



TOWN OF

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INVITATION FOR BIDS

**FORGE ROAD TANK AND SAUNDERSTOWN WATER TANK
MIXING PROJECT
DEPARTMENT OF WATER SUPPLY**

ADDENDUM #3

PLEASE REVIEW THE FOLLOWING CHANGES CAREFULLY:

- All relative dates for this Invitation for Bids remain the same.

SPECIFICATIONS

ADD - The following Sections are added:

01010	Summary of Work
01045	Cutting Coring and Patching
01050	Coordination
01070	Abbreviations & Symbols
01200	Project Meetings
01310	Construction Schedules
01320	Safety and Health Plan
01340	Submittals

Posted: November 23, 2022

01380	Construction Photographs
01400	Quality Control
01500	Temporary Facilities and Controls
01520	Site Security
01600	Delivery Storage and Handling

END OF ADDENDUM #3

SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Included: The installation of a PWM150 PAX tank mixers and control panels at both the Forge Road and Saunderstown water storage tanks. The major proposed work under this Contract includes:
 - 1. Installation of NSF-61 certified PAX mixer in the Forge Road Tank
 - 2. Installation of NSF-61 certified PAX mixer in the Saunderstown Tank
 - 3. Installation and connection of control panels at each tank
 - 4. Electrical service to each control panel
 - 5. Cleaning and removal of accumulated sediment in both tank prior to installation of mixing equipment.
- B. Related Work Specified Elsewhere:
 - 1. Coordination: Section 01050
 - 2. Quality Coordination Meetings: Various sections of the Specifications, including those outlined below.
 - a. 11228 Potable Water Tank Submersible Mixing System
- C. Removals, Relocations and Rearrangements
 - 1. Examine the existing site for the work of all trades which will influence the cost of the work under the bid. This work shall include removals, relocations and rearrangements which may interfere with, disturb or complicate the performance of the work under the bid involving systems, equipment and related service lines, which shall continue to be utilized as part of the finished project. The Contractor is responsible for all coordination in this regard.
 - 2. Provide in the bid a sufficient amount to include all removals, relocations, rearrangements and reconnections herein specified, necessary or required to provide approved operation and coordination of the combined new and existing systems and equipment.

PART 2 - PRODUCTS

Not Applicable.

PART 3 - EXECUTION

3.1 MAINTAIN EXISTING WORKS

- A. Existing Operations:
 - 1. The existing tanks provide daily water supply to the North Kingstown water system. The facilities will be taken off-line to complete the specified work. Work must be completed to not interfere with the delivery of safe drinking

water from the water storage tanks. All equipment install must be NSF62 certified and disinfected prior to installation.

2. Water samples shall be collected from the tank and tested for coliform bacteria and volatile organic chemicals (VOCs). Two sets of bacteria samples shall be required, one 24 hours after the first is collected.
3. Samples shall be submitted to a State of Rhode Island certified laboratory. If tests are negative the facilities may be placed into operation. If tests are positive, appropriate measures shall be taken to clean and re-disinfect the facilities until a negative coliform test is obtained.

B. Minimize Interference

1. The Contractor shall at all times conduct his operations so as to interfere as little as possible with existing works.
2. The tanks shall be taken out of service during and subsequent to the installation of equipment.
3. Equipment shall be install while water remains in each tank.
4. The Contractor shall not use the Owner's bathrooms or kitchen facilities.
5. The Contractor shall limit his personnel to the proposed work areas and limits of work.

3.2 CONSTRUCTION SEQUENCE

- A. Construction of the proposed equipment must be such that is will not disrupt the existing operations. The construction sequence phases and dates must allow the facility to maintain operation as specified in paragraph 3.1,B. Refer to paragraph 3.1,B,5. The Contractor may deviate from this construction sequencing as outlined in paragraph 3.2,C.
- B. The Contractor shall submit to the Engineer for review and acceptance a complete schedule of his proposed sequence of construction operations prior to commencing any work. This schedule shall include the Contractor's plans for doing the work.
- C. The Contractor must submit to the Engineer a written request to deviate from the above sequence, provided he can demonstrate to the Engineer that the water quality within the tank will not be adversely affected.
- D. The Contractor shall notify the Owner a minimum of seven (7) days in advance of any work which may affect or disrupt the operation of the existing facilities and two (2) calendar weeks in advance if it is determined necessary to remove the tanks from service. Once an interruption occurs the Contractor must maintain a workforce on-site to complete the work in the agreed upon time. Work shall be completed such that installation of the equipment and sampling occurs within a one-week time frame.
- E. Any work by the Contractor which requires the mechanical or electrical isolation of an existing piece of equipment, process or system shall be coordinated with the Engineer. Any and all isolation of electrical or mechanical equipment or process shall be accomplished in strict accordance with applicable codes and standards and the stricter of the Contractor's or Owner's lock-out/tag-out procedures.
- F. The Contractor shall have all materials and equipment on-site, and shall receive the Owner's approval, prior to initiating work which requires the water storage tanks to be off-line.
- G. Limited down-time of the existing water storage tanks is specified in this

specification. Should the Contractor fail to complete the Work within the down-time specified and should the Owner incur any actual costs directly or indirectly as a result thereof that would otherwise not have incurred had the Contractor successfully completed the Work within the specified down-time, the Contractor agrees to pay the Owner such actual incurred costs. Such costs may include, but not be limited to, Owner's actual costs of any additional maintenance and operations labor, material, equipment, and chemical costs, or any other related actual costs incurred in order for the Owner to keep the existing plant in normal operating condition.

- H. The Contractor shall not be eligible for additional compensation due to interruptions of the Contractor's schedule, in order for the Owner to respond to routine conditions.

END OF SECTION

SECTION 01045CUTTING, CORING AND PATCHINGPART 1 - GENERAL1.1 DESCRIPTION

- A. Work Included - This section establishes general requirements pertaining to cutting, excavating, coring, fitting, and patching of the Work required to:
 - 1. Make alterations to existing structures.
 - 2. Make the parts fit properly.
 - 3. Replace work not conforming to requirements of the Contract Documents.
 - 4. Contractor is responsible for all cutting, coring, and rough and finish patching. Contractor shall coordinate the work of any and all subcontracting trades performing the work.
 - 5. Contractor is responsible for reviewing with the Owner and Engineer and receiving permission to proceed prior to cutting and coring and patching.
- B. Related Work Specified Elsewhere:
 - 1. Pipe Sleeves and Seals are specified in Section 15092.
- C. Quality Assurance:
 - 1. Perform all cutting, coring and patching in strict accordance with pertinent requirements of these Specifications, and in the event no such requirements are determined, in conformance with the Engineer's written direction.
- D. Submittals:
 - 1. Provide a shop drawing submittal to include the following information:
 - a. Identification of coring and cutting subcontractor including: Company name, business address contact information, or if by Contractor indicated as such.
 - b. List of type of coring and cutting equipment proposed to be used with equipment cuts of the equipment.
 - c. Schedule indicating the: location of the core or cut, size and any potential obstructions or embedded conduits and wiring.
 - d. Key plan indicating the location of anticipated cores and cuts.
 - 2. Request for the Engineer's consent:
 - a. Prior to cutting which affects structural safety, submit written request to the Engineer for permission to proceed with cutting.
 - b. Should conditions of the work, or schedule, indicate a required change of materials or methods for cutting and patching, so notify the Engineer and secure his written permission prior to proceeding.

PART 2 - PRODUCTS2.1 MATERIALS

- A. Materials for replacement of work shall be equal to those of adjacent construction and shall comply with the pertinent sections of these Specifications.

- B. Concrete and grout for rough patching shall be as specified in Divisions 3 and 4.

PART 3 - EXECUTION

3.1 CONDITIONS

- A. Inspection:
1. Inspect existing conditions, including elements subject to movement or damage during cutting, excavating, coring, backfilling, and patching.
 2. After uncovering the work, inspect conditions affecting installation of new work.
- B. Discrepancies:
1. If uncovered conditions are not as anticipated, immediately notify the Engineer and secure needed directions.
 2. Do not proceed in areas of discrepancy until all such discrepancies have been fully resolved.

3.2 PREPARATION PRIOR TO CUTTING AND CORING

- A. Provide all required protection including, but not necessarily limited to, shoring, bracing and support to maintain structural integrity of the work.
- B. All cutting and coring shall be performed in such a manner as to limit the extent of patching.
- C. All holes cut through concrete and masonry walls or slabs shall be core drilled unless otherwise approved. No structural members shall be cut without approval of the Engineer and all such cutting shall be done in a manner directed by Engineer. No holes may be drilled in beams or other structural members without obtaining prior approval. All work shall be performed by mechanics skilled in this type of work.
- D. If holes are cored through floor slabs they shall be drilled from below.
- E. The Contractor shall determine from Owner's information, logical deduction and field testing if there are embedded electrical conduits, wiring or piping in the coring locations and shall readjust locations if possible to avoid coring through them. If concealed embedded conduit and piping are damaged, or severed, the coring contractor shall immediately notify the Contractor, Owner and RPR to determine impact of the damage and develop and implement a plan to repair the damage and reactive the lines.
- F. If embedded concealed conduit, wiring or pipe is damaged or severed and all reasonable steps were taken by the Contractor to identify embedded items, and alternate routing was investigated, the repair work will be compensated by the Owner through a Change Order. If it was reasonable to expect an embedded item could have been present at the location, the Contractor shall repair at no additional cost to the Owner.

