of the bearing.
      c. The use of permanently sealed, grease lubricated bearings will not be acceptable.
      d. An internal or external oil pump and appurtenances shall be provided if required to properly lubricate oil lubricated bearings.
      e. A dipstick or sight glass arranged to permit visual inspection of lubricant level shall be provided on each unit.
   5. Gear reducers that require the removal of parts or periodic disassembly of the unit for cleaning and manual regreasing of bearings will not be acceptable.
   6. Certification shall be furnished by the gear reducer manufacturer indicating that the intended application of each unit has been reviewed in detail by the Manufacturer and that the unit provided is fully compatible with the conditions of installation and service.

D. V-belt drives:
   1. Each V-belt drive shall include a sliding base or other suitable tension adjustment. V-belt drives shall have a service factor of at least 1.6 at maximum speed based on the nameplate horsepower of the drive motor.

1.9 SAFETY GUARDS

A. All belt or chain drives, fan blades, couplings, and other moving or rotating parts shall be covered on all sides by a safety guard.

B. Safety guards shall be fabricated from 16 USS gauge or heavier galvanized or aluminum-clad sheet steel or 1/2 inch mesh galvanized expanded metal.

C. Each guard shall be designed for easy installation and removal.

D. All necessary supports and accessories shall be provided for each guard. Supports and accessories, including bolts, shall be galvanized.

E. All safety guards in outdoor locations shall be designed to prevent the entrance of rain and dripping water.
1.10 ANCHOR BOLTS

A. Suppliers shall furnish suitable anchor bolts for each item of equipment.

B. Anchor bolts, together with templates or setting drawings, shall be delivered sufficiently early to permit setting the anchor bolts when the structural concrete is placed.

C. Anchor bolts shall comply with Section 05 05 30, Anchors, Inserts and Epoxy Dowels and, unless otherwise specified, shall have a minimum diameter of 1/2-inch.

D. Unless otherwise indicated or specified, anchor bolts for items of equipment mounted on baseplates shall be long enough to permit 1-1/2 inches of grout beneath the baseplate and to provide adequate anchorage into structural concrete.

1.11 EQUIPMENT BASES

A. Unless otherwise indicated or specified, all equipment shall be installed on concrete bases at least 6 inches high.

B. Cast iron or welded steel baseplates shall be provided for pumps, compressors, and other equipment.

C. Each unit and its drive assembly shall be supported on a single baseplate of neat design.

D. Baseplates shall have pads for anchoring all components and adequate grout holes.

E. Baseplates for pumps shall have a means for collecting leakage and a threaded drain connection.

F. Baseplates shall be anchored to the concrete base with suitable anchor bolts.

1.12 SPECIAL TOOLS AND ACCESSORIES

A. Equipment requiring periodic repair and adjustment shall be furnished complete with all special tools, instruments, and accessories required for proper maintenance. Equipment requiring special devices for lifting or handling shall be furnished complete with those devices.

1.13 SHOP PAINTING

A. Surface Protection:
   1. All steel and iron surfaces shall be protected by suitable paint or coatings applied in the shop.
   2. Surfaces that will be inaccessible after assembly shall be protected for the life of the equipment.
   3. Exposed surfaces shall be finished smooth, thoroughly cleaned, and filled as necessary to provide a smooth uniform base for painting.
   4. Electric motors, speed reducers, starters, and other self-contained or enclosed components shall be shop primed or finished with a high-grade oil-resistant enamel suitable for coating in the field with an alkyd enamel.
   5. Coatings shall be suitable for the environment where the equipment is installed.
B. Shop Primer:
   1. Surfaces to be painted after installation shall be prepared for painting as recommended by the paint manufacturer for the intended service, and then shop painted with one or more coats of the specified primer.
   2. Unless otherwise specified, the shop primer for steel and iron surfaces shall be:
      a. Cook "391-N-167 Barrier Coat",
      b. Koppers "No. 10 Inhibitive Primer",
      c. Tnemec "37H Chem-Prime HS",
      d. Valspar "13-R-28 Chromox Primer",
      e. Or equal.

C. Machined, polished, and nonferrous surfaces which are not to be painted shall be coated with rust-preventive compound, Houghton "Rust Veto 344", Rust-Oleum "R-9", or equal.

1.14 PREPARATION FOR SHIPMENT

A. All equipment shall be suitably packaged to facilitate handling and protect against damage during transit and storage. All equipment shall be boxed, crated, or otherwise completely enclosed and protected during shipment, handling, and storage. All equipment shall be protected from exposure to the elements and shall be kept thoroughly dry at all times.

B. Painted surfaces shall be protected against impact, abrasion, discoloration, and other damage. All painted surfaces which are damaged prior to acceptance of equipment shall be repainted to the satisfaction of Engineer.

C. Grease and lubricating oil shall be applied to all bearings and similar items.

D. Each item of equipment shall be tagged or marked as identified in the delivery schedule or on the Shop Drawings. Complete packing lists and bills of material shall be included with each shipment.

1.15 STORAGE

A. Upon delivery, all equipment and material shall immediately be stored and protected until installed in the work.

B. Pumps, motors, electrical equipment, and all equipment with antifriction or sleeve bearings shall be stored in weathertight structures maintained at a temperature above 60°F. Equipment, controls, and insulation shall be protected against moisture and water damage. All space heaters furnished in equipment shall be connected and operated continuously.

C. Equipment and materials shall not show any pitting, rust, decay, or other deleterious effects of storage when installed in the work.

1.16 INSTALLATION AND OPERATION

A. Equipment shall not be installed or operated except by, or with the guidance of, qualified personnel having the knowledge and experience necessary for proper results. When so specified, or when employees of Contractor or their Subcontractors are not
qualified, such personnel shall be field representatives of the Manufacturer of the equipment or materials being installed.

B. Qualified field representatives shall be provided by the equipment Manufacturers as required by Section 01 79 00, Testing, Training, and Startup.

C. All equipment installed under this Contract, including that furnished by Owner shall be placed into successful operation according to the written instructions of the Manufacturer or the instructions of the Manufacturer's field representative. All required adjustments, tests, operation checks, and other startup activity shall be provided.

D. Acceptance of work in connection with the installation of equipment furnished by Supplier will be subject to approval of the field representative. Contractor shall be responsible for planning, supervising, and executing the installation of work, and the approval or acceptance of Engineer or the field representative will not relieve Contractor of responsibility for defective work.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

+ + END OF SECTION + +
PART 1 - GENERAL

1.1 DESCRIPTION

A. Description of Work
   1. The RAS PUMP SYSTEM EQUIPMENT SUPPLIER (Supplier) shall make all arrangements for transportation and delivery of equipment and materials to the Point of Destination.
   2. Shipments of materials shall be delivered to the Point of Destination only during regular working hours. Shipments shall be addressed, and delivered to Contractor, except where otherwise directed.

1.2 QUALITY CONTROL / QUALITY ASSURANCE (QA/QC) – (NOT USED)

1.3 SUBMITTALS

A. Shipping List
   1. Prior to the delivery of the Goods, Supplier shall develop and submit to Contractor a Bill of Materials for the contents of all shipments. This list shall detail contents, size, weights and tag numbers of each item shipped. Upon receipt of the Goods, the Bill of Materials shall be used to determine that the Goods have been received by Contractor in accordance with the General Conditions of the Agreement.

1.4 PRODUCT DELIVERY STORAGE AND HANDLING

A. Supplier shall arrange deliveries of products in accordance with the Contract Time requirements stipulated in the Agreement.

B. Supplier shall coordinate deliveries that occur between specified Contract Times to accommodate the following:
   1. Work of other Contractors or Owner
   2. Limitations of storage space
   3. Availability of equipment and personnel for handling products

C. Partial deliveries of component parts of equipment shall be clearly marked to identify the equipment to simplify accumulation of parts and facilitate assembly.

D. Each part within a shipment shall be clearly labeled with the reference numbers and tag numbers included in the Bill of Materials.

E. Upon delivery, Supplier and Contractor, shall inspect shipment(s) to ensure:
   1. Product complies with requirements of approved submittals
   2. Containers and packages are intact
3. Labels are legible
4. Products are properly protected and undamaged
5. Contractor will provide equipment and personnel necessary to handle products by methods designed to prevent soiling or damage.
6. Contractor will provide storage facilities in accordance with Supplier storage requirements to be submitted prior to delivery and along with the delivered equipment under Section 01 71 19, Protection of Goods.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

+ + END OF SECTION + +
SECTION 01 71 19
PROTECTION OF GOODS

PART 1 - PART 1 - GENERAL

1.1 DESCRIPTION

A. Description of Work
   1. RAS PUMP SYSTEM EQUIPMENT SUPPLIER (Supplier) shall protect Goods in accordance with Manufacturer's recommendations and the requirements of the Contract Documents.
   2. Supplier shall make all arrangements and provisions necessary for the protection of Goods during delivery to the Point of Destination.
   3. Manufacturer's containers may be opened for inspection and verification of the Goods in accordance with Article 8 of the General Conditions. Upon completion of inspection, the Goods shall be repackaged and remain unopened until the time of installation, unless recommended by the Manufacturer or otherwise specified.
   4. Supplier shall provide Owner and Contractor with a list of Goods that are to be delivered prior to shipment.

B. Reference Specifications – NOT USED

C. Coordination: Supplier shall coordinate with Owner and Contractor for Goods that require special protection, storage or handling

1.2 QUALITY CONTROL / QUALITY ASSURANCE (QA/QC) – NOT USED

1.3 SUBMITTALS

A. Provide submittals required by this Section, at least 30 days prior to delivery of the Goods.

B. Supplier shall provide Contractor with a list of pumps, motors, drives, electrical equipment, instrumentation equipment (controls, devices, panels, etc.), and other equipment having anti-friction or sleeve bearings for storage in weather tight storage facilities, such as warehouses.

C. Supplier shall provide Contractor with a list of all panels, microprocessor-based equipment, and all other Goods and devices subject to damage or useful life decrease due to:
   1. Temperatures below 40 degrees F or above 120 degrees F
   2. Relative humidity above ninety (90) percent
   3. Or exposure to rain

D. Fully Protected Storage
1. Supplier shall provide Contractor with a list of Goods which could be damaged by low or high temperature and require temperature-controlled storage space.
2. Supplier shall provide Contractor a list of Goods that require protection from contamination by dust, dirt, and moisture.
3. Supplier shall provide Contractor with a list of Goods that require storage at specific humidity levels as recommended by Manufacturer.

E. Supplier Storage and Handling Instructions
1. Supplier shall provide specific storage and handling instruction for each loose-shipped item of equipment, instrumentation, materials and crates provided by Supplier.

1.4 PRODUCT STORAGE AND HANDLING

A. Goods shall be boxed, crated, or otherwise completely enclosed and protected during shipment, handling, and storage. Each container shall be clearly marked with Supplier's name, project name, and location. Goods shall be protected from exposure to the elements and shall be kept thoroughly dry at all times.

B. Painted surfaces shall be protected against impact, abrasion, discoloration, and other damage. Painted equipment surfaces that are damaged prior to acceptance shall be repainted.
   1. All parts shall be protectively wrapped and/or packaged, using materials commensurate with the weight and configuration of the part, the method of handling, and the method of transportation.
   2. Contact or pressure points shall be sufficiently protected when using steel or elastic banding.
   3. Cabinets and equipment too heavy to be handled or transported by one man shall be adapted for handling with pallet trucks and/or forklifts.
   4. Painted surfaces which will come in contact with lifting forks or other handling equipment (such as the bottom of cabinets or skid base frame members) shall be sufficiently padded with heavy corrugated cardboard, foam or other protective materials.
   5. Small equipment and skids shall be mounted on wooden pallets designed for fork lifting. This equipment shall be bolted (using existing holes in the frame) or strapped to the pallet to prevent tipping. Equipment and skids too large to be mounted on pallets shall have wooden block bolted or strapped to the base foundation pads to prevent paint degradation during handling, assembly and installation.

C. Electrical equipment, controls, and instrumentation shall be protected against moisture or water damage. Space heaters provided in the equipment will be connected by Contractor as noted by Supplier and operated at all times until equipment is placed in operation.

D. Notice of Enclosed Instructions: All delivered packages containing Goods shall have notices clearly visible on the exterior of the package indicating that maintenance instructions are enclosed.
E. Panel and Instrumentation Storage: All packages containing panels, electronic devices, and other microprocessor-based equipment shall contain a desiccant, volatile corrosion inhibitor (VCI) blocks, a moisture indicator, and maximum-minimum indicating thermometer. Supplier shall provide a spare set of such protection equipment including a desiccant, a moisture indicator, and VCI blocks for each package containing panels, electronic devices, and other microprocessor-based equipment for replacement by Contractor during the storage period.

**PART 2 - PART 2 - PRODUCTS (NOT USED)**

**PART 3 - PART 3 - EXECUTION (NOT USED)**

+ + END OF SECTION + +

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SECTION 01 73 19.01
INSTALLATION OF RAS PUMP EQUIPMENT

PART 1 - GENERAL

1.1 DESCRIPTION

A. RAS PUMP SYSTEM EQUIPMENT SUPPLIER (Supplier) shall coordinate all services and activities required by this Section with Contractor and Engineer.
   1. Upon completion of Installation, Engineer shall issue a "Notice of Completed Installation."

B. Reference Specifications:
   1. Division 01, General Requirements
   2. Division 05, Metals
   3. Division 43, Process Gas and Liquid Handling, Purification, and Storage Equipment

1.2 QUALITY CONTROL / QUALITY ASSURANCE (QA/QC) - NOT USED

1.3 SUBMITTALS

A. Pre-Delivery Submittals
   1. In accordance with Section 01 66 00, Transportation of Goods, Supplier shall provide to Contractor a listing of Goods to be delivered to the Point of Destination.
   2. In accordance with Section 01 71 19, Protection of Goods, Supplier shall provide to Contractor a listing of Goods that require protection. Special, storage, protection, and handling instructions shall be provided.
   3. In accordance with Section 01 78 23, Installation, Operation and Maintenance Manuals shall be provided.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.1 INSTALLATION

A. Supplier shall provide post-delivery field services described in this Section for all equipment provided under this contract.

B. Supplier shall provide a minimum of 16 hours, not including travel days, over a minimum of two separate site visits to assist Contractor with questions during installation of the equipment.