3.3 CORING

- A. Coring shall be performed with an approved non-impact rotary tool with diamond core drills. Size of holes shall be suitable for pipe, conduit, sleeves, equipment or mechanical seals to be installed.

- B. All equipment shall conform to OSHA standards and specifications pertaining to plugs, noise and fume pollution, wiring and maintenance.
- C. Provide protection for existing equipment, utilities and critical areas against water or other damage caused by drilling operation.
- D. Slurry or tailings resulting from coring operations shall be vacuumed or otherwise removed from the area following drilling. Slurry or tailings shall not be allowed to enter floor drains.
- E. Work area (e.g., adjacent walls, floors, ceilings, pipes, conduits, etc.) shall be cleaned to remove splash residues from coring operation.

3.4 CUTTING

- A. Cutting shall be performed with a concrete wall saw and diamond saw blades of proper size.
- B. Provide for control of slurry generated by sawing operation on both sides of wall.
- C. When cutting a reinforced concrete wall, the cutting shall be done so as not to damage bond between the concrete and reinforcing steel left in structure. Cut shall be made so that steel neither protrudes nor is recessed from face of the cut.
- D. Adequate bracing of area to be cut shall be installed prior to start of cutting. Check area during sawing operations for partial cracking and provide additional bracing as required to prevent a partial release of cut area during sawing operations.
- E. Provide equipment of adequate size to remove cut panel.
- F. Slurry or tailings resulting from cutting operations shall be vacuumed or otherwise removed from the area following drilling. Slurry or tailings shall not be allowed to enter floor drains.
- G. Work area (e.g., adjacent walls, floors, ceilings, pipes, conduits, etc.) shall be cleaned to remove splash residues from cutting operation.

3.5 PERFORMANCE

- A. Perform all required excavating and backfilling as required under pertinent sections of these specifications. Perform cutting, coring and demolition by methods which will prevent damage to other portions of the work and will provide proper surfaces to receive installation of repair and/or new work. Perform fitting and adjustment of products to provide finished installation complying with the specified tolerances and finishes.
- B. Coring or cutting which exposes cut surfaces of reinforcing steel or structural steel shall be coated. Coating shall be 10 mil (dry film thickness) applied in two 5 mil (dry film thickness) coats of a single component moisture cured coal tar urethane or two part coal tar epoxy corrosion barrier. Alternately the exposed steel can be cut back two inches from the surface and a non-shrink grout applied over the steel flush to the concrete core or cut surface.
- C. Rough patching shall be such as to bring the cut or cored area flush with existing construction unless otherwise shown.
- D. Finish patching shall match existing surfaces as approved.

END OF SECTION

SECTION 01050

COORDINATION

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Contractor is required to work in close proximity to Owner's existing facilities. The Contractor, under this Contract, will be responsible for coordinating construction activities with Owner to ensure that services, facilities, and safe working conditions are maintained.
- B. Other Construction Contractors will be interfacing with this Contract and working within the work area and in the vicinity of this Contract. The Contractor, under this contract, shall act as Construction Coordinator and shall coordinate construction activities with other Contractors working for Owner.
- C. Any damage to existing structures, equipment and property, accepted equipment or structures, and property or work in progress by others; as a result of the Contractor's or his subcontractor's operations shall be made good by the Contractor at no additional cost to the Owner.

1.2 COORDINATION WITH OTHERS

- A. Town of North Kingstown
 - 1. Contractor shall coordinate access, egress, detours and traffic control, if required, at each site with the North Kingstown Police Department. The Contractor shall notify North Kingstown Police, Fire Department and Rescue Squad at least 24 hours in advance of any street closings or detours.
 - 2. Contractor shall coordinate all work on Town property with the Water Department personnel.
 - 3. The Contractor shall be responsible for coordinating and maintaining public services to all public and private properties.
- B. North Kingstown Water Department (NKWD)
 - 1. Contractor shall be responsible for coordinating all work in the vicinity of water lines with the NKWD. Contractor shall bear all costs for the NKWD's inspection requirements, temporary facilities, water main adjustments and other requirements.
- C. National Grid (NGRID):
 - 1. The Contractor shall be responsible for coordinating all work around NGRID facilities with NGRID and shall bear all costs of inspection requirements, temporary facilities relocation and other requirements.
- D. Verizon:
 - 1. The Contractor shall be responsible for coordinating and providing telephone service to all construction sites, both temporary and permanent. The Contractor shall also be responsible for coordinating all work around Verizon facilities with Verizon and shall bear all costs of inspection requirements, temporary facilities relocation and all other requirements.
- E. The Contractor shall provide the Resident Project Representative and Chief Operator

- a construction schedule indicating the times to perform the work required. The Contractor shall update the schedule when required and give the facility one week notice before the start of any work. The Contractor shall provide the facility personnel enough time to obtain materials and perform the work required of them. The Contractor shall daily communicate with the Resident Project Representative and Chief Operator concerning updating the schedule, job progress, delay or early starts that affect the treatment process, facility staffing, etc.
- F. Weekly coordination meetings shall be held between the Contractor, Owner's Chief Operator/Superintendent and the Resident Project Representative. This meeting shall cover the following:
1. Work to be completed the following week
 2. Project Schedule
 3. Shop Drawing and O&M issues
 4. Outstanding RFIs and Clarifications
 5. Change Orders and Field Orders
 6. Review of Record Drawing Information
 7. Discussion/Resolution of any old issues
 8. New issues discussion
 9. Contractor's Safety and Health Plan Updates
- G. The Contractor shall be responsible for explicitly notifying all equipment suppliers, electrical subcontractor, and the instrumentation supplier that they are required to coordinate their work with the instrumentation supplier by providing operating sequences, input/out specifications with wiring diagrams for all equipment, and that they shall review and comment on each other's shop drawings to insure that all interfaces are compatible.
- H. Snow Removal Coordination: The Contractor shall be responsible for all snow removal activities in construction and laydown areas onsite. NKWD staff will be responsible for snow removal on the main access road around the facility. Contractor is to coordinate closely with NKWD staff to maintain access to all areas of the facility to facilitate normal operations.

1.3 CONTRACTOR'S USE OF PREMISES

- A. Contractor shall have use of the premises within the limits shown on the Drawings and as defined in the General Conditions for the performance of the Work.
- B. Contractor work hours will be limited to 7:00AM to 4:00PM, Monday through Friday. Any work outside these hours will require permission of the Owner and adequate notice.
- C. Contractor shall maintain access and utilities to the NKWD tanks and all other adjacent facilities at all times. Whenever access is cut off in one direction, an alternative route for accessing all equipment and tankage must be maintained.
- D. Contractor shall coordinate delivery schedules, site access, and other construction-related activities with any other contractors that may be hired by the Owner during the course of construction.
- E. Contractor shall assume full responsibility for security of all of their, and their subcontractors, materials and equipment stored on the site.
- F. If directed by the Owner, Contractor shall move any stored items which interfere with

- operations of Owner.
- G. Obtain and pay for use of additional storage or work areas if needed to perform the Work.
 - H. Contractor shall not have access to Owners lunch room, toilet or locker room facilities at any time and shall provide all necessary facilities in accordance with Specification Section 01500.

END OF SECTION

SECTION 01070ABBREVIATIONS & SYMBOLSPART 1 - GENERAL1.1 DESCRIPTION

- A. Where any of the following abbreviations are used in these Specifications, they shall have the meaning set forth opposite each.

AASHTO	American Association of State Highway and Transportation Officials
AC	Alternating Current
ACI	American Concrete Institute
ACP	Asbestos Cement Pipe
AGA	American Gas Association
AIC	Ampere Interrupting Capacity
AGMA	American Gear Manufacturers Association
AIEE(IEEE)	American Institute of Electrical Engineers (Institute of Electrical and Electronics Engineers, Inc.)
AISC	American Institute of Steel Construction
amp	Ampere 125-16
Amer. Std.	American Standard for Cast Iron Pipe Flanges and Flanged Fittings, Class 125 (ASA B16 11960)
ANSI	American National Standards Institute
API	American Petroleum Institute
ASA	American Standards Association
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWG	American or Brown and Sharpe Wire Gage
AWWA	American Water Works Association
BOD	Biochemical Oxygen Demand
c.f.	Cubic Foot
c.f.m.	Cubic Foot Per Minute
c.f.s.	Cubic Foot Per Second
CI	Cast Iron
CIPRA	Cast Iron Pipe Research Association
CSI	Construction Specifications Institute
c.y.	Cubic Yards
DC	Direct Current
DEP	Department of Environmental Protection
DI	Ductile Iron
DOT	Department of Transportation
EDR	Equivalent Directional Radiation

EPA	U.S. Environmental Protection Agency
fps	Feet Per Second
ft.	Feet
gal.	Gallons
gpd	Gallons Per Day
gpm	Gallons Per Minute
HP	Horsepower
IBR	Institute of Boiler and Radiator Manufacturers
in.	Inches
inter.	Interlock
ISA	Instrument Society of America
kva	Kilovolt-ampere
kw	Kilowatt
lb.	Pound
max.	Maximum
MCB	Master Car Builders
MGD	Million Gallons Per Day
Min.	Minimum
NBS	National Bureau of Standards
NEC	National Electrical Code, Latest Edition
NEMA	National Electrical Manufacturers Association
NEWWA	New England Water Works Association
NPT	National Pipe Thread
OS&Y	Outside Screw and Yoke
PCA	Portland Cement Association
ppm	Parts Per Million
%	Percent
psi	Pounds Per Square Inch
psig	Pounds Per Square Inch Gage
PVC	Polyvinyl Chloride
rpm	Revolutions Per Minute
RUS	Rural Utility Service
s.f.	Square Foot
STL. W.G.	U.S. Steel Wire, Washburn and Moen, American Steel and Wire Cos., or Roebling Gage
s.y.	Square yard
TDH	Total Dynamic Head
USAS	Standards of the United States of America Standards Institute (formerly American Standards Association)
USS GAGE	United States Standard Gage
VC	Vitrified Clay
WSP	Working Steam Pressure
Fed. Spec.	Federal Specifications issued by the Federal Supply Service of the General Service Administration, Washington, D.C.