C. This does not include site visit and hours for startup and training Visits to be coordinated with Contractor.
D. After the installation is complete, Supplier, Contractor, and Engineer shall jointly perform a pre-commissioning inspection of the System. The inspection shall identify the following:
   1. Mechanical
      a. All mechanical equipment has been completely installed and interconnecting piping (where applicable) pressure tested.
   2. Electrical
      a. All local control panels have been installed and terminations completed.
      b. All 480, 120, and 24VDC power supplies has been connected and verified.
      c. The documentation associated with the inspection of electrical terminations shall be provided by Contractor to Supplier.

E. Supplier will be responsible for making any adjustments and/or modifications to the installation process that may become necessary to ensure that all equipment is properly installed.
   1. The inspection shall identify any equipment that has not been properly installed, detailing the outstanding installation issues on a punch list and noting the party who shall be responsible for each correction and identify the items that require correction before commissioning can begin.
   2. Once the corrections identified have been made, a “Notice of Completed Installation” shall be issued by Engineer and commissioning shall commence in accordance with the requirements of Section 43 08 00, Commissioning of RAS Pump Equipment.

    + + END OF SECTION + +
SECTION 01 78 23
INSTALLATION, OPERATION AND MAINTENANCE MANUALS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Description of Work
1. Provide INSTALLATION, PRELIMINARY and FINAL Operational and Maintenance (O&M) Manuals for use by Contractor and Owner.
   a. The term "Operation and Maintenance Manual" includes all product related information and documents which are required for preparation of RAS pump system O&M Manual, and data that is required for inclusion by current regulations of any participating government agency or as a provision of a RAS pump system warranty.
   b. Failure to provide the INSTALLATION, PRELIMINARY and FINAL Operational and Maintenance (O&M) Manuals as required by this Section within the allocated time shall constitute a failure of the RAS PUMP SYSTEM EQUIPMENT SUPPLIER (Supplier) to provide Special Services in accordance with the requirements of the Contract. Supplier shall be assessed Liquidated Damages in accordance with Article 5 of the Agreement until Manuals have been received. Required Delivery for O&M Manuals are as follows:
      1) A DRAFT plan of operation containing a schedule summarizing appropriate times for essential actions to be taken for facility operation must be submitted to the Division of Water Quality at initiation of construction and approved in final form prior to 50% of construction completion. As a minimum, the plan of operation must include provisions for an operation and maintenance manual, emergency operation and response plan, properly trained management, adequate number and training of operation and maintenance personnel, budget plan for operation and maintenance, operation reports, and start-up procedures.
      2) INSTALLATION Manuals are due 30 days before the Goods are delivered to the Point of Destination.
      3) DRAFT O&M Manuals that provide long-term guidance for efficient facility operation and maintenance must be submitted and approved prior to 50% completion.
      4) FINAL O&M Manuals are due 30 days after the completion of Acceptance Testing and submitted and approved in final form prior to 90% completion.
   c. The term component equipment supplier is used to describe a Manufacturer’s Goods purchased by Supplier and incorporated into the RAS Pump System.
   d. The O&M Manual shall include, but not be limited to, the following:
      1) Equipment function, operating characteristics, limiting conditions, operating instructions and procedures for startup, normal and emergency conditions, shutdown and storage
      2) Safety considerations relating to installation, operation and maintenance procedures

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3) Installation procedures
4) Calibration procedures
5) Routine and preventive maintenance instructions
6) Procedures for disassembly, reassembly, alignment, adjustment, and inspection instructions
7) Recommended spare parts list to maintain equipment in service
8) Special Tools:
   a) For Supplier equipment, provide list of special tools included and required for installation checking, testing, parts replacement, and maintenance
   b) For component equipment, a list of special tools, materials, and supplies furnished with equipment for use prior to and during startup and for future maintenance with current price information
9) For component equipment provide name, address and telephone number for local sources of equipment and/or replacement parts
10) Operational log sheets and maintenance schedules
11) Material Safety Data Sheets (MSDSs) for any applicable item (chemicals, oils, lubricants, etc) provided by Supplier
12) Furnish lubricants of the type and grade necessary to meet the requirements of the equipment. Provide lubricants that are NSF Standard 61 approved as food grade and that are compatible for use in public water supplies
13) Warranty Information, Bond(s), and Service contract(s), if applicable
14) Equipment Specific and Factory Test Report information shall include:
   a) Tag name, Model and Serial number of the equipment provided
   b) Name, address, and phone number of Manufacturer, Manufacturer's local service representative
   c) Factory Test Reports where applicable
   d) Approved Shop Drawings (including equipment drawings, schematics, circuit diagrams)

e. Routine and preventive maintenance instructions include all information and instructions required to keep equipment properly lubricated, adjusted, and maintained so that the item functions as intended throughout its full design life. Routine and preventive maintenance instructions shall include, but not be limited to, the following:
   1) Written explanations with illustrations for each preventive maintenance task
   2) Recommended schedule for execution of preventive maintenance tasks
   3) Lubrication charts shall include a table of alternative lubricants naming at least two alternate lubricant manufacturers, with applicable product numbers, for each application
   4) Troubleshooting instructions
   5) List of required maintenance tools and equipment

B. Reference Specifications
   1. Division 1, General Requirements
   2. Division 5, Metals
   3. Division 43, Process Gas and Liquid Handling, Purification, and Storage Equipment

C. Coordination
   1. Supplier shall coordinate the delivery and incorporation of O&M Manuals prepared for this Project by Supplier or provided from their component equipment suppliers.

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Supplier shall develop an O&M Manual for the equipment and systems designed and provided by Supplier under this contract.

1.2 QUALITY CONTROL / QUALITY ASSURANCE (QA/QC) – NOT USED

1.3 SUBMITTALS

A. General
   1. Installation, Commissioning, Training of any process, or piece of equipment shall not be permitted until the respective INSTALLATION or PRELIMINARY manuals have been received and approved by Engineer as being sufficient in content to allow the completion of the work.
   2. O&M Manuals shall be submitted in three ring binders with a table of contents and index tabs to identify the various items.
   3. Where more than one binder is required, they shall be labeled "Vol. 1", "Vol. 2", and so on.
   4. The table of contents shall reference the applicable specification section(s) for each item and shall be included in each volume of multi-volume manuals.
   5. O&M manuals shall use dividers and indexed tabs between major categories of information such as Operating Instructions, Preventive Maintenance Instructions, etc.
   6. Cover label and title page shall be clearly labeled to designate the Project title, Project number, Specification Section where the item is specified, system or equipment for which it is intended with reference to the facility, equipment number, and equipment Manufacturer name.
   7. Each manual shall be divided into sections paralleling the equipment specifications.
   8. O&M manuals shall use 8-1/2-inch by 11-inch acid free paper of high rag content and quality. All text must be legible, type-written or machine printed originals or high quality copies.
   9. Each page shall have a binding margin of approximately 1-1/2 inches and be punched for placement in a three-ring "D" style loose-leaf binder, which shall be provided by Supplier along with the submittal. Each binder shall be no more than 3 inches.
  10. All data shall be hole-punched for binding and composition and printing shall be arranged so that punching does not obliterate any data.
  11. Drawings: Provide half-size black line (11 x 17) reproductions shall be provided for all Project drawings. 11-inch x 17-inch drawings shall be bound in a separate binder. 11-inch x 17-inch drawings shall not be folded and placed in any Project binder designed for 8-1/2 inch x 11 inch pages.
  12. Submit manual organization and format to Engineer for approval prior to manual preparation.
  13. Electronic File Format:
      a. All Supplier O&M Manual information shall be supplied to Owner as electronic file format that it was originally developed and in condensed portable document format (.PDF / A format) in accordance with standard ISO 19005. The electronic copy will be provided to the Project FTP site, by USB drive or other acceptable means designated by Owner. The specifications for PDF generation are as follows:
1) The acceptable format is Portable Document Format (PDF): Adobe Acrobat or Adobe Acrobat Exchange  
a) Individual PDF files shall not exceed 25 megabytes. Files in excess of 25 megabytes shall be split into multiple files at the nearest section break. File labels shall indicate the order of individual files.

2) The initial filename for the EOM submittal is provided with the request for final O&M manuals. The filename is posted near the top of the review form. Filenames use the “eight dot three” convention (XXXXX_YY.PDF) where XXXXX is the specification section number and YY is an ID number. If technical problems require you to break the submittal into more than one file then add a letter extension to the end of each filename. (example: 19876_01A.PDF) Keep the number of files to a minimum.

3) Scan images at a resolution of 400 dpi or greater. Perform Optical Character Recognition (OCR) capture on all images. Achieve OCR with the “original image with hidden text” option (as seen in Adobe Acrobat DC).

4) Create one PDF document (PDF file) for each equipment O&M Manual. The entire manual is converted to a single PDF file via scanning or other method of conversion. Drawing or other graphics must be converted to PDF format and made part of the one PDF document. Rotate pages that must be viewed in landscape to the appropriate position for easy reading. Word searches of the PDF document must operate successfully. (proof of OCR)

5) Create a bookmark in the navigation frame, for each entry in the Table of contents. Three levels deep is usually enough (i.e. “Chapter”, “Section”, “Sub-section”)

6) Generate thumbnails for each completed PDF file.

7) Set the opening view for PDF files as follows:
   a) Initial view: Bookmarks and page
   b) Magnification: Fit in window
   c) Open to the cover page of the manual, with bookmarks to the left, and the first bookmark linked to the table of contents.

   b. All component equipment manuals shall be provided in .PDF format.

   c. All Project drawings shall be provided in AutoCAD 2019 .DWG format and .PDF format. Three dimensional drawings, if provided, shall be in Revit 2019 .RVT format and .PDF format.

14. Equipment Identification  
   a. Identify products and components by their Tag and descriptive names. The use of cryptic model or catalog numbers or letters for identification shall not be acceptable.

   b. Indicate all components of the equipment on catalog pages by bold markings or some other clearly definable medium for ease of identification. All markings shall be readable if photocopied.

B. Letter of Transmittal:  
   1. Supplier shall provide a Letter of Transmittal with each submittal and include the following in the letter:  
      a. Date of submittal.
      b. Contract title and number.
      c. Supplier’s name and address.
      d. A list of the attachments and the Sections of the Manual to which they relate.
e. Reference to or explanation of related submittals already made or to be made at a future date.

C. Supplier shall prepare INSTALLATION Manuals for the Installation of the Goods by Contractor.
   1. Supplier shall submit to Contractor three (3) hard copies marked “INSTALLATION” of each required O&M manual and one (1) USB drives containing an electronic copy of the information contained in the manual. Contractor shall distribute copies as follows:
      a. The Contactor shall retain one (1) electronic copy of manuals.
      b. Engineer shall receive one (1) electronic copy of manuals.
      c. Owner shall receive three (3) hard copies and one (1) electronic copy of manuals.
   2. Supplier shall organize the “INSTALLATION” manuals as follows
      a. Supplier Equipment Installation Manual
         1) Supplier Equipment Installation Instructions
         2) Training Information
         3) Painting Touch up and Repair Instructions
         4) Equipment Cross-Reference Schedules
            a) For all tagged devices supplied, Supplier shall develop a “Cross Reference Schedule” that matches the Tag to the appropriate equipment manual. The equipment schedule shall include the pertinent information associated with the equipment including tag number, description, functional name location, component equipment model, part number, size, materials, accessories and range. The equipment cross-reference schedule shall be provided in the form of a Microsoft Excel (.XLSX) spreadsheet.
            b. Component Equipment O&M Manuals
               1) Includes all Division 5, Division 43 approved or “as constructed by Supplier” shop drawing submittals and equipment Installation, Operational and Maintenance Manuals.
            c. Electrical Equipment Manuals
               1) Includes all approved or “as constructed by Supplier” Shop Drawing Submittals and Equipment Installation, Operational and Maintenance Manuals.
         d. All “As Constructed” Project Drawings
   D. PRELIMINARY O&M Manual:
      1. Supplier shall submit electronic copies marked “PRELIMINARY” of each required O&M manual and the training plan.
      2. Supplier shall organize the PRELIMINARY O&M Manuals as follows:
         a. Supplier Equipment O&M Manual
            1) Includes O&M and Preventive Maintenance Instructions
            2) Includes Detailed Plan of Commissioning Activities
            3) Includes the Equipment Cross-Reference Schedule
         b. Component O&M Manuals
            1) Includes all Division 5, Division 43 approved or “as constructed by Supplier” equipment Installation, Operational and Maintenance Manuals.
         c. Electrical Equipment Manuals

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1) Includes all Shop Drawing Submittals and Equipment Installation, Operational and Maintenance Manuals.

d. Equipment Specific and Factory Test Reports Manual

e. Supplier and Component Equipment Suppliers Training Manual(s)

f. All “As Constructed” Project Drawings

g. After the Acceptance Testing has been completed Supplier shall revise and resubmit the FINAL O&M Manuals for the Project.

E. FINAL O&M Manual(s):

1. Supplier shall submit to Contractor three (3) hard copies marked “FINAL” of each required O&M Manual and one (1) USB drive containing an electronic copy the information contained in the manual. Contractor shall distribute copies as follows:
   a. The Contactor shall retain one (1) electronic copy of manuals.
   b. Engineer shall receive one (1) electronic copy of manuals.
   c. Owner shall receive three (3) hard copies and one (1) electronic copy of manuals.

2. Supplier shall organize the FINAL O&M Manuals as follows:
   a. Supplier Equipment O&M Manual
      1) This O&M Manual will be provided “as new in its entirety.”
      2) Includes O&M and Preventive Maintenance Instructions
      3) Includes an equipment cross-reference schedule.
      4) Includes a FINAL USB drive.
   b. Component O&M Manuals:
      1) This Manual will include only changes from the PRELIMINARY to FINAL Versions. Supplier shall provide new Manual Covers or Binders.
      2) Includes all Division 5, Metals, Division 43, Process Gas and Liquid Handling, Purification, and Storage Equipment, and approved or “as constructed by Supplier” equipment Installation, Operational and Maintenance Manuals.
      3) Includes a FINAL USB drive:
   c. Instrumentation and Control O&M Manuals if applicable
      1) Supplier PLC/HMI Manuals will be provided “as new in its entirety.”
      2) The component equipment manuals include only changes from the PRELIMINARY to FINAL Versions. Supplier shall provide new Manual Covers or Binders.
      3) Includes a FINAL USB drive.
   d. Electrical Equipment Manuals:
      1) The Electrical Equipment Manuals include only changes from the PRELIMINARY to FINAL Versions. Supplier shall provide new Manual Covers or Binders.
      2) Includes all Electrical, Shop Drawing Submittals and Component Equipment O&M Manuals
      3) Includes a FINAL USB drive.
   e. Equipment Specific and Factory Test Reports Manual:
      1) The FINAL Factory Test Report Manual shall include only changes from the PRELIMINARY to FINAL Versions for Component Equipment. Supplier shall provide new Manual Covers or Binders.
   f. Commissioning Test Reports Manual shall include:
      1) Results of all installation inspection, field calibration, and field testing reports prepared during the commissioning of the facility.

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2) Results of Acceptance Testing

g. All “as installed” Project drawings will be provided “as new in its entirety” and include a FINAL USB drive.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

+ + END OF SECTION + +
PART 1 - GENERAL

1.1 DESCRIPTION

A. Description of Work

1. Supplier shall provide warranty coverage as defined herein. The Supplier shall have sole responsibility of the RAS pump equipment. In each case, warrantees and support shall be provided directly by Supplier and not the local Manufacturer’s representative. All warranties shall cover both parts and labor unless specifically noted otherwise herein, and each shall commence upon Owner approval of successful completion of Start-up Testing per Section 01 79 00, Testing, Training and Startup.

2. Supplier shall warrant that replacement parts shall continue to be available to Owner for a minimum of 20 years from the date of successful completion of the Acceptance Testing per Section 01 79 13, Acceptance Testing of RAS Pump Equipment. Supplier shall warrant that, if Supplier or Supplier's product line is sold, Supplier shall make provisions such that all guarantees, warranties, and bonds will remain in effect and that replacement parts and operational support will continue to be available to Owner for the time period specified above.

3. Supplier agrees to hold Owner harmless from liability of any kind arising from direct damage due to defects in workmanship and materials during the specified warranty periods. Supplier shall make all repairs and replacements promptly upon receipt of written orders for the same from Owner. If within 10 days after Owner has notified Supplier of a failure/defect, Supplier has not started to make the necessary corrections, Owner is hereby authorized to make the corrections or to order the work to be done by a third party, and the costs of the corrections shall be paid by Supplier. Repetitive malfunction of RAS pump system material and equipment shall be cause for replacement and an extension of the applicable warranty period(s) for replaced material and equipment to match the term and conditions of the original warranty provided. Include in the Technical Proposal any tests and procedures required to continue the warranty following violation of a warranty or contract operating condition.

4. RAS pump failure and warranty exclusions are described further below. Owner reserves the right to renegotiate warranty terms and conditions at any time.

B. RAS Pump System General Equipment Warranty

1. Supplier shall provide warranty of the RAS pump system, covering all mechanical elements within the system scope of supply, for a minimum of eighteen months (18) months from successful completion of start-up testing. Supplier shall make all repairs or replacements necessitated by equipment failure within the warranty period at no cost to Owner.

C. Warranty Exclusions

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1. Occurrence of any of the following shall void the warranties described in this Section:
   a. Physical abuse or misuse of RAS pumps.
   b. Unauthorized alteration of any parts originally supplied by Contractor relating to the RAS pump system.
   c. Failure to adhere to Supplier specified cleaning and maintenance procedures.
   d. Failure to adhere to Supplier-approved maintenance program.

D. Warranty Services
   1. Supplier shall provide the following services during the warranty period:
      a. Telephone support.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

+ + END OF SECTION + +
PART 1 - GENERAL

1.1 DESCRIPTION

A. Description of Work:
   1. Spare parts and materials required to be supplied in the Contract Documents shall be furnished in unopened cartons, boxes, crates, or other protective covering suitable for preventing corrosion or deterioration for the maximum length of storage which may be normally anticipated. They shall be clearly marked and identified as to the name of Manufacturer or Supplier, applicable equipment, part number, description, and location in the equipment.
   2. Spare parts and materials shall be delivered to Owner at the Point of Destination or other location specified by Owner prior to commencing Commissioning of the RAS pump system.
   3. When a spare percentage is listed as a minimum requirement, the fractional quantities shall be rounded up to the nearest whole number. For example, if a 5 percent spare is listed, one spare is required for every 20. Therefore, if 21 items were supplied as part of the Contract, 2 spares would be provided.
   4. Provide a letter of transmittal and spare parts receiver form including the following:
      a. Date of letter and transfer of parts and material.
      b. Contract title and number.
      c. RAS PUMP SYSTEM EQUIPMENT SUPPLIER (Supplier)’s name and address.
      d. Applicable Sections of the Project Manual for each set of spare parts supplied.
      e. Acknowledgment signed by Supplier, that all spare parts and maintenance materials have been delivered.
   5. Supplier shall be fully responsible for loss or damage to parts and materials until they are received by Owner.

1.2 QUALITY CONTROL / QUALITY ASSURANCE – NOT USED

1.3 SUBMITTALS

A. Shop Drawings
   1. In accordance with the requirements of Section 01 33 00, Submittal Procedures, provide, as part of the second shop drawing submittal, a detailed list of spare parts with specific models and quantities denoted unique for Supplier to be provided under this Contract for approval by Engineer.
PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

++ END OF SECTION ++
SECTION 01 79 00
TESTING, TRAINING AND STARTUP

PART 1 - GENERAL

1.1 GENERAL

A. Scope:
1. This Section covers general equipment and system testing and startup requirements, services of the Manufacturer’s representatives and special coordinating services required of Contractor that shall apply during construction and training of Owner’s personnel for facilities operation.
2. Specific testing and tracking procedures and requirements found in the Technical Specifications shall also apply.

B. The RAS PUMP SYSTEM EQUIPMENT SUPPLIER (Supplier) shall inform all Subcontractors and Manufacturers of the requirements herein and include the required services in their costs for the work specified in these Contract Documents. Where a minimum amount of time is stated in the Technical Specifications for Manufacturers’ services, any additional time required to perform the specified services shall be provided at no additional cost to Owner.

C. Scheduling:
1. RAS Pump System testing, training and startup shall commence after the “Notice of Completed Commissioning” is issued in accordance with Section 43 08 00, Commissioning of RAS Pump Equipment.
2. Equipment testing and plant startup are requisite to satisfactory completion of the Contract and, therefore, shall be completed within the contract time.
3. All equipment testing and plant startup activities shall be realistically allowed for and shown on Supplier’s Progress Schedule, in accordance with the Request for Proposals.
4. All equipment testing and plant startup activities shall be scheduled in conformance with the restrictions specified in Section 01 33 16, Design Data; and Section 01 61 00 Common Product Requirements.

D. Equipment testing shall be satisfactorily completed prior to commencing plant startup associated with the particular equipment item or equipment package. The equipment shall not be considered ready for testing until the following conditions are satisfied:
1. Manufacturer's certification of equipment installation has been accepted by Engineer.
2. Electrical and/or instrumentation Subcontractor certification of motor control logic has been accepted by Engineer.
3. Related Technical Submittals, O&M Manual and Final Shop Drawings have been accepted by Engineer.
4. Operator training services have been furnished by Supplier (operational testing only).
5. Testing procedures have been submitted in writing and accepted by Engineer in accordance with Section 01 33 00, Submittal Procedures. All testing procedures and results shall be submitted in writing.

E. The requirements of plant startup specified herein shall also apply to the startup of individual treatment plant processes and facilities.
F. Startup Plan:
   1. Not less than 3 months prior to initial equipment or system startup, Supplier shall submit to Engineer for review, a detailed Facilities Startup Plan for the associated items of equipment and/or systems.
   2. The Startup Plan shall include:
      a. A detailed sub-network of Supplier's Construction Progress Schedule including the following activities:
         1) Manufacturer's Services;
         2) Installation Certifications;
         3) Operator Training;
         4) O&M Manual;
         5) Functional Testing;
         6) Performance Testing;
         7) Operational Testing;
         8) All other activities necessary to affect a coordinated and successful Testing, Training and Startup.
      b. Written testing plan with proposed data logs for each item of equipment to be tested.
      c. A discussion of any coordination required with Owners staff and/or any system or equipment outage requirements.
      d. The Plan shall be updated and/or revised as necessary prior to subsequent Construction Progress Meetings.
      e. Testing shall not be scheduled earlier than 30 days after approval of the Plan.

1.2 SERVICES DURING CONSTRUCTION

A. General:
   1. Manufacturer’s Representative:
      a. Supplier shall provide the services of competent and experienced technical representatives of the Manufacturers of all equipment and systems furnished under the contract, for as many days as may be necessary for assembly, installation, testing assistance and operator training.
      b. Supplier field representatives shall observe, instruct, guide, and direct Contractor’s erection or installation procedures, or perform an installation check, as required.
      c. In each case, Contractor shall arrange to have the Manufacturer's representative revisit the job site as often as necessary until operator training is complete and testing and startup problems have been resolved to the satisfaction of Engineer. Upon completion of Operator Training, a “Notice of Training Completion” will be issued by Engineer.
      d. This requirement applies to Manufacturers of all equipment furnished (excluding manually operated valves smaller than 24 inches in size, and any other items of equipment specifically exempted by Engineer in writing), whether or not specifically set forth in the Technical Specifications.
      e. Supplier shall maintain a service record on each item of equipment and shall deliver these service records to Engineer prior to acceptance of operational testing.

B. Fulfillment of Specified Minimum Services:
   1. Supplier and/or Contractor shall obtain prior written approval from Engineer for providing Manufacturers' services.
2. All requests to Engineer for prior approval shall (1) be in writing, (2) be submitted not less than 10 calendar days prior to the providing of the subject services, (3) state the service to be provided, and (4) state the reason(s) why the timing of the service is appropriate.

3. Request made to Engineer less than 10 calendar days prior to the Manufacturers' services may not receive consideration and response prior to the times the services are provided.

4. Visits of Manufacturers and their representatives to the jobsite or training classroom without prior approval as provided herein may not act to fulfill the specified minimum man-day requirements.

C. Certificate of Proper Installation:

1. Equipment requiring factory tests shall not be delivered to the jobsite until Supplier submits acceptable certified test results to Engineer and Contractor.

2. Equipment shall not be considered ready for functional testing until after the following certifications have been submitted and accepted by Engineer.
   a. Manufacturer Representatives:
      1) Contractor shall require that each Manufacturer's representative furnish to Engineer a written and signed report addressed to Owner certifying that the equipment has been properly installed, adjusted, lubricated, is in accurate alignment, is free from any undue stress imposed by connecting piping or anchor bolts, has been operated satisfactorily under full-load conditions and is ready for full-time operation.
      2) For pumps, compressors, blowers, engines, motors, and other rotating or reciprocating equipment, the report shall certify that the equipment operates within the Manufacturer's allowable limits for vibration.
      3) The report shall also certify that all controls, protective devices, instrumentation, and control panels furnished as part of the Manufacturer's equipment package are properly installed and calibrated; and that the control logic for equipment startup, shutdown, sequencing, interlocks, and emergency shutdown has been tested and is properly operating.
      4) Contractor shall also sign said certification.
      5) Contractor shall submit "Manufacturer's Certification of Proper Installation" on Owner form.
   b. Electrical and Instrumentation Subcontractor:
      1) Contractor shall require that the electrical and/or instrumentation Subcontractor shall furnish a written and signed report to Engineer certifying that the motor control logic for the equipment item that resides in motor control centers, control panels, control boards, microprocessors, distributed processing units, computers, and the like furnished by the electrical and/or instrumentation Subcontractor has been properly tested and calibrated.
      2) The report shall certify that the control logic for equipment startup, shutdown, sequencing, interlocks, and emergency shutdown has been tested and is properly operating.
      3) Contractor shall also sign said certification.

1.3 STARTUP AND TESTING

A. General:

1. Contractor shall provide the effective coordination of all parties necessary for the successful Project startup.
2. Engineer shall not be responsible to instruct Contractor in the startup of the Project; however, Engineer will be available prior to and during startup to provide operational and technical support to Contractor.

3. Contractor shall furnish all labor, consumables (power, water, chemicals, air, etc.) tools, equipment, instruments, and services required and incidental to completing all functional, performance and operational testing of installed equipment.

4. Supplier shall submit the proposed test procedures to Engineer for review at least 30 days prior to testing.

5. Contractor shall give Engineer written notice confirming the date of testing at least five working days before the time the equipment is scheduled to be tested.

6. All testing shall be witnessed by Engineer to be considered valid.

7. Test Reports:
   a. Supplier shall submit written detailed results of all functional, performance and operational testing.
   b. Upon successful completion of Operational testing all equipment installation, testing and maintenance records shall be submitted to Engineer.
   c. Said records shall be bound separately for each piece of equipment or system and shall be collected by type of record.

8. For factory tests, written test results shall be submitted to Engineer at least 10 days prior to shipment.

9. Supplier shall provide a minimum of 16 hours, not including travel days, for services listed in accordance with Paragraph 1.3, this does not include site visit and hours for assistance in the installation of equipment and system.

B. Functional testing:
   1. All items of mechanical and electrical equipment shall be functionally tested by Supplier and Contractor after installation for proper operation.
   2. Functional testing will be conducted using treated plant effluent provided by Contractor.
   3. A minimum of ten (10) days prior to the start of functional testing, Supplier shall submit interconnection diagrams for the equipment and for the alarms, controls and instruments associated with the equipment. This requirement shall not relieve Supplier of meeting any requirements in the technical specifications for earlier submittal of the interconnection diagrams.
   4. Minimum Test Requirements
      a. The functional test of each piece of mechanical equipment shall continue for no less than eight (8) continuous hours without interruption.
      b. The functional test shall include checking for proper rotation, alignment, speed, flows, pressure, vibration, sound level, etc. Initial equipment and system adjustment and calibrations shall be performed in the presence of and with the assistance of the Manufacturer's representative.
      c. The functional test shall include a demonstration of the proper performance of all alarms, local and remote controls, instrumentation, equipment functions, and all other electrical, mechanical and piping systems.
      d. All parts shall operate satisfactorily in all respects, under continuous full load, and in accordance with the specified requirements, for the full duration of the eight-hour test period.
      e. If any part of a unit shows evidence of unsatisfactory or improper operation during the eight-hour test period, correction or repairs shall be made and the full eight-hour test operation, as specified herein, shall be repeated after all parts operate satisfactorily.
C. Performance testing:
1. Where performance testing is required by the Technical Specifications, the testing shall be supervised by the Manufacturer's representative. These services shall continue until such times as the applicable equipment or system has been successfully tested for performance and has been accepted by Engineer for operational testing.
2. Performance testing shall take place after functional testing is successfully completed in accordance with Paragraph 1.3 B.
3. Functional testing will be conducted using treated plant effluent provided by Contractor.
4. Performance testing shall demonstrate that the equipment meets all performance requirements specified.