END OF SECTION

SECTION 01200

PROJECT MEETINGS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Included: To enable orderly review during progress of the work, and to provide for systematic discussion of problems, the Engineer will conduct project meetings throughout the construction period.
- B. Related work described elsewhere: The Contractor's relations with his subcontractors and materials suppliers and discussions relative thereto, are the Contractor's responsibility and are not part of project meetings content.

1.2 QUALITY ASSURANCE

- A. Persons designated by the Contractor to attend and participate in the project meetings shall have all required authority to commit the Contractor to solutions agreed upon in the project meetings.

1.3 SUBMITTALS

- A. Agenda items: To the maximum extent practicable, advise the Engineer at least 24 hours in advance of project meetings regarding all items to be added to the agenda.
- B. Minutes: The Engineer will compile minutes of each project meeting and will furnish a copy to the Contractor. The Contractor may make and distribute such other copies as he wishes.

PART 2 - PRODUCTS

(No products are required in this Section.)

PART 3 - EXECUTION

3.1 MEETING SCHEDULE

- A. Except as noted below for Preconstruction Meeting, project meetings will be held monthly. Coordinate as necessary to establish mutually acceptable schedule for meetings.

3.2 MEETING LOCATION

- A. Meetings will be held at the job site, unless the Owner and/or Engineer determine that virtual meetings are applicable and appropriate for any reason (e.g., COVID, Safety and Health Plan, etc.).
 - 1. If meetings are required by Owner/Engineer to be held virtually, Engineer will host the meetings via Microsoft Teams. All required meeting attendees are responsible for providing hardware necessary to view, share, be heard and hear content of the meeting.

3.3 PRECONSTRUCTION MEETING

- A. Preconstruction meeting will be scheduled within twenty days after the Effective Date of the Agreement, but before the Contractor starts work at the site. Provide attendance by authorized representatives of the Contractor and all major subcontractors. The Engineer will advise other interested parties and request their attendance.
- B. Minimum agenda: Distribute data on, and discuss:
 - 1. Identification of key project personnel for Owner, Engineer, Contractor, funding/regulatory Agencies.
 - 2. Responsibilities of Owner, Engineer, Resident Project Representative, Contractor.
 - 3. Channels and procedures for communications.
 - 4. Construction schedule, including sequence of critical work.
 - 5. Easements, permits.
 - 6. Contract Documents, including distribution of required copies of original documents and revisions.
 - 7. Processing of Shop Drawings and other data submitted to the Engineer for review.
 - 8. Processing of field decisions and Change Orders.
 - 9. Rules and regulations governing performance of the Work, including funding/regulatory Agency requirements.
 - 10. Procedures for safety and first aid, security, quality control, housekeeping, and other related matters.

3.4 PROJECT MEETINGS

- A. Attendance: To the maximum extent practicable, assign the same person or persons to represent the Contractor at project meetings throughout progress of the Work. The Superintendent shall attend. Subcontractors, materials suppliers, and others may be invited to attend those project meetings in which their aspects of the Work are involved.
- B. Minimum agenda:
 - 1. Review, revise as necessary, and approved minutes of previous meeting.
 - 2. Review progress of the Work since last meeting, including status of submittals for approval.
 - 3. Review schedule of work to be accomplished prior to next meeting.
 - 4. Discuss monthly partial payment request.
 - 5. Review status of change order requests and Work Directive Changes.
 - 6. Identify problems which impede planned progress.
 - 7. Develop corrective measures and procedures to regain planned schedule.
 - 8. Complete other current business.

END OF SECTION

SECTION 01310

CONSTRUCTION SCHEDULES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Included: Within ten (10) days after the effective date of the Agreement between Owner and Contractor submit to the Engineer an estimated progress schedule as specified herein.
- B. Form of Schedules:
 - 1. Narrative: Completely describe the construction methods to be employed.
 - 2. Network Analysis System:
 - a. Provide a separate horizontal schedule line for each trade or operation and show concurrent and preceding activities.
 - b. Present in chronological order the beginning of each trade or operation showing duration and float time.
 - c. Scale: Identify key dates and allow space for updating and revision.
 - 3. Mathematical Analysis:
 - a. A mathematical analysis shall accompany the network diagram. A computer printout will be acceptable.
 - b. Information shall be included on activity numbers, duration, early start, late start, etc. and float times.
- C. Content of Schedules:
 - 1. Provide complete sequence of construction by activity:
 - a. Shop Drawings, Project Data and Samples:
 - i. Submittal dates.
 - ii. Dates reviewed copies will be required.
 - b. Decision dates for:
 - i. Products specified by allowances.
 - ii. Selection of finishes.
 - c. Estimated product procurement and delivery dates.
 - d. Dates for beginning and completion of each element of construction.
 - 2. Identify work of separate phases and logically grouped activities.
 - 3. Show the projected percentage of completion for each item of work as of the first day of each month.
 - 4. Provide separate sub-schedules, if requested by the Engineer, showing submittals, review times, procurement schedules, and delivery dates.
 - 5. Schedule sheets shall be printed in color on 24"x36" paper, unless a smaller size paper is allowed by the Engineer.
- D. Updating:
 - 1. Show all changes occurring since previous submission.
 - 2. Indicate progress of each activity, show completion dates.
 - 3. Include:
 - a. Major changes in scope.
 - b. Activities modified since previous updating.

- c. Revised projections due to changes.
 - d. Other identifiable changes.
- 4. Provide narrative report, including:
 - a. Discussion of problem areas, including current and anticipated delay factors.
 - b. Corrective action taken, or proposed.
 - c. Description of revisions that may affect schedules.

1.2 SUBMITTALS

- A. Submit updated schedules with each progress payment request.
- B. Submit 4 copies of initial and updated schedules to the Engineer.

END OF SECTION

SECTION 01320

SAFETY AND HEALTH PLAN

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. The Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work, as outlined herein and in the General and Special Conditions of the Contract Documents. Within 10 days after the effective date of the Agreement between Owner and Contractor, submit to the Engineer a Safety and Health Plan as specified herein. Refer to submittals section below.
2. Contractor shall comply with all applicable Laws and Regulations related to the safety of persons or property, or for the protection of persons or property from damage, injury, illness, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.
3. Contractor shall designate a qualified and experienced safety representative (OSHA defined "Competent Person") at the site whose duties and responsibilities shall be the prevention of accidents and maintaining and supervising of safety precautions and programs, including a "Job Hazards Analysis".
4. The Contractor shall be solely responsible to provide all labor, equipment, and utilities sufficient to ensure no construction noise, particulates, or odors, are allowed to accumulate to levels which adversely affect health or work in, or near the construction area.

B. Content of Safety and Health Plan:

1. Prepare complete safety and health plan in accordance with the requirements of CFR Title 29 Part 1926 - Safety and Health Regulations for Construction.
 - a. Provide documentation that Contractor's hazardous communication program is up to date.
 - b. Provide documentation that Contractor's safety training is up to date.
 - c. Prepare a project specific Safety and Health Plan addressing construction safety and protection, including but not limited to excavations, fall protection and egress, as well as provisions for construction in hazardous environmental conditions at the wastewater treatment facility. The hazardous environmental conditions at the wastewater treatment facility include, but are not limited to, confined space entry, electrically-classified spaces, chemical storage and handling areas, biological hazards, to name a few.
2. Safety provisions for confined space entry shall follow the requirements of CFR Title 29 Part 1926, Subpart AA – Confined Spaces in Construction and will be incorporated into the Safety and Health Plan.
3. The Owner has provided Table 1 at the end of this section listing chemical storage and handling spaces where the Contractor may be required to carry out

work tasks. The Contractor is required to perform a site evaluation to identify all hazards and potential hazards in work areas whether included in Table 1 or not, prior to control of site. Contractor shall ensure that all employees and subcontractors working in these areas have received appropriate training and are properly equipped in accordance with Contractor's Safety and Health Plan.

- C. Updating:
 - 1. Contractor shall be responsible for updating the Safety and Health Plan as appropriate throughout the course of the construction period.