D. Startup/operational testing:
1. Upon successful completion of operator training and the functional, performance and leakage testing, Contractor shall startup the plant facilities and test the equipment operation and performance by conducting a 24-hour operational test on each RAS pump.
2. Functional testing will be conducted using treated plant effluent provided by Contractor.
3. Owner will provide Contractor-trained operating personnel for the duration of the operational test. Said operation shall be conducted and under the supervision and direction of Supplier or Manufacturer's representative.
4. Operational Defects:
   a. All defects in materials or workmanship which appear during the operational test shall be immediately corrected by Contractor and/or Supplier.
   b. In the event of a malfunction or deficiency that results in shutdown or partial operation of a system or process unit or results in performance that is less than that specified, the startup duration shall be repeated for that corresponding system or process unit and any other affected equipment so its proper operation and performance as required by the Contract Documents is demonstrated for a minimum of 24 continuous hours.
5. If the operational test is interrupted through no fault of Supplier, the test may resume at the earliest mutually agreeable time.
6. No unit process or part thereof shall be placed in service until it has successfully completed operational testing.
7. During plant startup, Contractor shall provide the appropriate construction trades and the services of authorized Manufacturer's representatives for operational testing and as necessary, to correct faulty equipment operation.
8. After completion of all startup/operational testing, Contractor shall repaint, hose, scrub, clean up and otherwise return the work to a "like new" condition, prior to Owner acceptance.

1.4 TRAINING OF OWNER PERSONNEL

A. General:
1. Operation and maintenance training of Owner's personnel shall be provided for mechanical, electrical, instrumentation and control equipment as listed in this Section or elsewhere in the Specifications.
2. For the purposes of this requirement, operations training is considered to be separate from maintenance training. Instructions are to be tailored to the needs of each group.
3. These training services shall be conducted by Supplier and shall ensure measurable and observable means that Owner personnel are qualified to perform equipment task requirements, including essential knowledge, skills and abilities.

4. Training shall be conducted by competent Supplier representatives who are certified by the Manufacturer to be thoroughly familiar with the subject matter as well as instructional methods.

5. Training materials shall be submitted to Owner (see Paragraph 1.4 C below) for review. Acceptance of training materials is required prior to start of training.

6. All training shall be completed prior to beginning operational testing.

7. Owner shall have the right to videotape any or all training sessions, or may designate separate sessions or portions thereof for the sole purpose of videotaping.

B. Training coordinator:

1. Contractor shall designate and provide one or more persons to be responsible for coordinating and expediting training duties.

2. The person or persons so designated shall be present at all training coordination meetings with Owner.

C. Training schedule:

1. Contractor's coordinator shall coordinate the training periods with Owner’s personnel and Manufacturer's representatives, and shall submit a training schedule and the training materials for each piece of equipment or system for which training is to be provided.

2. The training schedule shall be submitted not less than 21 calendar days prior to the time that the associated training is to be provided and shall be based on the then current Plan of Operation.

3. Equipment and/or systems shall be deemed suitable for use in training upon satisfactory completion of functional testing.

4. All training with regards to a unit process or part thereof shall be completed prior to the start of operational testing.

5. As a minimum, training shall be provided on the following equipment and systems:

   a. RAS Pump System and appurtenances

6. Supplier shall provide distinct and separate training sessions for both operations and maintenance personnel, meeting the following criteria:

   a. Maintenance Training:

      1) Maintenance training shall be provided for all items in 1.4.C.5 above.

      2) Supplier shall provide two (2) separate training sessions on a schedule agreed to by Engineer and Owner.

      3) Training shall emphasize theory of operations, troubleshooting, and preventative maintenance and repair procedures.

      4) The discussion shall encompass issues relating to instrumentation, electrical, and mechanical systems.

      5) Sessions are to be provided on Wednesdays between 6:00 a.m. and 12:00 p.m.

   b. Operations training:

      1) Operations training shall be provided for each piece of equipment listed in Paragraph 1.4.C.5 above.

      2) Supplier shall provide two (2) separate training sessions for each of three (3) operating shifts.

      3) Sessions are to be provided on Wednesdays between 6:00 a.m. and 12:00 p.m.

   c. Training session schedules shall be approved by Engineer.
d. Training shall emphasize theory of operations, startup instructions, emergency and normal shutdown instructions, lockout procedures, troubleshooting, preventative maintenance, and alarm and control logic.

7. Supplier shall confirm each training period a minimum of three working days prior to the schedule time.

8. If a Manufacturer's representative fails to conduct a scheduled training class, Supplier hereby agrees to compensate Owner for labor costs, including overhead, for all Owner personnel in attendance for the entire scheduled training period.

9. If Supplier or the Manufacturer's representative fails to provide training that qualifies Owner personnel to perform equipment task requirements, Supplier hereby agrees to provide remedial training to ensure Owner personnel proficiency at no additional cost to Owner.

**PART 2 - PRODUCTS (NOT USED)**

**PART 3 - EXECUTION**

3.1 RECORD KEEPING

A. Supplier shall maintain as a minimum, the following records:
   1. Equipment Manufacturer's shop drawings.
   2. Daily logs indicating all equipment testing and startup activities.
   3. Log and time sheets of all Manufacturer's representatives performing services on the jobsite.
   4. Updated equipment testing and startup schedules.
   5. Records of system cleaning.
   6. Hydrostatic and pressure test records.
   7. Equipment alignment and vibration measurements and corrective actions.
   8. Equipment lubrication records.
   10. Electrical phase, voltage and amperage measurements.
   11. Electrical breaker inspection, test, and adjustment records.
   12. Logs of abnormal circuits and lifted wires.
   13. Testing and validation of all central and alarm functions.
   14. Data sheets of all testing and calibration of instrumentation devices and control loops including documentation of set points.
   15. Equipment and system release logs (from construction to startup).
   16. Daily work reports.

3.2 GENERAL PROCEDURES

A. The general work procedures listed below outline the work to be performed by Supplier. Additional procedures applicable to specific equipment items are specified elsewhere.

B. Technical assistance and support:
   1. Obtain the assistance of the appropriate construction trades and the Manufacturer or vendor, as required for technical assistance during equipment installation, testing, and startup by Supplier and for training of Owner's Operation and Maintenance personnel.
2. Furnish names and telephone numbers of Manufacturer's and vendor's current technical service representatives for use by Engineer.

C. Instructions:
1. Maintain an adequate Manufacturer's instruction file so that the information will be readily available during equipment testing and startup.
2. Prior to equipment testing, finalize, and transmit to Engineer the applicable technical manuals as required under Section 01 33 00, Submittal Procedures of the Contract Specifications.

D. Removal of rust preventives:
1. Prior to equipment testing, remove all rust preventives and oils used to protect the equipment during the construction period whenever these protective materials will be detrimental to operation or equipment maintenance.

E. Lubricants:
1. At least 60 days prior to startup, provide a list of the Manufacturer's recommended lubricants for use in the plant. All equipment lubrication shall be listed with the lubricant types and quantities recommended and approved by the equipment manufacturers.
2. Provide the necessary lubricants for startup and the initial 60 days of operation.
3. Flush systems and install the initial charge of all lubricants. Dispose of flushing oil in accordance with applicable regulations.
4. Supplier shall lubricate the equipment in accordance with the Manufacturer's recommendations until the equipment is accepted by Owner.
5. Maintain a lubrication record for each item of equipment. Supplier shall submit the lubrication records to Engineer prior to equipment testing.

F. Packing and seals:
1. Install, adjust, and replace packing, mechanical seals, and accessories, as necessary, during the equipment testing and startup period.
2. Adjust seal water and flushing water flow rates in accordance with the equipment Manufacturer's recommendations.

G. Removal of temporary bracing:
1. Prior to equipment testing, remove all temporary supports, bracing, or other foreign objects that were installed in vessels, transformers, rotating machinery, or other equipment to prevent damage during shipping, storage, and erection, and repair any damage sustained.

H. Rotation, alignment, and vibration:
1. Prior to equipment testing, check rotating machinery for correct direction of rotation and for freedom of moving parts before connecting the driver.
2. Prior to equipment testing, perform the cold alignment and hot alignment to the Manufacturer's tolerances.
3. Prior to equipment testing, test equipment vibration and correct any vibration in excess of the Manufacturer's recommendation.

I. Tie-ins at the contract limits:
1. Provide proper notification, preparation, and coordination for safe tie-ins and minimal interference with the plant operation.
2. Obtain approval and make the necessary tie-ins at the unit limits as required by the Contract Documents and as approved by Engineer.
3. Prior to startup, remove the temporary blind flanges, plugs, bulkheads, seals, etc.

J. Leak and pressure tests:
1. Provide Engineer with 3-day advance notification in writing of the schedule for non-operating field leak tests or field pressure tests on piping and field fabricated equipment, unless otherwise directed by Engineer.
2. Provide the water, air and any special media required for the test purposes.
3. Prior to startup, conduct all leak and pressure tests in accordance with applicable codes, regulations, and the Contract Documents, and as approved by Engineer. Supplier is advised that the tests shall be witnessed by Engineer, to be considered valid.
4. Maintain a record of the leak and pressure test data and work completed.
5. Dispose of the test media in a manner that is acceptable to and approved by Owner and applicable regulatory agencies.
6. Isolate in-line equipment as necessary for protection against test pressure.

K. Pressure/vacuum safety relief devices:
1. Prior to equipment testing, test and adjust all safety devices as recommended by the equipment Manufacturer.
2. Prior to plant startup, provide Engineer with a list of all field or factory equipment settings.

L. Flushing and chemical/mechanical cleaning:
1. Prior to equipment operation, conduct all flushing, blowing, and chemical/mechanical cleaning operations without using the permanently installed equipment.
2. Provide any special media needed for flushing and/or cleaning purposes.
3. Dispose of all media in a manner that is acceptable to and approved by Owner and the applicable regulatory agencies.
4. All systems shall be free of trash and construction debris before initiating startup.
5. Maintain a record of the work completed.

M. Screens, strainers, and blind flanges:
1. Provide and install temporary strainers, screens, and blind flanges as necessary to protect the equipment and to test the equipment and pipelines.
2. Prior to startup, remove all of the temporary blinds and temporary appurtenances.
3. Clean the screens and strainers as required during startup.
4. At the end of startup, clean all of the permanently installed screens and strainers.

N. Purging/inerting:
1. Prior to startup, purge and/or passivate the facilities as specified.
2. Install purge/inerting connections in accordance with the Manufacturer's recommendations.
3. Provide purge or inerting materials and conduct the necessary operations as recommended by the equipment Manufacturer.

O. Drying out:
1. Prior to startup, dry out the facilities as specified or recommended by the equipment Manufacturer to prevent contamination of catalysts, operating materials, and/or product.
2. Dry out systems, protective coatings, refractories, and linings as specified or recommended by the equipment Manufacturers.

3.3 SPECIFIC PROCEDURES

A. In addition to the work responsibilities described in Subsection 3.2, the procedures outlined below further define the work responsibilities of Contractor for specific systems and items of equipment.

B. Mechanical equipment:
   1. Level baseplates and soleplates and grout under all load bearing surfaces.
   2. Install suitable supports and flexible connections to alleviate any piping stresses that may be imposed on pumps, compressors, and drivers.
   3. In accordance with the Manufacturer's recommendations, chemically clean lube oil, seal oil, and cooling systems. Dispose of waste and cleaning media in a manner that is acceptable to and approved by Owner and applicable regulatory agencies.
   4. In accordance with the Manufacturer's recommendations, charge the lube oil, seal oil, and cooling systems with flushing media and circulate for cleaning purposes. Dispose of any flushing media in a manner that is acceptable to and approved by Owner and applicable regulatory agencies.
   5. Charge the lube oil systems, seal oil systems, and cooling systems with the amount and type of operating oil or coolant recommended by the Manufacturer.
   6. Operate the equipment and check for excessive vibration, abnormal operating noises, overheating and lubricant leakage, etc., and test any safety shutdown/alarms devices for proper operation, and make any operating tests required by Engineer. The adjustments required for proper operation shall be made prior to operational testing.
   7. Utilize Manufacturer's representative for technical assistance during installation and startup.
   8. Prior to startup, all sidewalks, gratings, handrails, safety chains, safety shields, etc., shall be installed.
   9. Prior to startup, demonstrate to Engineer's satisfaction that all chemical solution pipelines are connected to the intended tank(s), feeder(s), pump(s), and application points, and that the pipes, appurtenances contained therein and diffusers will operate at the intended flow rates.
   10. Prior to startup, the applicable safety equipment, emergency shower and eyewash units, fire extinguishers, fire suppression equipment, self-contained breathing apparatus, toxic and/or combustible gas detectors (including the respective personnel warning system), protective clothing, emergency repair kits, etc., shall be installed in an acceptable manner-subject to Engineer's approval, and be fully ready for operation.
   11. All safety hazards, e.g., exposed drive shafts or rotating equipment members, exposed electrical circuitry, open electrical junction boxes and panels, improperly supported piping and conduits, missing safety devices, etc., shall be corrected prior to supplier training of Owner's personnel.
   12. Supplier shall perform a comprehensive safety inspection and correct any safety deficiencies found before implementing plant startup.
   13. Roadways that are required for ambulance service, fire fighting access, delivery of treatment chemicals and supplies, and disposal of the treatment byproducts shall be completed prior to startup.
   14. Prior to startup, install all warning and safety signs, labels, and devices.

C. Tanks:
1. Test all tanks and internals, as required to demonstrate conformance to the Contract Documents. Dispose of test media in a manner that is acceptable to and approved by Owner and the applicable regulatory agencies.

2. Prior to startup, conduct chemical cleaning or flushing operations as specified. Dispose of wastes and cleaning media in a manner that is acceptable to and approved by Owner and the applicable regulatory agencies.