1.2 SUBMITTALS

- A. Submit the Contractor's site-specific Safety and Health Plan to the Engineer, in accordance with Section 01340. Submit hardcopy submittals, if required.
- B. Submit updated Safety and Health Plans as necessary during the course of the project.
- C. The Safety and Health Plan is provided "for information only" to inform the Owner, Engineer and Resident Project Representative of the project specific safety program requirements; however, if the Safety and Health Plan incomplete (e.g., missing elements relevant to the project work), inadequate (e.g., outdated qualifications) or not project-specific, it will be returned "revise and resubmit". Delays related to an incomplete Safety and Health Plan are the responsibility of the Contractor.
- D. The Contractor will overview the plan with the Owner (and staff), Engineer (and Resident Project Representative) prior to work beginning at the project site, and subsequently when/if the safety plan is updated.
- E. Contractor's most current Safety and Health Plan shall be available at the construction site throughout the construction project.

1.3 ON-SITE COORDINATION MEETINGS

- A. Contractor shall review key aspects of Safety and Health Plan at the Pre-Construction Meeting, and subsequent on-site safety informational meeting.
- B. Contractor shall report to Engineer and Owner at each progress meeting concerning compliance with the Safety and Health Plan for the most recent construction period and new considerations and requirements for the upcoming period.
- C. Contractor shall hold weekly on-site coordination meetings with Resident Project Representative and Owner to ensure that Owner's staff is aware of key Safety and Health Plan requirements of the current phase of construction.

1.4 OWNER'S CONFINED SPACE ENTRY PROGRAM INFORMATION

- A. A copy of the Owner's Confined Space Entry Program is available for viewing at the facility and is not included herein.

END OF SECTION

SECTION 01340SUBMITTALSPART 1 - GENERAL1.1 DESCRIPTION

- A. Work Included:
 - 1. Submit all shop drawings, operations and maintenance manuals, Manufacturers' certificates, project data, and samples required by the Specifications.
- B. Related Work Specified Elsewhere:
 - 1. Construction Schedules: Section 01310
 - 2. General Conditions
- C. Submittals: This project shall utilize:
 - 1. Submittals – Electronic via Email/FTP with Hard Copy for Record
 - a. The Contractor shall submit to the Engineer an electronic submittal of shop drawings and O&M Manuals in portable document format (PDF) transmitted via email or file transfer protocol (FTP). The Engineer shall return an electronic PDF of the submittal review comments to the Contractor for distribution to subcontractors, suppliers and manufacturers. The electronic submittals shall serve as the electronic record of the project.
 - b. In addition, completed shop drawings and completed operations and maintenance (O&M) manuals shall be provided in hard copy (paper) format, for the record, in accordance with the following requirements.
 - i. Shop drawings and O&M manuals shall be considered “completed” once an action code of “0” or “1” has been attained, as specified below, unless otherwise directed by the Engineer.
 - ii. Once completed, the Contractor shall provide three hard copy sets (for Owner, Engineer and Resident Project Representative, respectively).
 - iii. Hard copy submittals shall be updated on a monthly basis, for those submittals completed during the preceding month.

1.2 SHOP DRAWINGS

- A. Shop Drawings are required for each and every element of the work.
- B. Shop Drawings are generally defined as all fabrication and erection drawings, diagrams, brochures, schedules, bills of material, manufacturers data, spare parts lists, and other data prepared by the Contractor, his subcontractors, suppliers, or manufacturers which illustrate the manufacturer, fabrication, construction, and installation of the work, or a portion thereof.
- C. The Contractor shall provide a completed Contractor Submittal Certification Form (copy provided for Contractor's use at the end of this Specification Section) which shall be attached to every copy of every shop drawing and signed by the Contractor and Manufacturer (where applicable). Shop Drawings shall show the principal dimensions, weight, structural and operating features, space required, clearances, type and/or brand of finish or shop coat, grease fittings, etc., depending on the subject of the drawing. When it is customary to do so, when the dimensions are of particular importance, or when so specified, the drawings shall be certified by the manufacturer or fabricator as correct for the work.

1. Each shop drawing submittal shall include a complete copy of the relevant specification section markup up to reflect “compliance” or “deviation” on an item-by-item basis.
- D. Shop Drawings shall be submitted as a complete package by specification section, unless otherwise reviewed and approved by the Engineer. It is the intent that all information, materials and samples associated with each specification section be included as a single submittal for the Engineer's review. Any deviation from this requirement, shall be requested in writing with an anticipated shop drawing breakdown/schedule prior to any associated submittal. An exception to this requirement are shop drawings for reinforcing steel, miscellaneous metals and structural steel, which shall be submitted separately for each structure unless otherwise permitted by the Engineer.
- E. The Contractor shall be responsible for the prompt and timely submittal of all shop and working drawings so that there shall be no delay to the work due to the absence of such drawings.
- F. No material or equipment shall be purchased or fabricated especially for the Contract until the required shop and working drawings have been submitted as hereinabove provided and reviewed for conformance to the Contract requirements. All such materials and equipment and the work involved in their installation or incorporation into the Work shall then be as shown in and represented by said drawings.
- G. Until the necessary review has been made, the Contractor shall not proceed with any portion of the work (such as the construction of foundations), the design or details of which are dependent upon the design or details of work, materials, equipment or other features for which review is required.
- H. All shop and working drawings shall be submitted to the Engineer by and/or through the Contractor, who shall be responsible for obtaining shop and working drawings from his subcontractors and returning reviewed drawings to them. Shop drawings shall be formatted to standard paper sizes to enable the Owner to maintain a permanent record of the submissions. Approved standard sizes shall be: (a) 24 inches by 36 inches; (b) 11 inches by 17 inches, and (c) 11 inches by 8-1/2 inches. Provision shall be made in preparing the shop drawings to provide a binding margin on the left hand side of the sheet. Shop drawings submitted other than as specified herein may be returned for resubmittal without being reviewed.
- I. Only drawings which have been checked and corrected by the fabricator should be submitted to the Contractor by his subcontractors and vendors. Prior to submitting drawings to the Engineer, the Contractor shall check thoroughly all such drawings to satisfy himself that the subject matter thereof conforms to the Drawings and Specifications in all respects. All drawings which are correct shall be marked with the date, checker's name, and indication of the Contractor's approval, and then shall be submitted to the Engineer.
- J. If a shop drawing shows any deviation from the Contract requirements, the Contractor shall make specific mention of the deviations in the transmittal. Shop Drawings that contain significant deviations that are not brought to the attention of the Engineer may be subject to rejection.
- K. Should the Contractor submit equipment that requires modifications to the structures, piping, electrical conduit, wires and appurtenances, layout, etc., detailed on the Drawings, he shall also submit details of the proposed modifications. If such

equipment and modifications are accepted, the Contractor, at no additional cost to the Owner, shall do all work necessary to make such modifications.

- L. A maximum of two submissions of each Shop Drawing will be reviewed, checked, and commented upon without charge to the Contractor. Any additional submissions which are ordered by the Engineer to fulfill the stipulations of the Drawings and Specifications, and which are required by virtue of the Contractor's neglect or failure to comply with the requirements of the Drawings and Specifications, or to make those modifications and/or corrections ordered by the Engineer in the review of the first two submissions of each Shop Drawing, will be reviewed and checked as deemed necessary by the Engineer, and the cost of such review and checking, as determined by the Owner, and based upon Engineer's documentation of time and rates established for additional services in the Owner-Engineer Agreement for this Project, may be deducted from the Contractor to make all modifications and/or corrections as may be required by the Engineer in an accurate, complete, and timely fashion. Resubmittals for the sole purpose of providing written responses to review comments will not be considered a resubmittal counting towards the two submission limit.
- M. Shop Drawings that include drawings or other material that is illegible or too small may be returned without review.

1.3 SAMPLES

- A. The Contractor shall submit samples when requested by the Engineer to establish conformance with the specifications, and as necessary to define color selections available. Submittals of "samples" shall be documented through the electronic submittal process by including a photograph of the item(s) and indicating the date the sample was mailed and/or delivered.

1.4 OPERATION AND MAINTENANCE MANUALS

- A. Operation and Maintenance (O&M) Manuals are required for certain elements of the project, as specified herein.
- B. The Contractor shall provide a completed Operation and Maintenance Manual Certification Form (copy provided for Contractor's use at the end of this Specification Section) which shall be attached to every copy of every Manual and signed by the Contractor and Manufacturer.
- C. Each hard copy of an O&M Manual shall be provided in a stand-alone binder or shall be suitable for insertion into a 3-ring binder. Include the General Contractor's and Manufacturer's representative's contact information on the front cover. O&M manuals must be appropriate for the project and customized for the project. If a Manufacturer's standard O&M manual is included in the submittal, all non-applicable content must be removed or crossed out.
- D. O&M Manuals shall contain the following operational information:
 - 1. Safety Precautions: List personnel hazards, equipment or product safety precautions for all operating conditions.
 - 2. Operator Prestart: Include all procedures required to set up and prepare each system, equipment or component for use.
 - 3. Startup Procedures: Provide a narrative description for all startup operating procedures, include all control sequences.
 - 4. Shutdown Procedures: Provide a narrative description for all shutdown operating procedures, include all control sequences.

5. Post-Shutdown Procedures: Provide a narrative description for all post-shutdown operating procedures, include all control sequences.
 6. Normal Operating Procedures: Provide a narrative description of normal operating procedures. Include control diagrams with data to explain operation and control of systems and specific equipment.
 7. Emergency Operations: Include emergency procedures for equipment malfunctions to permit a short period of continued operation or to shut down the equipment to prevent further damage to systems and equipment. Include emergency shutdown instructions for fire, explosion, spills, or other foreseeable contingencies. Provide guidance on emergency operations of all utility systems including valve locations and portions of systems controlled.
 8. Operator Service Requirements: Include instructions for services to be performed by the operator such as lubrication, adjustment, inspection, alignment, spare parts installation and gage reading or recording.
 9. Environmental Conditions: Include a list of environmental conditions (temperature, humidity, and other relevant data) which are best suited for each product or piece of equipment and describe conditions under which the equipment should not be allowed to run.
- E. O&M Manuals shall contain the following maintenance information:
1. Lubrication Data: Include a table showing recommended lubricants for specific temperature ranges and applications. Also, include charts with a schematic diagram of the equipment showing lubrication points, recommended types and grades of lubricants, capacities and a lubrication schedule showing service interval frequency
 2. Preventative Maintenance Plan: Include the manufacturer's schedule for routine preventive maintenance, inspections, tests and adjustments required to ensure proper and economical operation as well as to ensure minimization of corrective maintenance and repair. Provide the manufacturer's projection of preventive maintenance work-hours on a daily, weekly, monthly, and annual basis including craft requirements by type of craft. For periodic calibrations, provide the manufacturer's specified frequency and procedures for each separate operation.
 3. Troubleshooting Guides: Include recommendations on procedures and instructions for correcting problems and making repairs. Provide step-by-step procedures to promptly isolate the cause of typical malfunctions. Describe clearly why the checkout is performed and what conditions are to be sought. Identify tests or inspections and test equipment required to determine whether parts and equipment may be reused or require replacement.
 4. Wiring and Control Diagrams: Provide Wiring diagrams and control diagrams. All diagrams shall be point-to-point drawings of wiring and control circuits including factory-field interfaces. Provide a complete and accurate depiction of the actual job specific wiring and control work. On diagrams, number electrical and electronic wiring and pneumatic control tubing and the terminals for each type, identically to the actual installation numbering.
 5. Maintenance and Repair Procedures: Include instructions and list the tools required to restore products and/or equipment to proper conditions or operating standards.

6. Removal and Replacement Instructions: Include step-by-step procedures, list required tools/supplies for removal, replacement, disassembly, and assembly of components, assemblies, subassemblies, accessories, and attachments. Provide tolerances, dimensions, settings and adjustments required. Instructions shall include a combination of text and illustrations.
 7. Spare Parts and Supply Lists: Include lists of spare parts and supplies required for maintenance and repair to ensure continued service or operation without unreasonable delays. Special consideration shall be required for facilities at remote locations. List spare parts and supplies that have a long lead times to obtain.
 8. Corrective Maintenance Work Hours: Include the manufacturer's projection of corrective maintenance work-hours including craft requirements by type of craft. Corrective maintenance that requires participation of the equipment manufacturer shall be identified and tabulated separately.
- F. O&M Manuals shall contain the following additional information:
1. Parts Identification: Provide identification and coverage for all parts of each component, assembly, subassembly, and accessory of the end items subject to replacement. Include special hardware requirements, such as requirements to use high-strength bolts and nuts. Identify parts by make, model, serial number, and source of supply to allow reordering without further identification. Provide clear and legible illustrations, drawings, and exploded views to enable easy identification of the items.
 - a. When illustrations omit a part number and description, both the illustration and a separate listing shall show the index, reference, or key number which shall cross-reference the illustrated part to the listed part. Parts shown in the listings shall be grouped by components, assemblies, and subassemblies. Parts data may cover more than one model or series of equipment, components, assemblies, subassemblies, attachments, or accessories, such as a master parts catalog, in accordance with the manufacturer's standard commercial practice.
 2. Warranty Information: List and explain the various warranties and include the servicing and technical precautions prescribed by the manufacturers or contract documents to keep warranties in force. Include warranty information for all primary components included in product systems.
 3. Personnel Training Requirements: Provide information available from the manufacturers to use in training designated personnel to operate and maintain the equipment and systems properly.
 4. Testing and Special Tools: Include information on test equipment required to perform specified tests and on special tools needed for the operation, maintenance, and repair of components.
 5. Contractor Information: Provide a list that includes the name, address, and telephone number of the General Contractor and each subcontractor installing the respective product or equipment. Include local representatives and service organizations most convenient to the project site. Provide the name, address, and telephone number of the product or equipment manufacturers.

6. Written confirmation from the manufacturer that the Contractor has coordinated the equipment One Year Service Call in accordance with specification Section 01800, par. 1.1, A, 2.

1.5 MANUFACTURER'S CERTIFICATES

- A. Prior to accepting the installation, the Contractor shall submit manufacturer's certificates for each item specified.
- B. Such manufacturer's certificates shall state that the equipment has been installed under either the continuous or periodic supervision of the manufacturer's authorized representative, that it has been adjusted and initially operated in the presence of the manufacturer's authorized representative, and that it is operating in accordance with the specified requirements, to the manufacturer's satisfaction. All costs for meeting this requirement shall be included in the Contractor's bid price.

1.6 SUBMISSION REQUIREMENTS

- A. Accompany submittals with a transmittal cover sheet, containing:
 1. Date.
 2. Project title and number.
 3. Contractor's name and address.
 4. The sequential shop drawing number for each shop drawing, project data and sample submitted shall be:
 - a. Specification Section number followed by a dash and then a sequential number beginning with 01 (e.g., 16000-01).
 - b. Under limited situations when additional different pieces of equipment are submitted under the same specification section, those submittals shall be numbered sequentially (e.g. 05500-01, 05500-02, 05500-03, etc.).
 - c. Resubmittals shall include an alphabetic suffix after the corresponding sequential number (e.g., 16000-01A).
 - d. O&M submittals shall be numbered with the Specification Section number followed by a dash, the letters "OM", another dash, and then a sequential number beginning with 01 (e.g. 16000-OM-01). Resubmittals of O&Ms shall include an alphabetic suffix after the corresponding sequential number (e.g. 16000-OM-01A).
 5. Notification of deviations from Contract Documents.
 6. Other pertinent data.
- B. A completed Contractor Submittal Certification Form shall be attached to each hardcopy and electronic PDF of each shop drawing and must include:
 1. Project name
 2. Specification Section and sequential number with alphabet suffix for resubmittal
 3. Description
 4. Identification of deviations from Contract Documents.
 5. Contractor's stamp, initialed or signed, certifying review of the submittal, verification of field measurements and compliance with Contract Documents.
 6. Where specified or when requested by the Engineer, manufacturer's certification that equipment, accessories and shop painting meet or exceed the Specification requirements.
 7. Where specified, manufacturer's guarantee.

C. Additional Requirements for Electronic Submittals:

1. Each individual shop drawing or O&M submittal shall be contained in one PDF.
2. The first page of the PDF shall be the Contractor Submittal Certification Form as described above.
3. The electronic PDF shall be **exactly** as submitted in the hardcopy.
4. The electronic PDF shall include an electronic table of contents that is bookmarked for each section of the submittal.
5. The electronic PDF shall be configured such that is fully searchable.
6. PDF versions of 24x36 drawings shall be converted to 24 x 36 PDFs so as not to lose the clarity of the original drawing.
7. Electronic PDF submittals that are not submitted in accordance with the requirements stated above will not be reviewed by the Engineer.
8. Electronic submittals shall be transmitted via the protocol established in Part 1 above.

1.7 RESUBMISSION REQUIREMENTS

- A. Revise initial submittals as required and resubmit as specified for initial submittal.
- B. Indicate on submittals any changes which have been made other than those required by Engineer. All renumbering of shop drawings, relabeling of individual pieces or assemblies or relocating of pieces or assemblies to other Drawings within the submittal shall be clearly brought to the attention of the Engineer. If relabeling of individual pieces or assemblies has taken place, the labels from the previous submittal shall be indicated to assist in comparing the original and resubmitted shop drawing.
- C. All resubmittals shall include a summary of the previous submittal review comments with the vendors' written response as to how the previous comments were addressed.