3. Prior to startup, install all chemical identification, warning, and safety signs and labels.

D. Electrical power and lighting systems:
1. Provide Engineer with 3-day advance notification in writing of the test schedule. Supplier is advised that the tests shall be witnessed by Engineer.
2. Perform insulation resistance tests on all wiring 120 volt and larger. Do not megger instruments or solid-state devices.
3. Perform insulation resistance tests on all motor and transformer windings from phase to phase and phase to ground.
4. Perform grounding system tests to determine the continuity of connections and the value of resistance to ground.
5. Fill electrical gear with oil and/or other media as recommended by the equipment Manufacturer.
6. Prior to substantial completion and startup, test and set switchgear and circuit breaker relays for proper coordination and operation.
7. Supplier shall obtain the services of a qualified "independent testing service", member of the National Electric Testing Association, to perform a thermographic survey on all switchgear buses, insulators and power connections when energized and under at least 20 percent load. Significant hot spots shall be further checked by infrared pyrometer for exact temperature rise. Supplier shall troubleshoot and correct the thermographic hot spots. Correction shall be verified by repeating the thermographic survey at no additional cost to Owner.
8. Supplier shall obtain the services of a qualified "independent testing service", member of the National Electric Testing Association, to inspect and test the protective relays and the 800-ampere and larger drawout breakers for proper installation, adjustment, and operation in accordance with the Manufacturer recommendations.
9. Supplier shall obtain the services of a qualified "independent testing service", member of the National Electrical Testing Association, to perform DC high potential tests on all cables that will operate at more than 2,000 volts to ground.
10. Obtain local electrical inspector's approval where required.
11. Energize all substations, with approval of the Utility Company and Engineer after completion of all electrical testing.
12. Prior to startup, perform tests and adjustments on all switchgear and motor control equipment to demonstrate proper operation and conformance to the Contract Documents and Manufacturer's recommended settings.
13. Prior to startup, test installation of emergency power and lighting systems for proper operation, including light intensity.
14. Prior to startup, provide Engineer with a record of all test data and the work completed.
15. Vacuum clean all electrical equipment prior to startup and acceptance.

E. Piping systems:
1. Provide Engineer with 3-day advance notification in writing of test schedule.
2. Hydrostatically or pneumatically test all piping as required by the codes and contract documents.
3. After successful testing of the piping, slowly drain the system and then flush the system. Orifice plates shall be installed after testing. If installed with the piping, they will be removed and replaced with spacers or pipe spools of equal length prior to the pressure test.
4. Dewater the system, remove blind flanges, and perform tightness tests, as required by Engineer.
5. Insulate or paint piping, flanges, threaded joints, or field welds after the specified testing of each item has been completed unless instructed otherwise by Engineer.
6. Leave exposed all welded joints (longitudinal, girth, and nozzle) in underground piping that have not been shop tested until the specified testing has been completed. After final testing of these joints, cover the system.
7. Prior to substantial completion and startup, check pipe hangers, supports, guides, and pipe specialties for the removal of all shipping and erection stops and for the correctness of the cold and hot settings for the design service, make adjustments as necessary to obtain proper installation. Provide Engineer with instructions for the hot settings.
8. As necessary during equipment testing and at the end of substantial completion and startup, clean or replace the screens and filter elements as appropriate for the filter type and service.
9. Prior to startup, verify, to the extent required by Engineer, that specified valve packing has been provided on valves installed in the plant.
10. Prior to startup, install all of the valve and piping system identification labels.
11. Prior to startup, check and record the position of all process system valves.
12. Prior to startup, correct support, vibration, and thermal expansion problems detected during the preliminary equipment testing.
13. Prior to the startup, retorque all hot and cold service bolting as required to ensure a permanent and proper installation.
14. Prior to startup, demonstrate to Engineer's satisfaction that each piping system (e.g., chemical, sample, utility, irrigation process, etc.) functions as designed and required by the Contract Documents.

++ END OF SECTION ++
PART 1 - GENERAL

1.1 DESCRIPTION

A. Description of Work: The RAS PUMP SYSTEM EQUIPMENT SUPPLIER (Supplier) shall support the Contractor in the completion of Acceptance Testing of the equipment. Acceptance Testing is subject to the following provisions.
   1. Acceptance Testing shall be completed in accordance with the Contract Times outlined in the Agreement, and in coordination with the Contractor’s testing schedule.
   2. Acceptance Testing shall be performed on each individual RAS pump. Testing for each pump shall extend for a period of 7 consecutive days in accordance with this Section.
   3. Failure to complete the Acceptance Testing as required by this Section shall constitute a failure of Supplier to provide Special Services in accordance with the requirements of the Contract.
   4. Engineer shall document the time when the facilities are substantially unavailable for use by Supplier to perform Acceptance Testing due to circumstances beyond the control of Supplier including but not limited to power outages, lack of feedwater, inability to transfer settled water or feedwater due to factors beyond the control of Supplier, or not having adequate staff from Contractor or Owner. If in the sole opinion of Engineer the facilities are substantially unavailable to Supplier, equivalent additional Acceptance Testing time will be granted.
   5. The date that the Acceptance Testing ends shall be used by Engineer for the date of the equipment “Notice of Substantial Completion”. The “Notice of Substantial Completion” shall be issued by Engineer upon completion of FINAL Operational and Maintenance Manuals.

B. Reference Specifications:
   1. Section 01 79 00, Testing Training and Startup
   2. Section 43 08 00, Commissioning of RAS Pump Equipment
   3. Section 43 21 39, Submersible Propeller Pump

C. Coordination
   1. Supplier shall coordinate all services and activities required by this Section with Contractor, Owner and Engineer.

1.2 QUALITY CONTROL / QUALITY ASSURANCE (QA/QC) – NOT USED

1.3 SUBMITTALS

A. Upon completion of the Acceptance Testing, Supplier shall submit to Owner a written report detailing the results of the Acceptance Testing, including a copy of all field notes and test data.
PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 ACCEPTANCE TESTING

A. Upon completion of the Operator Training in accordance with the requirements of Section 01 79 00, Testing, Training and Startup, Supplier shall support the Contractor in the performance of Acceptance Testing on the System.

B. The purpose of the Acceptance Testing is to demonstrate that equipment is:
   1. Properly installed
   2. Ready to be placed into service by Owner
   3. In compliance with the service conditions, performance requirements, and all other requirements of the Contract Documents

C. Supplier shall furnish all non-consumable materials, instruments, and incidental and expendable equipment required for Acceptance Testing, except where otherwise specified.

D. Throughout the Acceptance Testing period, a representative of Supplier shall be available via cellular communication at all times during testing.

E. Owner or an authorized representative of Owner will be present to witness the Acceptance Testing.

F. The initial Acceptance Testing period will extend for 7 consecutive days with one Unit operating at the design flow.

G. After the Acceptance Testing for all unit(s) is completed, Engineer and Owner will meet with Supplier to determine compliance with the Contract Documents. At that time, if it is determined that Supplier has fulfilled the requirements of the Contract Documents, Supplier will be released from its on-site obligation unless otherwise retained.

H. If the System does not perform in accordance with the Contract Documents, Supplier shall return or remain on site to perform all necessary corrections at the cost of Supplier until compliance with Contract Documents is demonstrated.

I. During the Acceptance Testing, the System shall perform in accordance with the approved pump curve submitted by Supplier to allow Owner to pump RAS to the DO depletion channel.

J. If the Acceptance Testing is interrupted at the request of Supplier or by the non-conformance of Supplier’s equipment for more than three instances or a cumulative downtime of more than six hours during the acceptance test, Owner or Engineer may require that Acceptance Testing be restarted from the beginning, at no cost to Owner.
K. Any interruption of the Acceptance Testing caused by circumstances beyond the control of Supplier shall not require the testing to be restarted from the beginning. Such events include any activities that would result in an inadvertent or unplanned shutdown of the PLC / HMI control System or otherwise interfere with the Reliability Acceptance Test. The elapsed time of Acceptance Testing prior to the interruption will be applied to the required testing period.

++ END OF SECTION ++

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PART 1 - GENERAL

1.1 SUMMARY

A. Section includes all post-installed anchors and inserts required to anchor parts of the Work to supporting concrete or masonry construction, and plaster. This Section also includes adhesives for anchoring reinforcing dowels into existing concrete.

1.2 REFERENCES

A. American Society for Testing and Materials
   3. ASTM D746, Standard Test Method for Brittleness of Temperature of Plastics and Elastomers by Impact
   5. ASTM D1525, Standard Test Method for Vicat Softening Temperature of Plastics

B. 2018 International Building Code (IBC)

C. American Concrete Institute (ACI)
   1. ACI 355.2, Qualification of Post-Installed Mechanical Anchors in Concrete
   2. ACI 355.4, Qualification of Post-installed Adhesive Anchors in Concrete

1.3 SYSTEM DESCRIPTION

A. Provide the size, type, and length of anchor shown on the drawings or, if not shown, as specified in the detailed Sections of these specifications.

B. When the size, length or load carrying capacity of an anchor bolt, expansion anchor, toggle bolt, or concrete insert is not shown or specified, provide the size, length and capacity required to carry the design load times a minimum safety factor of 4.

C. For equipment anchors, if the design load is not specified by the Manufacturer, provide anchors of diameter no less than the diameter of the hole minus 3/16 inch. When the design load is not specified by the Manufacturer, provide structural calculations in accordance with Section 01 61 00, Common Product Requirements.

1.4 SUBMITTALS

A. Product Data: Submit for approval copies of material certification, Manufacturer's specifications, load tables, dimension diagrams and installation instructions for the devices.
B. Installer’s Qualifications: When installing adhesive anchors subject to sustained tension loading or when specifically noted in the Drawings, submit for approval copies of the installer’s qualifications certified by the ACI/CRSI Adhesive Anchor Installer Certification program.

1.5 QUALITY ASSURANCE

A. Post-installed concrete anchors shall be ICC approved for seismic applications in cracked concrete and prequalified in accordance with ACI 355.2 or ACI 355.4.

PART 2 - PRODUCTS

2.1 ANCHOR BOLTS

A. Non-submerged use in areas of wet use, washdown areas, or areas outside heated buildings:
   1. Stainless steel Type 316, unless otherwise shown.
   2. Diameter, Length and Bend Dimensions: As required by equipment or machinery Manufacturer. Unless otherwise required, provide 3/4-inch minimum diameter by 12-inches long and other geometry as shown.
   3. Furnish A320 nuts and washers of same material for each bolt, unless otherwise shown.
   4. Provide sleeves as required or as shown for location adjustment.

B. Submerged Use:
   1. Stainless steel Type 316, unless otherwise shown.
   2. Submerged use is defined as any connection 1 foot 6 inches below the normal water surface elevation in a water holding basin.
   3. As specified for non-submerged use, for equipment, machinery or other connections except as follows:
      a. Coating of anchor bolt threads is not required.
      b. Where threads are covered with fusion bonded coating, provide nut of proper size to fit and provide connection of equal strength to embedded bolt.

C. For anchoring fabricated metalwork, structural steel, or other components where connections will be protected or dry:
   1. Galvanized Steel, 36 ksi, minimum.
   2. Minimum Size: 3/4-inch diameter by 12-inch long, unless otherwise shown.
   3. At base plates with grout pads, furnish two nuts and two washers per bolt of same material as bolt, unless otherwise shown.

2.2 ANCHOR BOLT SLEEVE

A. High Density Polyethylene Plastic:
   1. Single unit construction with deformed sidewalls such that the concrete and grout lock in place.
   2. The top of the sleeve shall be self-threading to provide adjustment of the threaded anchor bolt projection.
   3. Material requirements shall conform to the following:
      b. Density: 0.956, ASTM D1505.
c. Vicant Softening Point: 256°F, ASTM D1525  
d. Brittleness Temperature: -180°F, ASTM D746

B. Fabricated Steel Sleeve:  
2. Dimensions, welding, and sizes as shown.

2.3 STAINLESS STEEL FASTENERS LUBRICANT (ANTISEIZING)

A. Provide for stainless steel nuts and machined bolts, anchor bolts, concrete anchors, and all other threaded fasteners.

B. Lubricant shall contain substantial amounts of molybdenum disulfide, graphite, mica, talc, or copper as manufactured by:  
1. Loc Tite Co., Permatex.  
2. Or equal

2.4 CONCRETE INSERTS

A. For vertical support of grating or floor plate, provide cast-in metal fabrications as shown.

B. Except as permitted below, or as otherwise shown, provide malleable iron inserts for hanging piping and conduit from concrete ceilings and soffits. Comply with Federal Specification WW-H-171-E (Type 18). Provide those recommended by the Manufacturer for the required loading.

C. Obtain inserts in sufficient time so as not to delay concrete or masonry work.

D. Product and Manufacturer: Provide inserts of one of the following:  
1. Figure 282, as manufactured by Anvil International.  
2. Sharktooth Insert, as manufactured by Hohmann and Barnard, Incorporated.  
3. No equal.

2.5 ADHESIVE (EPOXY) ANCHORS AND DOWELS

A. Provide adhesive anchors where specifically shown and where adhesive anchors are allowed. Unless otherwise shown, adhesive anchors are allowed for anchoring:  
1. Supports for pipe, conduit, and electrical boxes, devices, and panels, on floors and walls  
2. Handrails, guardrails, sunshades, stairs,  
3. Fixtures and equipment on floors and walls, and  
4. Single pipes and conduits <2 inch in diameter to ceilings and soffits.

B. Adhesive shall be epoxy resin. Vinylester resin anchors are NOT allowed.

C. Product and Manufacturer: Provide one of the following:  
1. Installation to Concrete:  
   a. HIT-HY 200 as manufactured by Hilti, Inc.  
   b. SET-3G as manufactured by Simpson Strong-Tie, Inc.  
   c. No equal.  
2. Installation to solid-grouted Masonry:  
   a. HIT-HY 270 as manufactured by Hilti, Inc.
2.6 EXPANSION ANCHORS

A. Provide expansion anchors only where specifically shown or where approved by Engineer.

B. Expansion anchors are NOT allowed in any submerged or chemical containment areas.

C. Leveling nuts shall not be used with expansion anchors. If leveling nuts are required, provide adhesive anchors, unless otherwise shown.

D. Wedge anchors: Provide one of the following:
   1. Installation to Concrete:
      a. Hilti Kwik Bolt TZ by Hilti, Inc.
      b. Strong-Bolt 2 by Simpson Strong-Tie, Inc.
      c. Or approved equal meeting ACI 355.2.
   2. Installation to solid-grouted Masonry:
      a. Hilti Kwik Bolt-3 by Hilti, Inc.
      b. Wedge-All by Simpson Strong-Tie, Inc.
      c. Or approved equal.

E. Drop-in anchors, only where specifically shown on the drawings: Provide one of the following:
   1. HDI by Hilti, Inc.
   2. Drop-In by Simpson Strong-Tie, Inc.
   3. Or equal.