1.8 ENGINEER'S REVIEW

- A. The review of shop and working drawings hereunder will be general only, and nothing contained in this specification shall relieve, diminish or alter in any respect the responsibilities of the Contractor under the Contract Documents and in particular, the specific responsibility of the Contractor for details of design and dimensions necessary for proper fitting and construction of the work as required by the Contract and for achieving the result and performance specified thereunder.
- B. The Engineer's review comments will be summarized on a Submittal Review Form, which includes an action code. A description of each action code is provided below.
 1. No Exceptions Taken (Status 0 on shop drawing log). The shop drawing complies with the Contract Document requirements. No changes or further information are required. Where appropriate, the submittal review form will be used to alert the Contractor, Owner and Field personnel of remaining items within that specification section that still needs to be submitted.
 2. Make Corrections Indicated (Status 1 on shop drawing log). The shop drawing complies with the Contract Document requirements except for minor changes, as indicated. Engineer requires that all comments will be addressed by the Contractor, unless otherwise notified in writing prior to execution of the relevant work.
 3. Conditional to Remarks (Status 2 on shop drawing log). The shop drawing potentially complies with the Contract Document requirements, contingent upon satisfactory resolution of review comments. Remarks will explicitly list

what information needs to be resubmitted. Resubmittal from the Contractor should include a cover letter or summary which indicates how each review comment has been addressed. **This action code will not be used, or will be sparingly used, for electronic submittals.**

4. Revise and Resubmit (Status 3 on shop drawing log). The shop drawing does not comply with the Contract Document requirement as submitted but may with changes indicated and/or submission of additional information. The entire package must be resubmitted with the necessary information and a cover letter which indicates how each review comment has been addressed and where to find the information in the resubmittal.
5. Rejected (Status 4 on shop drawing log). The shop drawing does not comply with the Contract Document requirements, for the reasons indicated in the remarks, and is unacceptable.
6. For Information Only (Status 5 on shop drawing log). The shop drawing review was for information only.
7. In Review (Status 6 on shop drawing log). The shop drawing is currently under review.

CONTRACTOR SUBMITTAL CERTIFICATION FORM

PROJECT: _____ CONTRACTOR'S PROJ. NO: _____

CONTRACTOR: _____ ENGINEER'S PROJ. NO: _____

ENGINEER: _____

SHOP
DRAWING
NUMBER:SPECIFICATION SECTION
OR DRAWING NO:SEQUENTIAL NUMBER
(& ALPHA SUFFIX FOR
RESUBMITTAL)

DESCRIPTION: _____

MANUFACTURER: _____

The above referenced submittal has been reviewed by the undersigned and I/we certify that the material and/or equipment meets or exceeds the project specification requirements with

☐ NO DEVIATIONS

or

☐ A COMPLETE LIST OF DEVIATIONS AS FOLLOWS^a:

By: _____ By: _____

Contractor^bManufacturer^c

Date: _____ Date: _____

a Any deviations not brought to the attention of the Engineer for review and concurrence shall be the responsibility of the Contractor to correct, if so directed.

b Required on all submittals

c When required by specifications Page ____ of ____

General Contractor's Stamp

OPERATIONS AND MAINTENANCE MANUAL CERTIFICATION FORM

PROJECT: _____ CONTRACTOR'S PROJ. NO: _____

CONTRACTOR: _____ ENGINEER'S PROJ. NO: _____

ENGINEER: _____

O&M NUMBER:	_____	- OM -	_____
	SPECIFICATION SECTION OR DRAWING NO:		SEQUENTIAL NUMBER (& ALPHA SUFFIX FOR RESUBMITTAL)

DESCRIPTION: _____

MANUFACTURER: _____

The above referenced operations and maintenance manual has been reviewed by the undersigned and I/we certify that the manual is customized as needed for this project, is suitable for mounting in a 3-ring binder, and contains the following items:

- | | |
|--|--|
| <input type="checkbox"/> Table of Contents | <input type="checkbox"/> Project-Related Design Data |
| <input type="checkbox"/> Contractor and Manufacturer Contact Information | <input type="checkbox"/> Serial Numbers |
| <input type="checkbox"/> Preventative Maintenance Schedule and Summary | <input type="checkbox"/> Maintenance and Repair Procedures |
| <input type="checkbox"/> Removal and Replacement Instructions | <input type="checkbox"/> Wiring and Control Diagrams |
| <input type="checkbox"/> Lubrication Schedule | <input type="checkbox"/> Equipment Drawings & Schematics |
| <input type="checkbox"/> Troubleshooting Information | <input type="checkbox"/> Equipment Performance Curves |
| <input type="checkbox"/> Warranty Information | <input type="checkbox"/> Parts and Service Contact Information |
| <input type="checkbox"/> Rebuild Information for All Components | <input type="checkbox"/> Manufacturer's Contact Information |
| <input type="checkbox"/> Startup, Operation and Shutdown Procedures | <input type="checkbox"/> Emergency Operations Plan |
| <input type="checkbox"/> Normal and Emergency Operations | <input type="checkbox"/> List of All Component Part Numbers |
| <input type="checkbox"/> Safety Procedures and Precautions | <input type="checkbox"/> List of Spare Parts Supplied |
| <input type="checkbox"/> Shop Drawings corrected to As-Built Conditions | <input type="checkbox"/> Testing Equipment & Special Tools |
| <input type="checkbox"/> Personnel Training Requirements | <input type="checkbox"/> Other System Specific Information |

By: _____ By: _____

Contractor^a

Manufacturer^b

Date: _____ Date: _____

^a Contact information shall include name, address and telephone number.

^b Required on all Operation and Maintenance Manuals.

^c When required by Specifications. Page ____ of ____

General Contractor's Stamp

PROCESS EQUIPMENT MANUFACTURER SUBMITTAL CERTIFICATION
(Divisions 11 and 14)

Owner: _____ Date: _____

Project: _____

Contractor: _____

Equipment Manufacturer: _____

Equipment: _____

As an authorized representative of the equipment manufacturer, the undersigned certifies that the equipment listed above conforms to the requirements of Section 11000, Part 1.3.K. The undersigned authorized representative of the manufacturer further certifies that the equipment manufacturer or supplier has: reviewed the Construction Documents, the intended installation by the Contractor, and the intended functional and operational conditions; determined all conditions to be acceptable; and found no conditions which would cause the warranty to be void; or the equipment to function improperly, or not meet the performance requirements.

(Authorized Representative of the Manufacturer)

(Date)

END OF SECTION

SECTION 01380CONSTRUCTION PHOTOGRAPHSPART 1 - GENERAL1.1 DESCRIPTION

A. Work Included:

1. Pre-Construction Record: Contractor shall take digital photographs and video to obtain a visual record of the project area prior to beginning any work at the project site.

1.2 QUALITY

- A. Pre-Construction Record: Quality shall be such that the condition of existing pavement, curbing, driveway entrances, sidewalks, walls, doors, equipment, piping, etc. can be readily determined.

1.3 SUBMITTAL OF PRINTS

A. Pre-Construction Record:

1. Submit pre-construction photographs/videos in accordance with Section 01340 prior to initiating any work on-site.
- B. The quality of the photos and video are subject to approval by the Engineer.
 - C. Photographs and videos taken for the project and submitted are released to the Owner and Engineer for reproduction and use for records retention, governmental and commercial purposes.

END OF SECTION

SECTION 01400
QUALITY CONTROL

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. General Quality Control.
- B. Workmanship.
- C. Manufacturer's Instructions.
- D. Manufacturer's Certificates.
- E. Manufacturer's Field Services.
- F. Testing Laboratory Services.

1.2 RELATED REQUIREMENTS

- A. Section 01340 - Submittals: Submittal of Manufacturer's Instructions
- B. Section 11228 – Potable Water Tank Submersible Mixing System

1.3 QUALITY CONTROL

- A. Maintain quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

1.4 WORKMANSHIP

- A. Comply with industry standards except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.
- B. Perform work by persons qualified to produce workmanship of specified quality.
- C. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.

1.5 MANUFACTURERS' INSTRUCTIONS

- A. Comply with instructions in full detail, including each step in sequence. Should instructions conflict with Contract Documents, request clarification from Engineer before proceeding.

1.6 MANUFACTURERS' CERTIFICATES

- A. When required by individual Specifications Section, submit manufacturer's certificate that products meet or exceed specified requirements.

1.7 MANUFACTURERS' FIELD SERVICES

- A. When specified in respective Specification Sections, require supplier and/or manufacturer to provide qualified personnel to observe field conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to make appropriate recommendations.
- B. Representative shall submit written report to Engineer listing observations and recommendations.

1.8 TESTING LABORATORY SERVICES

- A. Owner will employ and pay for services of an Independent Testing Laboratory to perform inspections, tests, and other services wherever an Independent Testing Laboratory is required by individual specification sections listed in paragraph 1.2 above, unless otherwise indicated.
- B. Services will be performed in accordance with requirements of governing authorities and with specified standards.
- C. Reports will present observations and test results and indicate compliance or non-compliance with specified standards and with Contract Documents. Independent Testing Laboratory will submit one copy of each report directly to each of the following: Engineer, Resident Project Representative, Contractor. Reports will be submitted within 5 days of obtaining test results. If test results indicate deficiencies, Independent Testing Laboratory shall telephone or email results to Engineer, Resident Project Representative and Contractor within 24 hours.
- D. Contractor shall cooperate with Independent Testing Laboratory personnel; furnish tools, samples of materials, design mix, equipment, storage and assistance as requested.
- E. Contractor shall notify Engineer at least one full working day prior to needing testing laboratory services. Engineer will notify Independent Testing Laboratory. If scheduled tests or sampling cannot be performed because the work is not ready as scheduled, testing costs associated with the delay will be determined by Engineer and invoiced by Owner to Contractor. If unpaid after 60 days, the invoice amount will be deducted from the Contract Price. If adequate notice is not provided, Contractor shall suspend work on that portion of the Project until testing can be performed. Such suspension will not be grounds for a claim against the Owner for delay, nor will it be an acceptable basis for an extension of time.
- F. Payment for Independent Testing Laboratory services shall be as follows:
 - 1. General: Where testing is the Owner's responsibility, payment will be made as stated below unless other requirements are given in Specification Sections. Testing which is the responsibility of the Contractor will be considered an incidental item unless otherwise indicated in Section 01150, Measurement and Payment.
 - 2. Initial Testing: Owner will pay for initial tests.
 - 3. Retesting: Costs of retesting due to non-compliance will be paid by Owner. The cost of retesting will be determined by Engineer and Owner will invoice

Contractor for this cost. If unpaid after 60 days, the invoice amount will be deducted from the Contract Price.

4. Contractor's Convenience Testing: Inspections and tests performed for Contractor's convenience will be paid for by Contractor.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 01500TEMPORARY FACILITIES AND CONTROLSPART 1 - GENERAL1.1 DESCRIPTION

A. Work Included:

1. Provide and pay for all temporary applicable utilities required to properly perform the Work at no additional cost to the Owner including the placement and removal of the utilities.
2. Completely remove all temporary equipment and materials upon completion of the Work and repair all damage caused by the installation of temporary utilities.
3. Make all necessary applications and arrangements for electric power, light, water and other utilities with the local utility companies. Notify the local electric power company if unusually heavy loads, such as welders, will be connected.
4. Provide temporary protection of existing concrete tanks and other unheated concrete structures taken out of service for the General Contractor to complete the Work as indicated on the Contract Documents in that area.
5. Contractor shall provide temporary ventilation during construction as required to ensure a safe working environment. The temporary ventilation systems shall address the following conditions, including but is not limited to: removal of hazardous fumes from explosion-proof rated spaces (Class 1, Division 1 rated spaces), removal of paint fumes and other potentially toxic conditions associated with the contractor's activities, and ventilation of confined spaces, in compliance with all OSHA and State safety requirements.

1.2 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies:

1. Obtain permits as required by local governmental authorities.
2. Obtain easements, when required, across private property other than that of the Owner for temporary power service.
3. Comply with the latest National Electrical Code.
4. Comply with all local, State and Federal codes, laws, and regulations.

B. All temporary utilities are subject to the approval of the Engineer.

PART 2 - PRODUCTS2.1 MATERIALS

A. Electrical:

1. The General Contractor shall make necessary arrangements with the local power company for connection to the existing power supply and shall provide and pay for all temporary light and power requirements except as otherwise specified hereunder. In general, the temporary electrical service shall include all necessary switches, poles, wiring, cables, conduit, raceways, panelboards,

fixtures, lamps and receptacles to supply construction power of adequate capacity for the project. Temporary transformers and meters shall be furnished and installed by the appropriate power authority, but paid for by the General Contractor, who shall be responsible for making all arrangements for their installation prior to using any existing power for temporary purposes.

2. Use new or used materials adequate in capacity for the purposes intended.
 3. Materials must not create unsafe conditions or violate the requirements of applicable codes.
 4. Conductors:
 5. Wire, cable or busses of appropriate type, sized in accordance with the latest National Electrical Code for the applied loads.
 6. Use only UL approved wire.
 7. Conduit:
 8. Rigid steel, galvanized: ANSI C80.1.
 9. Electrical metallic tubing: ANSI C80.3.
 10. Other material approved by NEC.
 11. Equipment: Provide appropriate enclosures for the environment in which used in compliance with NEMA Standards.
 12. Temporary power shall be based upon the following minimum requirements:
 13. Lighting - 300 watt per 1,000 square feet of floor area.
 14. Receptacles - One 15 ampere duplex for 1,000 square feet of floor space.
 15. Special Construction Equipment - Provide one 30-amp, 2-pole fused switch for equipment connection. The cost for cables and connection from switch to the special equipment will be borne by the Sub-Contractor requiring same.
 16. The General Contractor will pay for the cost of energy consumed by all trades, including cost of lamp replacement. The General Contractor and Subcontractors of all trades shall furnish their own extension cords and such additional lamps as may be required for their work, shall pay for the cost of temporary wiring of a special nature for light and power required, other than that above mentioned.
 17. All temporary work shall be furnished and installed in conformity with the National Electrical Code and in accordance with local ordinances and requirements of the municipal power authority. All temporary wiring and accessories shall be removed after it has served its purpose.
- B. Heating and Ventilation:
1. The General Contractor shall furnish, install, and maintain a complete temporary heating and ventilation systems, including fuel therefore, which will provide heat and ventilation as required by the trades and for the protection of personnel in the work spaces, and stored and installed materials from injury as can be caused by dampness and cold. The General Contractor shall employ, within the terms of the General Contract, a competent watchman who will maintain and operate the systems, as required. The General Contractor shall bear all costs incurred from the temporary heating and ventilation from the time the systems are first required until the date of Substantial Completion of the General Contract, as defined in the General Conditions and Supplementary Conditions.

2. Under no circumstance shall the permanent heating system be used for temporary heating purposes, until the building/buildings have been considered as satisfactorily enclosed by the Engineer, specified hereunder.
 3. Temporary heating equipment must be smokeless and fumeless type, Underwriters Laboratories, Factory Mutual, Fire Marshal and Engineer approved, and will fulfill the heating requirements specified hereunder.
 4. As soon as practicable, after the building/buildings have been considered satisfactorily enclosed by the Engineer, the General Contractor shall have the permanent heating and ventilation systems and apparatus put in operation. Electrical service, wiring, controls, and other essential parts of the permanent system must be installed prior to utilizing the heating system. The General Contractor shall pay for all power and fuel consumed in the temporary operation of the permanent systems until the time the building/buildings are partially or permanently occupied by the Owner, whichever comes first in accordance with the provisions specified herein for use and occupancy prior to acceptance by the Owner.
 5. After enclosure of the building/buildings and before installation of wet work such as interior masonry and tile, maintain temperatures of 50 degrees minimum, except for a period commencing 10 days prior to the installation of interior woodwork, interior flooring, or interior painting, whichever occurs first, after which time the temperature shall be maintained at a minimum of 65 degrees F., until the project is either partially or permanently occupied by the Owner.
- C. Water and Sanitary:
1. The General Contractor shall make necessary arrangements for connection to the municipal water supply and shall provide, at his own expense, any extensions as required for the operation of this project. The General Contractor shall bear all costs incurred for the temporary water services, including the costs of the water itself.
 2. All lines, temporary or permanent, shall be protected and maintained by the General Contractor. Temporary lines shall be removed by the General Contractor when the temporary service is no longer required.
 3. The General Contractor shall provide an adequate drinking water supply, satisfactorily cooled, for his employees.
 4. See Site Plan for nearest water hook-up.
 5. The General Contractor shall furnish, install, maintain and pay for adequate temporary chemical type toilet accommodations, for all persons employed on the work and located where approved by the Engineer. The accommodations shall be in proper enclosures and in accordance with Municipal Ordinances and shall be maintained in proper, safe and sanitary conditions and suitably heated when requested.
 6. Relocate temporary toilet facilities as required to facilitate the construction.
 7. Remove all temporary facilities at completion of work when directed by the Engineer.
- D. Protection of Existing Concrete Tanks and other Unheated Concrete Structures taken out of Service:

1. The General Contractor shall provide protection as required to maintain the surface temperatures of the existing concrete above 40 degrees F during the months of November through March and other periods during which the ambient air temperature is below 32 degrees F. The General Contractor shall be responsible for all means and methods to maintain the specified temperature at no additional cost to the Owner.
2. The General Contractor shall furnish and monitor surface thermometers on the concrete surfaces.
3. The above listed requirement is a minimum required to prevent the structure from freezing. If the nature of the work within the structure requires a greater air temperature to perform the work (such as application of coatings), the requirements of Part 2.1.B shall apply.
4. If, in the opinion of the Engineer, the work required in the unheated structure is of a short duration or the anticipated ambient air temperatures will not drop below 40 degrees F, additional protection as required in Part D.1 may not be required. The General Contractor shall still be responsible for monitoring the temperature of the concrete surfaces and providing protection if they drop below 40 degrees F.

PART 3 - EXECUTION

3.1 PERFORMANCE

A. Electrical:

1. Provide electrical energy to:
 - a. All necessary points on the construction site so that power can be obtained at any desired point with extension cords no longer than 100 feet.
 - b. Construction site offices.
 - c. Lighting as required for safe working conditions at any location on the construction site.
 - d. Night security light.
 - e. When applicable, Owner's present facilities during the changeover of electrical equipment.
2. Maintain electrical energy throughout the entire construction period.
3. Capacity:
 - a. Provide and maintain adequate electrical service for construction use by all trades during the construction period at the locations necessary, as specified herein.
4. Installation:
 - a. Install all work with a neat and orderly appearance.
 - b. Have all installations performed by a qualified electrician.
 - c. Modify service as job progress requires.
 - d. Locate all installations to avoid interference with cranes and materials handling equipment, storage areas, traffic areas and other work.