2.7 TOGGLE BOLTS

A. Provide toggle bolts only where specifically shown, to fasten single pipes and conduits <1 inch and equipment weighing less than 50 lbs (4-bolts required) to hollow walls.

B. Provide spring-wing toggle bolts, with two-piece wings, carbon steel bolts with zinc coating in accordance with Federal Specification FF-S-325.

C. Product and Manufacturer: Provide toggle bolts of one of the following:
   1. The Rawlplug Company, Incorporated.
   3. Or equal.

2.8 OTHERS

A. Powder actuated fasteners and other types of anchors not specified herein shall not be used, unless approved by ENGINEER.

2.9 ACCESSORIES

A. Provide Belleville washers, or approved equal, at anchorage connections used to transfer anchorage loads at sheet metal equipment housings.
PART 3 - EXECUTION

3.1 INSTALLATION OF ANCHORS

A. Obtain anchor bolts in sufficient time so as not to delay concrete or masonry work.

B. Adhesives shall be stored and installed at the service temperature ranges recommended by the Manufacturer.

C. Locate and accurately set the anchor bolts using templates or other devices as necessary.

D. Protect threads and shank from damage during installation of equipment and structural steel.

E. Post-installed anchors are NOT acceptable substitutes for cast-in-place anchor bolts.

F. Assure that embedded items are protected from damage and are not filled in with concrete.

G. Unless otherwise shown, the minimum diameter of anchor bolts for structural steel is 3/4 inch, and for other applications, 3/8 inch.

H. Unless otherwise shown, provide the following minimum embedment, where “d” is the nominal anchor diameter:
   1. Cast-in-place anchors: 12d.
   2. Adhesive anchors: 12d.
   3. Expansion anchors: 8d.

I. Unless otherwise shown, provide a minimum edge distance equal to six times the bolt diameter for adhesive anchors, eight times the bolt diameter for expansion anchors and a bolt spacing equal to twelve times the bolt diameter.

J. Concrete shall have a minimum age of 21 days at the time of post-installed anchor installation.
   1. Concrete temperature at the time of adhesive anchor installation shall be at least 50°F.

K. Existing reinforcing bars in the concrete structure may conflict with specific anchor locations. Unless noted on the Drawings that the bars can be cut, Contractor shall review the existing structural drawings and shall undertake to locate the position of the reinforcing bars at the locations of the concrete anchors by ferroscan, ground penetrating rebar (GPR), x-ray, chipping or other means.

L. Drilling equipment used and installation of post-installed anchors shall be in accordance with the Manufacturer’s printed instructions.

M. For the adhesive and expansion anchors, Contractor shall comply with the Manufacturer’s printed installation instructions on the drilled hole diameter and depth.

N. Contractor shall properly clean out the hole utilizing a wire brush and compressed air in accordance with the Manufacturer’s printed installation instructions to remove all loose
material from the hole, prior to installing adhesive or expansion anchors. Drilled and cleaned anchor holes shall be protected from contamination until the anchor is installed. A drilled anchor hole shall be re-cleaned assuming the hole was just drilled, if in the opinion of Engineer or Inspector that the hole has become contaminated after initial cleaning.

O. Unless otherwise indicated by the Manufacturer, adhesive shall be dispensed through a tube or cartridge extension, beginning at the maximum depth of the hole and withdrawn as adhesive is injected, followed by insertion and rotating the anchor to the specified depth. Where necessary, spaces around anchors at the surface shall be sealed at horizontal to vertically overhead locations to prevent loss of the adhesive during curing.

P. Anchors to be installed in the adhesive shall be clean, oil-free, and free of loose rust, paint, or other coatings.

Q. Installed anchors shall be securely fixed in-place to prevent displacement. Unless shown otherwise on the Drawings, anchors shall be installed perpendicular to the concrete surface.

R. Reinforcing adhesive dowel bars or all-threaded adhesive bars shall not be bent after being adhesively embedded in hardened, sound concrete.

S. In lieu of the use of stacked standard washers, if threads of an anchor bolt protrude beyond the attachment, the installers shall use a fabricated filler plate of equal or greater size of the washer. Hole on the filler plate shall be 1/16" (or 2 to 3 mm) greater than the bolt size. Coat as appropriate in accordance with the material and installation location requirements.

3.2 FIELD QUALITY CONTROL

A. Anchors shall be installed by qualified personnel in accordance with the Manufacturer's printed installation instructions. Installation of adhesive anchors shall be performed by personnel trained to install adhesive anchors.

B. Installation of adhesive anchors horizontally or upwardly inclined to support sustained tension loads shall be performed by personnel certified by the ACI/CRSI Adhesive Anchor Installer Certification program.

C. Contractor shall employ a special inspector to perform field inspection services in accordance with Chapter 17 of the IBC for all post-installed anchors.
   1. The special inspector must be periodically on the jobsite during post-installed anchor installation.
   2. Adhesive anchors installed to resist sustained tension loads shall be continuously inspected during installation by an inspector specially approved for that purpose by the building official.

D. Contractor shall employ a testing laboratory to perform field quality testing of installed adhesive anchors. A minimum of 10% of randomly selected adhesive anchors and reinforcing dowel bars greater than 3/8 inch diameter are to be tension tested to the least of 50 percent of expected adhesive ultimate bond strength or 80 percent of steel yield strength of the anchor rod. Maintain the proof load at the required load level for a minimum of 10 seconds.

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1. Tension testing shall be performed in accordance with ASTM E488.
2. The independent testing laboratory shall submit an anchorage testing plan for approval to ensure the testing requirements are fulfilled.
3. If failure of more than 5 percent of the tested anchors or reinforcing dowel bars occurs, Contractor will be required to pay for the costs involved in testing the remaining 90%.
   a. Concrete cracking in the vicinity of the anchor after loading shall be considered a failure.

E. Contractor shall correct improper workmanship, remove and replace, or correct as instructed by ENGINEER, all anchors or bars found unacceptable or deficient, at no additional cost to Owner.

F. The independent testing and inspection agency shall complete a report on each area. The report should summarize the observations made by the inspector and be submitted to ENGINEER.

G. Provide access for the testing agency to places where Work is being produced so that required inspection and testing can be accomplished.

+ + END OF SECTION + +
SECTION 43 08 00
COMMISSIONING OF RAS PUMP EQUIPMENT

PART 1 - PART 1 - GENERAL

1.1 DESCRIPTION

A. Description of Work: The Supplier shall commission the equipment and place the system into operation. Commissioning is subject to the following provisions.

1. Commissioning shall not commence until the “Notice of Completed Installation” is issued in accordance with Section 01 73 19.01, Installation of RAS Pump Equipment.

2. Commissioning shall be completed by the Supplier within the allocated time as identified in the Agreement.

3. The Engineer shall document the time when the facilities are substantially unavailable for use by the Supplier to perform commissioning. Potential times of substantial unavailability include: 1) when the installation of the equipment results in a delay to the Supplier, 2) when the Engineer conducts its review of system operation and 3) circumstances beyond the control of the Supplier including but not limited to power outages, lack of feedwater, inability to transfer product water or feedwater due to factors beyond the control of the Supplier, not having adequate staff from the Contractor or the Owner. If in the sole opinion of the Engineer the facilities are substantially unavailable to the Supplier, equivalent additional commissioning time will be granted.

4. Failure to complete the Commissioning as required by this Section within the allocated time shall constitute a failure of the Supplier to provide Special Services in accordance with the requirements of the Contract. The Supplier shall be assessed Liquidated Damages in accordance with Article 5 of the Agreement until commissioning is complete.

5. Upon completion of Commissioning, the Engineer shall issue the “Notice of Completed Commissioning”

B. The Supplier shall coordinate all services and activities required by this Section with the Contractor, the Engineer and the Owner.

C. The Supplier shall perform all other tests required by the Specifications.

D. Commissioning activities will be observed by the Engineer and Owner’s operations staff to allow operations staff to become familiar with the equipment.

E. Reference Specifications:
   1. Section 01 79 00, Testing, Training and Startup
   2. Section 43 21 39, Submersible Propeller Pump
1.2 QUALITY CONTROL / QUALITY ASSURANCE (QA/QC) – NOT USED

1.3 SUBMITTALS

A. The Supplier shall prepare a “Detailed Plan of Commissioning Activities” that will be used as a guideline for Commissioning of the Goods provided by the Supplier. If the equipment is not supplied by the Supplier, the Contractor shall ensure coordination of Equipment Commissioning with other systems. The “Detailed Plan of Commissioning Activities” shall be used to coordinate the activities of the Supplier’s personnel. The “Detailed Plan of Commissioning Activities” will identify the Commissioning requirements for all Goods supplied by the Supplier. The guidelines shall include the following minimum check items.

1. Pump(s)
   a. Filled with Oil
   b. Rotation is Proper
   c. Aligned Properly (Mechanical Seal has been set)
   d. Receives and responds to Process Control Command Signals (Discrete and/or Analog) for change in pump speed.
   e. Electrical Supply is Connected
   f. Control Alarm Set Point has been established

B. The “Detailed Plan of Commissioning Activities” will be used as a guideline for placing the facility into operation. The “Detailed Plan of Commissioning Activities” shall be coordinated with the activities of the Contractor, the Engineer and the Owner. Commissioning activities shall be in coordination with the Contractor’s testing schedule. The guidelines shall include the following minimum check items.

1. Field Verification of Installed Equipment including:
   a. Pumps
   b. Discharge tube systems and Temporary Connections
   c. FSI, if supplied
   d. Electrical Control and Operator Interface Systems

2. Commissioning of Equipment
   a. Pumps

3. Start-up Activities
   a. Flow, Pressure and Level Control Sequences

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.1 COMMISSIONING

A. No system or subsystem shall be started-up for continuous operation unless all Goods, including instrumentation and monitoring systems, of that system or subsystem have been tested and proven to be operable as intended by the Contract Documents.

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B. The Supplier shall place the Goods into operation and perform tests to determine if equipment is operating properly. The purpose of these tests is to verify that both the System and each Unit are:
1. Properly installed
2. Operational
3. Capable of completing operating cycles free of problems
4. Free from pump or valve cavitation, water hammer, overheating, overloading, vibration, or other operating problems.
5. The Supplier shall verify that control programming has been configured with appropriate software time delays to avoid rapid pump cycling in response to transient dynamic hydraulic effects. Any operation of any pump under a “zero-flow” or “flow condition below the pump manufacturers acceptable limits” is not acceptable. The pump manufacturers “maximum number of pumps starts per hour” shall not be exceeded.

C. The Supplier shall coordinate all activities with the Contractor, Owner and Engineer. The types of activities to be performed by the Supplier will be detailed in the “Detailed Plan of Commissioning Activities” include but not necessarily limited to the following items:
1. Initial Start Up Activities
   a. Verify Unit and Discharge Tube Installation
   b. Verify FSI, if supplied, Installation.
   c. Verify temporary system interconnections
2. Commissioning Activities
   a. Verify Pumps for Rotation
3. Start Up Activities
   a. Check Start Up Sequence in Normal and Emergency Modes
   b. Check Shut Down Sequence in Normal and Emergency Modes
   c. Remove Temporary Interconnections
   d. Verify All Supplier Process Sequences
   e. Verify all Process Flow Sequences

D. As a part of the commissioning, the Supplier shall start-up and operate all support systems provided by or required by the Supplier for operation of the system. The testing shall demonstrate that there are no water or air leaks in the System, that the discharge tube, FSI, if supplied, has been installed and connected properly, unit is responding to Instrumentation and Controls signals.

E. The Supplier shall furnish lubricants and other materials (excluding chemicals and power), instruments, and incidental and expendable equipment required for commissioning / placing the equipment into operation. The Supplier shall retain the services of any Manufacturer’s representatives as required in the Contract Documents to assist with the commissioning / placing into operation of the Goods. The costs of these services shall be borne by the Supplier

F. When requested by the Supplier, the Engineer shall inspect the operation of the equipment to verify that the commissioning is complete.
1. The Engineer shall perform random tests to determine if the equipment is operating properly and witness various operational sequences.
2. The Engineer may initiate alarm conditions to determine if equipment provided is operating properly.

3. The Engineer’s inspection will include verification of proper installation. All deficiencies and/or inconsistencies concerning the installation of the equipment will be documented in a punch list identifying items requiring correction and noting responsible party for each correction.

G. Upon satisfactory completion of the review, the Engineer shall submit to the Supplier a written “Notice of Completed Commissioning”.

H. Once the “Notice of Completed Commissioning” is issued, Training of Operation and Maintenance Personnel may commence. Refer to Section 01 79 00, Testing, Training and Startup.

++ END OF SECTION ++
SECTION 43 21 39

SUBMERSIBLE PROPELLER PUMPS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope:
1. RAS PUMP SYSTEM EQUIPMENT SUPPLIER (Supplier) shall furnish six (6) duty and one (1) shelf spare new submersible axial/mixed flow propeller pumps, six (6) discharge tubes including associated soleplate and cable suspension system, to provide six (6) complete installations with operational motor and pump mounted instruments and accessories as specified.
2. The Return Activated Sludge (RAS) pumps will be installed in RAS channel and will be used to pump RAS from RAS channel and convey the RAS to Dissolved Oxygen (DO) depletion channel.
3. The shelf spare pump shall be complete with power and instrumentation cable and cable suspension system.
4. Each pump shall be of the vertical axial/mixed flow submersible type directly coupled to a submersible motor. The pumps shall be mounted within a discharge tube and be designed to be removed at the operating water level for maintenance and repair without taking RAS channel out of service.
5. The pump and pump motor shall be considered an integral unit and its design shall be the responsibility of the Supplier.
6. The discharge tube and soleplate shall be the responsibility of the Supplier to design and fabricate. For purposes of performance and this specification it shall be treated as part of the pumping unit.
7. Supplier shall provide installation and start up assistance, certification, and training services.
8. Supplier shall develop and submit shop drawings for review by Owner and Engineer; coordinating with Owner and Engineer regarding design details.
9. An optional adder, Formed Suction Inlet (FSI) for an individual RAS pump may be provided by the Supplier, if accepted by the Owner. For purposes of performance and this specification it shall be treated as part of the pumping unit. The FSI shall be the responsibility of the Supplier to design and fabricate.

B. The piping from discharge tube’s discharge flange to flap valve at discharge point will be provided by Contractor under a separate contract with the Owner.