B. Heating and Ventilation:

1. Maintain a heated and ventilated environment for the work at the temperature and for the length of time specified or as directed by the Engineer, and as needed to protect all individuals on the construction site.
 2. Precaution:
 - a. Operate temporary heating apparatus in such a manner that finished work will not be damaged.
 - b. Repair all damage, caused by temporary heating operations, to the complete satisfaction of the Engineer.
- C. Water:
1. Provide and maintain water for drinking and construction purposes as required for the proper execution of the Work.
- D. Sanitary Accommodations:
- a. Provide and maintain sanitary accommodations for the use of the employees of the General Contractor, subcontractors, and Engineer.
 - b. Sanitary accommodations shall meet the requirements of all local, State and Federal health codes, laws and regulations.
- E. Protection of Existing Tanks and other Unheated Structures taken out of Service:
1. The General Contractor shall provide protection and/or heat as required to maintain the specified temperature of the existing structure.
 2. The General Contractor shall document the condition of the structures immediately after they are taken out of service with either still photos or video.
 3. Precaution:
 - a. If additional heat is required, operate temporary heating apparatus in such a manner that the existing structure will not be damaged.
 - b. Repair all damage, caused by temporary heating operations, to the complete satisfaction of the Engineer.
 4. The General Contractor shall repair any concrete damaged as a result of the surface temperatures of the concrete dropping below 40 degrees F.

END OF SECTION

SECTION 01520

SITE SECURITY

PART 1 - GENERAL

1.1 SECURITY PROGRAM

A. The Contractor shall:

1. Protect work premises and Owner's operations from theft, vandalism, and unauthorized entry.
2. Initiate program in coordination with Owner's existing security system at job mobilization.
3. Maintain program throughout construction period.

1.2 ENTRY CONTROL

A. The Contractor shall:

1. Restrict entry of persons and vehicles into Project site and existing facilities.
2. Allow entry only to authorized persons with proper identification.
3. Maintain log of workmen, visitors and deliveries and make log available to Owner on request.
4. Coordinate entrance of persons, vehicles (including deliveries) in such a manner to not interfere with Owner's operations.

B. Owner will control entrance of persons and vehicles related to Owner's operations.

1.3 RESTRICTIONS

- A. The Contractor shall not allow cameras on site or photographs taken except by written approval of Owner.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 01600

DELIVERY, STORAGE AND HANDLING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This Section specifies the general requirements for the delivery, handling, storage and protection for all items required in the construction of the work. An updated delivery and storage log is required with the monthly payment requisition prior to approval. An example log is included in this section.
- B. Related Items:
 - 1. Section 01800: Equipment Start-Up, Certification and Operator Training.
 - 2. Section 11000: Equipment - General.

1.2 TRANSPORTATION AND DELIVERY

- A. Transport and handle items in accordance with manufacturer's instructions.
- B. Schedule delivery to reduce long term on-site storage prior to installation and/or operation. Under no circumstances shall equipment be delivered to the site more than 120 days prior to installation without written authorization from the Engineer.
- C. Ship equipment, material and spare parts complete except where partial disassembly is required by transportation regulations or for the protection of components.
- D. Pack spare parts in containers bearing labels clearly designating contents and pieces of equipment for which intended, including cross reference of the applicable contract specification section.
- E. Deliver spare parts at the same time as pertaining equipment. Deliver spare parts to the Owner after completion of work.
- F. Deliver products to the site in manufacturer's original sealed containers or other packing system, complete with instructions for handling, storing, unpacking, protecting and installing.
- G. Instructions for handling, storing, unpacking, protecting and installing equipment shall be included in the Equipment O&M Manuals, which shall be submitted prior to the equipment being shipped to the site. This information shall be filed in a dedicated three ring binder(s) on-site, in the Contractor trailers, accessible to the Owner and Engineer. The binder(s) shall be clearly labeled, and include dividers for each specification section. The manufacturer-provided instructions for each equipment item shall be labeled with the specification number, equipment name, and equipment number. The instructions shall also be submitted to the Engineer.
- H. Assume responsibility for equipment material and spare parts just before unloading from carrier at site.
- I. All items delivered to site shall be unloaded and placed in a manner which will not hamper the Contractors normal construction operation or those of subcontractors and other contractors and will not interfere with the flow of necessary traffic.
- J. Provide equipment and personnel to unload all items delivered to the site.
- K. Promptly inspect shipment to assure that products comply with requirements, quantities are correct, and items are undamaged. For items furnished by others (i.e.

Owner, other Contractors), perform inspection in the presence of the Engineer.
Notify the Engineer in writing of any problems.

- L. Pay all demurrage charges if failed to promptly unload items.

1.3 STORAGE AND PROTECTION

- A. Store and protect products and equipment in accordance with the manufacturer's instructions, with seals and labels intact and legible. Storage instructions shall be studied by the Contractor and reviewed with the Engineer by them. Instructions shall be carefully followed and a written record of this kept by the Contractor for each product and pieces of equipment.
- B. Arrange storage of products and equipment to permit access for inspection. Periodically, inspect to make sure products and equipment are undamaged and are maintained under specified conditions.
- C. Provide protective maintenance during storage consisting of manually exercising equipment, inspecting mechanical surfaces for signs of corrosion or other damage, lubricating, applying any coatings as recommended by the equipment manufacturer necessary for its protection and all other precautions to assure proper protection of all equipment stored and for compliance with manufactures requirements related to warranties.
- D. Store loose granular materials on a solid flat surface in a well-drained area. Prevent mixing with foreign matter.
- E. Cement and lime shall be stored under a roof and off the ground and shall be kept completely dry at all times. All structural, miscellaneous and reinforcing steel shall be stored off the ground or otherwise to prevent accumulation of dirt or grease, and in a position to prevent accumulations of dirt, standing water, staining, chipping or cracking. Brick, block and similar masonry products shall be handled and stored in a manner to reduce breakage, cracking and spalling to a minimum.
- F. All mechanical and electrical equipment and instruments shall be covered with canvas and stored in a weather tight building to prevent injury. The building may be a temporary structure on the site or elsewhere, but it shall be satisfactory to the Engineer.
 - 1. All equipment shall be stored fully lubricated with oil, grease and other lubricants unless otherwise instructed by manufacturer.
 - 2. Moving parts shall be rotated at a minimum of once weekly to insure proper lubrication and to avoid metal-to-metal "welding". Log all rotation maintenance for each piece of equipment in the written record noted above.
 - 3. Upon installation of the equipment, the Contractor shall start the equipment, at least half load, once weekly for an adequate period of time to ensure that the equipment does not deteriorate from lack of use. Log all startup for each piece of equipment in the written record noted above.
 - 4. Lubricants shall be changed upon completion of installation and as frequently as required thereafter during the period between installation and acceptance. New lubricants shall be put into the equipment at the time of acceptance.
 - 5. Prior to acceptance of the equipment, the Contractor shall have the manufacturer inspect the equipment and certify that its condition has not been detrimentally affected by the storage period. Such certifications by the manufacturer shall be deemed to mean that the equipment is judged by the

manufacturer to be in condition equal to that of equipment that has been shipped, installed, tested and accepted in a minimum time period. As such, the manufacturer will guarantee the equipment equally in both instances. If such a certification is not given, the equipment shall be judged to be defective. It shall be removed and replaced at the Contractor's expense.

- G. The weather tight building shall be provided with adequate heating/cooling and ventilation as required by the manufacturer to prevent condensation. Maintain temperature and humidity within range required by manufacturer and to prevent condensation on the equipment being stored.
- H. Temporary heating and cooling is acceptable. Equipment shall be protected from environmental effects as required by the manufacturer and dependent on the season. Equipment that arrives on site without coating shall be protected from environmental impacts through coating or protection at the Contractor's expense. Any equipment that displays defects or corrosion from environmental impacts will not be accepted for installation.
- I. The location of all stored material and equipment shall be reviewed with the Owner and Engineer. The Owner and Engineer may request that equipment and material be moved to an alternate location to accommodate plant maintenance and operation, or if the location is deemed unacceptable or unsuitable.

PART 2 - PRODUCTS - NOT APPLICABLE

PART 3 - EXECUTION

3.1 DELIVERY, STORAGE, AND HANDLING MONTHLY LOG

- A. An updated storage and delivery log is required with the monthly payment requisition prior to approval.
- B. The monthly log shall include the specification section, equipment description, equipment tagging, submittal approval date, date of equipment delivery, date of O&M submittal, contractor start-up sign-off, certified equipment testing date, operator training date, spare parts turnover date, required maintenance (activity and date), and equipment turnover (Owner's witness and date).

3.2 STORAGE AND PROTECTION

- A. Equipment requires acceptance and verification of the storage from the Owner, Engineer, Manufacturer and Contractor at the Engineer's discretion.
- B. Following delivery, the equipment warranty from the Manufacturer is the responsibility of the Contractor.
- C. All storage and maintenance will be the responsibility of the Contractor, conducted at the Contractor's expenses and verified by the Engineer.
- D. It is the Contractor's responsibility to coordinate all storage requirements on site as required by the Manufacturer to achieve acceptance.

Section 01600 Delivery, Storage and Handling

[illegible]

1. If equipment is delivered and placed in storage, all steps for Stored Equipment shall be followed and tracked separately
2. Log weekly start-ups of installed equipment, performed by Contractor, until Equipment Turnover

END OF SECTION