C. The Contractor will install the pumps under a separate contract with the Owner.

1.2 SITE CONDITIONS

A. This section describes the environmental conditions which have been observed at the site of the work and which may reasonably be anticipated throughout the life of the Project.

B. The site of the work is at an elevation of approximately 4,500 feet above mean sea level.

C. Hydrogen sulfide gas although unlikely, may be present in the wastewater and flow conveying structures.
D. RAS temperature ranges between 8 degrees Celsius and 25 degrees Celsius.

E. RAS will be withdrawn from membrane reactor that has passed through a ¼-inch bar screen, aerated grit removal process, primary clarifiers, and 2mm fine screen prior to membrane reactor. Anticipated suspended solids concentrations are 3,800 to 12,000 mg/L.


1.3 QUALITY ASSURANCE

A. Reference Standards: Work covered by this specification shall meet or exceed the provisions and recommendations of the latest editions of the following codes and standards in effect at the time of awards of the Contract, except as otherwise shown or specified.
   3. Institute of Electrical and Electronic Engineers (IEEE).
   5. American Society of Mechanical Engineers (ASME).
   10. American Iron and Steel Institute (AISI).
   12. Anti-Friction Bearing Manufacturers Association (AFBMA).
   13. International Organization of Standardization (ISO)- ISO9001
   14. Factory Mutual (FM)

B. Qualifications:
   1. The Supplier shall have complete responsibility to supply the pumping unit (submersible pump, submersible motor, discharge tube, soleplate, cable suspension system, instrumentation and accessories, and FSI as an optional adder) that meet the requirements of this specification. Thus, the pump performance shall be the sole responsibility of the Supplier.
   2. The Supplier shall have experience in producing similar equipment, and shall show evidence of five (5) installations in satisfactory operation for at least five (5) years, with contact information supporting qualification under this requirement.
   3. Installation and Start-up representative:
      a. Supplier shall furnish a competent installation and start-up representative who is knowledgeable and experienced with the installation and start-up procedures for submersible pumps and the associated equipment specified.
      b. When so requested, the installation and start-up representative shall be responsible for providing complete and correct direction during installation, initial start-up, and subsequent operation of equipment until field tests are completed.
      c. The installation and start-up representative shall initiate instructions for actions necessary for proper receipt, inspection, handling, uncrating, assembly, and testing of equipment.
      d. The installation and start-up representative shall also keep a record of measurements taken during testing and shall furnish hard copy and electronic copy on thumb drive to the Engineer upon request or on the completion of

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commissioning. The Contractor shall be responsible for coordinating the required field services with the Supplier.

C. Factory Testing:
   1. Propeller pumps shall be tested at the factory:
      a. Verify that propeller, motor rating and electrical connections comply with this Section.
      b. Measure for moisture content and insulation defects in motor and cable, both before and after the submergence test described below.
      c. Run propeller pump dry to verify proper rotation, alignment and mechanical integrity.
      d. Run propeller pump submerged for at least 30 minutes under a minimum of 8 feet of water to check for balance, unusual noise and overheating. Verify specified pumping capacities.
      e. Test motor for no-load current at rated voltage, high potential, and locked rotor current.
      f. A certified test curve (per HI standards) showing the performance of the pump shall be supplied to the Engineer. Tests shall cover the full pump operating range from the maximum to the minimum specified flow conditions and Supplier calculated pumping head as specified in paragraph 1.4. B. Conduct test(s) per above specifications on all supplied pumps, generating a curve showing actual flow, total head, static head, BHP and hydraulic efficiency.
      g. Tests shall be performed on the actual assembled pumps to be supplied – prior tests on similar units or prototype model tests are not acceptable. The discharge tube used in testing should be identical to the one to be supplied.
      h. If optional adder Formed Suction Inlet (FSI) is supplied, test shall be run as per HI standards. The test shall confirm FSI design to avoid formation of swirl, vortex, eddies, cavitation and condition incoming flow into a uniform profile as per applicable HI standards.
   2. Tests shall be witnessed by a Registered Professional Engineer who may be an employee of the Supplier. The Registered Professional Engineer shall sign and seal all copies of test curves and shall certify that performance tests were performed. Tests shall be conducted in conformance with the Standards of the Hydraulics Institute.

1.4 SUBMITTALS

A. Submit head calculations, shop drawings, and product data in accordance with contract documents for RAS Pump system.

B. Head Calculations:
   1. Supplier shall calculate and submit pumping head calculations corresponding to Clause 2.2.B and Clause 2.2.C. Supplier shall refer to Figure -1 for additional information required for calculation.
   2. Hard seal flap valve such as Waterman F 55 or equal as backwater preventer shall be considered for head calculation.
   3. If optional adder Formed Suction Inlet (FSI) is supplied, head calculations corresponding to Supplier designed Formed Suction Inlet (FSI) shall be calculated by Supplier.
   4. All the Head Calculations shall be calculated by a Registered Professional Engineer who may be an employee of the Supplier and submitted to Engineer for approval. The Registered Professional Engineer shall sign and seal the calculations.
5. The Supplier shall submit the following data for proposed RAS PUMP system:
   a. Discharge Tube diameter (inches)
   b. Discharge Tube’s Discharge Flange diameter (inches)

   c. 

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<th>Duty Point</th>
<th>Flow (gpm)</th>
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<th>NPSHre corresponding to minimum static head (ft)</th>
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</tr>
<tr>
<td>Minimum Achievable flow for proposed pump</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   C. Product Data: Submit for approval Supplier's literature, illustrations, specifications, ISO 9001 Certification, Supplier's written quality assurance/quality control (QA/QC) program, technical support documentation, service support documentation, recommended pump station design guidance, installation guide, paint certification and engineering data including: dimensions, materials, size, weight, and performance data, anchor bolt sizing calculations, pump performance curves, motor performance curves, minimum recommended submergence above bell inlet, minimum and maximum recommended depth below bell inlet from floor, seal descriptions, electrical motor data.

   D. Shop Drawings: Submit for approval fabrication, assembly, installation, loads on supporting structures, field connection and anchor bolt locations, outline drawing and dimension, control drawings, discharge tube drawing and details, wiring diagrams and accessories drawing. Drawings shall show each component of pumping unit in detail. Wiring diagrams shall comply with NFPA 79, Annex D standards.

   E. Factory Test Report.

   F. Installation, Field Test, Performance and Start-up Report.

   G. Operation and Maintenance Manuals: Submit complete manuals including copies of all approved Shop Drawings, test reports, maintenance data and schedules, description of operation, and spare parts information as per Section 01 33 00 O&M Manual Review Checklist; Section 01 78 23 Installation, Operation and Maintenance Manuals; Section 01 78 43 Spare Parts.

   H. Delivery/Transportation, Storage, Protection and Handling
   1. Refer to Section 01 66 00 Transportation and Handling of Goods

   43 21 39-4
2. Refer to Section 01 71 19 Protection of Goods

I. Supplier shall verify all dimensions for adequate clearance for inclusion within submittals and prior to fabrication. No items shall be fabricated prior to approved submittal response.

J. Warranty:
   1. Refer to Section 01 78 36.01 RAS Pump Equipment Warranty

PART 2 - PRODUCTS

2.1 PRODUCT AND MANUFACTURER:

A. Provide one of the following manufacturers:
   1. Flygt PL
   2. KSB Amacan PA4
   3. Sulzer VUPX
   4. Or Equal.

B. The pump specified herein shall be the design and manufacture/fabrication of a single Manufacturer which shall have sole source responsibility for said equipment.

2.2 SERVICE CONDITIONS

A. General:
   1. Propeller pumps shall be submersible with the submersible motor close-coupled, directly connected to the propeller. Gear box designs shall not be acceptable. The propeller shall be capable of handling solids, fibrous materials, heavy sludge, and other matter found in sanitary sewage applications.
   2. The discharge tube shall be permanently installed in the wet well. The pump unit shall be designed for installation into a discharge tube. The pump shall seat at the bottom of the column and shall be held in place by its own weight and the pumping head. The design shall be such that the pump units will be automatically and firmly seated to the discharge tube when lowered into place. The system design shall prohibit rotational movement of the pump/motor units within the tubes. An O-ring shall be provided on the bottom of the inlet (suction) bell mouth of the pump so that the weight of the pump unit, when acting on the O-ring, will provide an effective seal between pump and discharge column. The pumps shall be easily removable for inspection or service with no need for personnel to enter the RAS channel. It shall be possible to lower and raise the pump in the column and put into operation when column is filled with RAS. The pumps shall not require any bolts, nuts or fasteners for connection to the discharge column. Stiffening and guiding webs shall be provided at the pump support seat to ensure concentric positioning of pump within the discharge column.
   3. The outlet shall have guide vanes designed to minimize clogging by carrying debris normally prone to clog the guide vanes from the inside of the guide vanes towards the outside of the guide vane.
   4. The RAS pumped will be pretreated as described in paragraph 1.2 but may contain residual levels of grit, suspended solids and trash.
   5. The motor shall be induction type with a squirrel cage rotor, housed in an air filled, watertight chamber. It shall be permanently submersible according to applicable standard (IEC 60034 and protection class IP 68).
6. The motor shall be cooled by the pumped RAS flowing along the stator housing when the pump is working. A water jacket or any external cooling system is not acceptable.

7. The motor shall be capable of no less than 10 evenly spaced starts per hour and be able to operate throughout the entire pump performance curve from shut-off through run-out.

8. Runaway Speed: The pump shall be designed to sustain full runaway speed without damage at maximum head difference across the pump. Based on the system design the Supplier shall compute the maximum reverse runaway speed, and the pump and motor shall be designed to sustain that reverse rotation without damage.

9. Supply with FM listed motors for use in unclassified location as defined by the National Electric Code.

10. Each propeller pump shall be specially designed and manufactured for the service intended.

11. Identify the pumping unit by means of a separate nameplate permanently affixed in a conspicuous location as per Section 01 58 00 Identification and Tagging.

12. The pumping unit shall be equipped with suitably located instruction plates, including any warnings and cautions, describing any special and important procedures to be followed in starting, operating, and servicing the equipment. Plates shall be made of corrosion-resistant stainless-steel with raised or depressed lettering and a contrasting background.

B. Design Conditions

Figure -1 RAS PUMP CROSS SECTION
### Equipment Tag(s) | TBD
---|---
### No. Required | 6 Duty and 1 spare
### Liquid Pumped | Return Activated Sludge
### Design Mixed Liquor Suspended Solids Concentration (mg/L) | 3,800 – 12,000
### Pumping Cycle | Continuous
### Minimum static head (ft) | See Figure 1
### Maximum static head (ft) | See Figure 1
### Maximum Size of discharge tube (inch) | 36

1. RAS Channel Invert elevation can be adjusted as per pumps required minimum submergence.

### C. Performance Requirements:

#### Performance requirements per pump

<table>
<thead>
<tr>
<th>Duty Point</th>
<th>Flow (gpm)</th>
<th>Minimum Efficiency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd Operating Point</td>
<td>9,950</td>
<td>70</td>
</tr>
<tr>
<td>3rd Operating Point</td>
<td>3,850</td>
<td>70</td>
</tr>
</tbody>
</table>

| Drive Type                     | Direct     |
| Drive                          | Variable frequency drive |
| Power Supply                   | 480-volt, 3-phase, 60 Hz. |
2.3 MATERIALS AND CONSTRUCTION

A. The materials of construction shall comply with following:

<table>
<thead>
<tr>
<th>PART</th>
<th>MATERIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suction Bell</td>
<td>Cast iron or Stainless Steel plate</td>
</tr>
<tr>
<td>Pump Bowl</td>
<td>Cast iron, cast steel or Stainless Steel plate</td>
</tr>
<tr>
<td>Propeller</td>
<td>Stainless Steel or Duplex Stainless Steel</td>
</tr>
<tr>
<td>Pump/Motor Shaft</td>
<td>Stainless Steel</td>
</tr>
<tr>
<td>Wearing Ring</td>
<td>Stainless Steel (Manufacturer's standard)</td>
</tr>
<tr>
<td>Bolts, Key, etc.</td>
<td>Stainless Steel, Type 316</td>
</tr>
<tr>
<td>O-rings</td>
<td>Nitrile rubber or Viton</td>
</tr>
<tr>
<td>Mechanical seals</td>
<td>Silicon carbide or Tungsten carbide</td>
</tr>
<tr>
<td>Discharge tube and Soleplate</td>
<td>Stainless Steel, Type 316</td>
</tr>
<tr>
<td>Pump Case</td>
<td>Cast iron or Stainless Steel</td>
</tr>
<tr>
<td>Motor Housing</td>
<td>Cast iron or Stainless Steel</td>
</tr>
</tbody>
</table>

B. Materials Not Specifically Described: Materials not specifically described shall conform to the latest ASTM specification or to other listed commercial specifications covering class or kinds of materials to be used.

C. When dissimilar metals are in intimate contact, suitable protection against galvanic corrosion shall be applied. The anodic member shall be protected by proper electrical insulation of the joint.

D. Propeller Pump Materials and Construction:

1. Propeller pump components in contact with liquid shall be of material described in Paragraph 2.3.A with smooth surfaces devoid of blow holes and other irregularities.

2. All mating surfaces where watertight sealing is required shall be machined and be fitted with a double set of nitrile rubber or Viton O-rings.

3. Propeller pump Removal:
   a. The propeller pumps shall be removable for inspection or service requiring no bolts, nuts or other fastenings to be disconnected and without the need for personnel to enter the RAS channel.
   b. Pump Lifting Handle and Lifting Lugs:
      1) The lifting handle shall be designed to bear the entire weight of the pumping unit at a conservative factor of safety. Lifting lugs shall be provided where the weight of the separate part requires a lug. The working load of the lifting system shall be at least 50% greater than the pump unit weight.

4. Bearings:
   a. The shaft shall rotate on a minimum of three permanently lubricated sealed bearings:
      1) The outboard (propeller-end) bearing:
         a) Angular contact type.
      2) The inboard (motor-end) bearing:
         a) Angular contact type or cylindrical roller type to take up the axial loads
         b) Radial bearing to take up the radial loads.
   b. Bearing design shall ensure the pump rotating elements are supported so that the possibility of excessive vibration is eliminated. Provide bearing isolators that are the labyrinth, non-fretting type designed to expel contaminants by centrifugal force and prevent the escape of lubricants.
c. All bearings shall have a minimum L-10 life rated 100,000 hours and shall have
inner and outer races of metal construction.

5. Bearing Housing:
   a. Shall be ductile iron or cast iron or stainless steel, and machined with piloted
      bearing fits for concentricity of all components.
   b. Piloted motor mount shall firmly align motor on top of bearing housing.

6. Mechanical Seal:
   a. Each propeller pump shall be provided with two sets of tandem, lapped end face
      type mechanical seals running in a lubricant chamber for cooling and lubrication.
   b. The mechanical seals shall contain a stationary face ring of silicon carbide or
      tungsten carbide and a positively driven rotating face ring of silicon carbide or
      tungsten carbide.
   c. Shaft seals without positively driven rotating members will not be accepted.
   d. Only the seal faces of the outer seal assembly shall be exposed to the pumped
      media. All other components shall be contained in the lubricant housing.
   e. The lubricant housing shall facilitate easy oil flow.
   f. All seal faces shall be capable of relapping.
   g. Seals shall require neither maintenance nor adjustment, but shall be easily
      inspected and replaceable.
   h. Seals shall be non-proprietary in design, and shall be available from another
      vendor in addition to the Supplier.

7. Lubricant Housing:
   a. Provide an oil housing with oil, as recommended by the Supplier, to lubricate the
      shaft sealing system and to dissipate the heat generated by the motor and
      bearings.

8. Propeller:
   a. The propeller shall be stainless steel, dynamically balanced, non-clogging and
      self-cleaning. The propeller surface shall be smooth, without holes and fabrication
      offsets. The propeller may be cast or fabricated.
   b. The attachments to shaft shall be with keys or other fasteners which are to be
      made of stainless steel. The attachment should be of sturdy construction
      designed to not loosen but be easily removed for maintenance.
   c. At the time of assembly, the propeller clearances shall be those shown on
      assembly drawings and may be checked in the field or at the factory at the
      Engineer's option.
   d. The propeller shall be dynamically balanced at the design operating speed. The
      standard balance quality grade shall be applied in accordance with applicable
      standards. Balancing procedure shall be in accordance with HI standards

9. Motor Shaft:
   a. The shaft shall be one-piece integral with the motor, of Stainless Steel with a
      factor of safety of five measured against the ultimate strength. The shaft shall be
      designed for all torque conditions during normal operation and for runaway speed
      during reverse flow. Units with multiple piece shafts or gearboxes are not
      acceptable.

10. External Hardware:
    a. All bolts, nuts, keys and cap screws shall have hexagon heads and be of Type 316
        stainless steel.

11. The bowl assembly may be cast or fabricated. The hydraulic design shall be the
    Supplier's standard design as used in previous operating installations. The general
    manufacture quality relating to flange design, drilling, bolts, alignments, etc., shall be
    in accordance with industry standard practice.
12. Bell mouth shall be designed to deliver a smooth hydraulic velocity and directional transition into the pump casing and propeller with a minimum of turbulence. The pump casing / diffuser section shall be designed to deliver the flow of water into the discharge tube to maximize the hydraulic efficiency and minimize exit losses from the pump.

13. Wear Rings:
   a. A wear ring system shall be used to provide efficient sealing between the volute and suction inlet of the propeller.
   b. The following wear ring systems are acceptable:
      1) Each pump shall be equipped with a ring insert that is drive fitted to the volute inlet. The wear ring shall be easily replaced without having to remove the propeller/propeller hub or any other pump components.
      2) The pump may also have a stainless steel impeller wear ring heat shrink fitted onto the suction inlet of the propeller.

14. Lifting Equipment:
   a. For each pump the Supplier shall supply a stainless steel lifting chain to lift the pump and to support the cables of the pump. The lifting chain shall be approved for a rated load as mentioned in paragraph 2.3.D.3.b.1 and extend at least 10 ft. above the top of the column when the pump is at its lowest point.
   b. The power and instrumentation cables shall be secured to prevent movement while the pump is operating.
   c. Clamps with an integrated chain profile and vulcanized straps shall fix the cable to the lifting chain with a maximum spacing of 3 ft.
   d. An EPDM spacer shall be provided between the power cable, instrumentation cable, and stainless-steel lifting chain for protection against binding and abrasion.
   e. Lifting devices required for use in conjunction with pump removal using an overhead bridge-crane shall be furnished.

E. Motors:
1. Motor shall be inverter duty rated for operation with a VFD.
2. The motor shall be sized to not overload when operating at any point along the characteristic curve of the pump.
3. The motors shall be 3-phase, 60-Hz, 480 V.
4. The stator windings and stator leads shall be insulated with a moisture-resistant Class H insulation with temperature resistance of 356 degrees F.
5. The service factor shall be 1.15.
6. The temperature rise above ambient for continuous full load rated conditions and for the class of insulation used shall not exceed the values in NEMA MG 1.
7. The motor shall be rated for continuous duty when submerged and shall also be capable of operation in the dry for testing and maintenance purposes without any damage.
8. Cable:
   a. Power and instrumentation cable shall be specifically designed for use with a submersible pump application and shall conform to the requirements of NEC, NEMA, ICEA and other applicable standards. Submersible cable shall be suitable for continuous submersion in water at the maximum depth encountered.
   b. The cable length shall not be less than 20 feet. The cable length shall be adequate to reach the junction box without the need for splices.
   c. Power and instrumentation cable shall be oil resistant chloroprene rubber jacketed.
   d. The cable shall be rated for 600-volt and 90-degrees C with a 40-C degree ambient temperature and shall be FM approved.
   e. Control conductors for sensors shall be integral with the motor power cable.
f. Power and instrumentation cables shall enter the motor through a sealing system that prevents water entry into the unit and provides strain relief. The cable entry water seal design shall preclude specific torque requirements and ensure a watertight and submersible seal.

g. The cable entry housing shall be an integral part of the back plate. The Cable entry design shall combine the sealing function with the cable strain relief function so that when the cable entry is mounted onto the junction box, the cable entry will be 100% watertight during immersion of 65 feet or greater, while providing sufficient strain relief to prevent the cable from pulling out when handling, installing, or operating the pump.

9. Cable junction Box:
   a. Provide cable junction box on top of motor housing, with cable entry sealed to ensure that no entry of moisture is possible into the high-voltage motor/terminal area even if the cable is damaged or severed below water level.
   b. An appropriate sealing system shall be provided to render the motor compartment leak proof.
   c. A moisture sensor mechanism shall be provided to detect any leakage into the junction box. This sensor shall be separately wired to provide an alarm in the event of water intrusion into the cable junction box.

F. Discharge Tube and Soleplate:
   1. The design, manufacture and installation of the discharge tube and soleplate shall be in accordance with the Supplier's instructions. For purposes of performance and this specification it shall be treated as part of the pumping unit. The discharge tube shall accommodate the dimensions of the pump supplied in accordance with the Supplier's requirements.
   2. Discharge tube and soleplate shall be permanently installed in the RAS channel.
   3. Requirements as per paragraph 2.2.A.2 shall be met.
   4. At the top of each discharge tube the Supplier shall supply provide a mechanism that keeps the lifting chain and the cable under tension to prevent excessive movement and protect lifting chain and cable from damage during operation.
   5. Flanged Joints:
      a. AWWA C207, Class D (150psi), hub or ring type. Type 316 Stainless Steel.
   6. Gaskets:
      a. 1/8 inch thick, cloth-inserted rubber, corrosive acid and alkali free for intended service conforming to ANSI B16.21 and AWWA C207; full-face gaskets for flat-face flanges; flat ring gaskets for raised-face flanges.
      b. Gaskets for rolled grooved ends shall be as recommended by Supplier for intended service.
   7. Tube Cover:
      a. The discharge tube cover shall be a removable and circular, of a single- or two-piece design. The cover, gasket and bolt system shall be designed to meet the maximum pressure of the pump at the highest end of the selected pump curve without leakage.
      b. Power and instrumentation cable penetrations shall be watertight.
   8. Optional Adder/Items
      a. Formed Suction Inlet (FSI)
         1) To provide optimal inflow to the propeller pump the FSI as an optional adder may be provided, if accepted by owner. The FSI device shall be mounted to the discharge tube.
         2) Formed suction intake (FSI) elbow shall be fabricated from material identical to the discharge tube and shall be able to be bolted to the tube.

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3) The FSI shall be supplied with the tube and shall be fabricated by the same Supplier.
4) The FSI shall be designed as per applicable HI standards by the Supplier and shall be compatible with the selected pump.
5) The FSI shall have anchor tabs or other device for anchoring the FSI. The FSI shall have adjustable support legs that shall be used to support the FSI and pump enclosure.
6) The FSI shall be designed to condition the incoming flow into a gradually accelerating and uniform profile as per applicable HI standards and without any swirl, vortex, eddies, cavitation and any other disturbances affecting pump performance.

G. Pump Protection:
   1. Pump protection system shall be provided to protect pumps against the following:
      a. Overload
      b. Overtemperature
      c. Moisture detection.
      d. Vibration sensor

H. Surface Preparation:
   1. Shall be in accordance with paragraph 2.5

I. Accessory Equipment:
   1. Provide the following accessories for each propeller pump and discharge tube assembly and FSI, if accepted by owner, as required for a complete installation.
      a. Anchor Bolts:
         1) Type 316 stainless steel.
         2) Ample size and strength for the purpose intended.
      b. Cable Holder and Support Grip: Type 316 stainless steel.

2.4 SPARE PARTS AND MAINTENANCE MATERIALS

A. Refer to Section 01 78 43 Spare Parts.

B. Furnish complete list of recommended spare parts, current price list and ordering information.

C. Provide two (2) Supplier’s repair kits which shall include as a minimum the following:
   1. One (1) set of seals, gaskets and O-rings.
   2. One (1) complete set of all bearings.
   3. One (1) set replacement case wear ring.
   4. One (1) set impeller wear ring if applicable.
   5. Six (6) sealing kits for discharge tube including all O-rings and seals.

D. Special tools required for normal operation and maintenance of the equipment shall be furnished with the equipment by the Supplier. Lifting devices required for use in conjunction with pump removal using an overhead bridge-crane shall be furnished.

2.5 PAINTING

A. Surface Preparation (Non-Stainless Steel):
   1. Remove all sharp edges, burrs, weld spatter, slag and weld accumulations by chipping, peening, grinding or otherwise blunting.

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2. Remove all oil and grease from metal surfaces in accordance with SSPC-SP1, and remove all film and greasy residue on the cleaned surface before abrasive blasting.
3. Neutralize welds with a chemical solvent that is compatible with the specified coating system.
4. Blast clean to SSPC-SP5, White Metal Blast Cleaning. Abrasive particle size and type shall be sufficient to produce a surface profile in accordance with recommendations of the Coating Manufacturer or the specified coating system to be applied.
5. Blast cleaned surfaces shall be cleaned prior to application of specified coatings by a combination of blowing with clean dry air, brushing/brooming and vacuuming.

B. Shop Coatings (Non-Stainless Steel):
1. All ferrous surfaces shall be primed and top coated in the shop.
2. Primer:
   a. Shop coat with a solvent-based inorganic zinc primer.
   b. Apply primer in a single coat at 1.5 to 3.5 mils dry film thickness (DFT).
   c. Primer shall be one of the following products:
      1) Ameron Dimetcote 21-9
      2) Tnemec 90-97 Tnene-Zinc
      3) Carboline Carbo Zinc 11HS
      4) Or Equal.
3. Top Coat:
   a. Provide two coats of high solids epoxy applied at 5 to 6 mils dry film thickness (DFT) per coat.
   b. Epoxy topcoat shall be one of the following products:
      1) Ameron Amercoat 385
      2) Tnemec Series 69 Hi-Build Epoxoline II
      3) Carboline 890
      4) Or Equal.
   c. One gallon of the epoxy topcoat shall be furnished with the equipment for touch up use by the Contractor.

C. Non-Stainless Steel, machined, polished, and nonferrous surfaces which are not to be painted shall be coated with rust-preventive compound, Houghton "Rust Veto 344", Rust-Oleum "R-9", or equal.

2.6 SHOP ASSEMBLY

A. The discharge tube, soleplate and FSI, if supplied, shall be assembled in the Supplier's plant to ensure the proper fitting and alignment of all parts. Prior to disassembly, all parts shall be match-marked to facilitate the correct assembly in the field.

PART 3 - EXECUTION

A. Start-up and testing shall be in accordance with Section 01 79 00 Testing Training Startup

B. A factory trained representative shall be provided for installation supervision, startup and test services, and operation and maintenance personnel training services.

C. Installation
   1. Installation shall be in complete accordance with Supplier’s instructions.

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2. Installation shall include furnishing and applying an initial supply of grease and oil, recommended by Supplier.
3. Pump installation shall place no strain on adjacent piping systems.

D. Pump Field Tests
1. Submit a field test plan to Engineer for approval prior to field testing.
2. Upon approval of field test plan, field testing shall be conducted by an experienced field test engineer and will be witnessed by Engineer and Owner. Before initially energizing the pump/motors, ensure that all pumping plant control, monitoring, and protective circuits have been successfully tested. This thorough electrical checkout procedure shall have follow a detailed step-by-step plan. The motor and other pumping unit elements undergoing tests should also be checked at this time.
3. Test complete assemblies for correct rotation, proper alignment and connection, and quiet operation.
4. Prepare and submit the field test report and an operation and maintenance manual for the completed system.

E. Performance Test
1. Refer Section 01 79 00, Testing, Training and Startup.
2. Refer Section 43 08 00, Commissioning of RAS Pump Equipment.
3. Each unit shall be given an operating test under load for a period as directed by the Engineer in addition to the performance requirements per paragraph 2.2.C. Conduct the tests to be witnessed by the Owner. During the tests, the operation of the pumping units shall be observed and measurement of noise (in accordance with HI), motor-bearing temperatures, voltage, current, vibration at the top of the discharge tube for each pump shall be recorded. Measured parameters shall be within the Supplier's published limits. Vibration limits shall not exceed those recommended by HI.
4. Prepare and submit the performance test report and an operation and maintenance manual for the completed system.

F. The installation and startup representative shall make three (3) visits to the site.
1. The first visit (minimum of 16 hours) shall be for assistance in the installation of equipment.
2. The second visit (minimum of 16 hours) shall be for checking the completed installation, functional testing, performance testing and start-up assistance for the system.
3. The third visit shall be for Instruction of Operations and Maintenance Personnel as per Section 01 79 00 Testing Training Startup.

++ END OF SECTION ++