DOS RIOS WRC CHLORINE SYSTEM IMPROVEMENTS
Solicitation Number: CO-00197
Job No.: 17-6508

ADDENDUM 6

October 2, 2018

To Bidder of Record:

This addendum, applicable to work referenced above, is an amendment to the bid proposal, plans and specifications and as such will be a part of and included in the Contract Documents. Acknowledge receipt of this addendum by entering the Addendum number and issue date on the space provided in submitted copies of the bid proposal.

RESPONSES TO QUESTIONS RECEIVED

1. Will there be additional electrical information than what is showing on Addendum 5 drawing 05-E103? How is the feed from the MCC-DB1 to the Mini-Load Center to be routed?

Response: Field routing will be coordinated in the field by the contractor. Direct bury the conduit and provide markings to show the routing.

2. MCC-DB-1 bucket #24 is to be used for the Chlorine Storage Room Unit Heaters per the original contract drawings. Addendum 5 uses it for the feed to the Mini-Load Center please clarify.

Response: The intent is to use the breaker for both applications. Feed the temporary system while construction is happening and then switch the load to the heaters at the end of the project.

3. Will there be control system required with the Alternate 1?

Response: No control system will be required.

4. Please provide SAWS Specification for the Mini-Load Center and AFDs as soon as possible.

Response: See revised Specification Section 01 50 00 – Temporary Facilities and Controls, attached to this addendum.

5. Since the Alternate 1 requested is a Temporary Sodium Hypochlorite Feed System, will the installed electrical service be expected to be removed at project completion?

Response: The temporary system shall be removed at project completion. See Specification Section 01 50 00.1.16.K.

6. Regarding the temporary electric system, the specs contradict themselves. One section says contractor pays (1.15.A.4) and one says SAWS pays (1.16.G.1).

Response: The Contractor shall pay for electric power to the contractor laydown area and contractor trailer area, and SAWS will pay for power costs at other locations. Specification Section 01 50 00.1.15., attached to this addendum, has been revised to clarify this requirement.

7. Per spec section 01 50 00 1.16 C 1, it stipulates that 3-4 Storage tanks are to be provided. Based upon the 10-15 day storage requirement, the tanks sizes would need to be 10,000 gal each. Currently the largest capacity rental tank available is 6,900 gals. To store 40,000 gal, a total of six (6) 6,900 gal tanks would be required. Will this be acceptable?

Response: Six tanks would be acceptable. The maximum tank diameter shall be 12-ft. See revised Specification Section 01 50 00 – Temporary Facilities and Controls, attached to this addendum.

8. Can you provide dimensions of the two overhead doors on this project?

Response: The overhead door in the chlorine storage room is approximately 24' x 16'-6", and the overhead door in the sulfur dioxide storage room is approximately 21'-6" x 13'-6".

MODIFICATIONS TO THE SPECIFICATIONS

1. Section 01 22 13 – MEASUREMENT AND PAYMENT

Replace Section 01 22 13.1.4.B.2 with the following: "Payment: Contractor shall submit written documentation with SAWS sign-off of acceptance of actual amount accepted by SAWS."

2. Section 01 50 00 – TEMPORARY FACILITIES AND CONTROLS

Remove Section 01 50 00 in its entirety, and replace with the same, attached hereto.

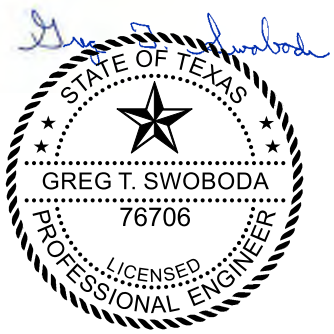
3. Section 08 33 23 – OVERHEAD COILING DOORS

Replace Section 08 33 23.1.2.A with the following: "1.2.A. Delegated Design: Design overhead coiling doors, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated. Overhead doors shall be installed in the chlorine storage room and sulfur dioxide storage room. Approximate dimensions are as follows, but shall be confirmed by the Contractor prior to ordering doors and materials.

1. Chlorine Storage Room (width x height): 24' x 16'-6"
2. Sulfur Dioxide Storage Room (width x height): 21'-6"x13'-6"."

This Addendum, including these two (2) pages, is sixteen (16) pages with attachments in its entirety.

Attachments: Specification Sections: 01 50 00 – TEMPORARY FACILITIES AND CONTROLS



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SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Furnishing, maintaining, and removing construction facilities and temporary controls, including temporary utilities, construction aids, barriers and enclosures, security, access roads, temporary controls, project sign, field offices and sheds, and removal after construction.

B. Related sections:
   1. Section 01 10 00 – Summary.
   2. Section 01 32 00 – Construction Progress Documentation
   3. Section 01 33 00 – Submittal Procedures
   4. Section 01 34 00 – Photographic and Videographic Documentation

1.2 REFERENCES

A. The following is a list of standards which may be referenced in this section:
   1. American Association of Nurserymen: American Standards for Nursery Stock.
   2. Federal Emergency Management Agency.
   3. NFPA, National Fire Prevention Standard for Safeguarding Building Construction Operations.
   4. Telecommunications Industry Association (TIA); Electronic Industries Alliance (EIA): 568B, Commercial Building Telecommunications Cabling Standard.
   5. U.S. Department of Agriculture: Urban Hydrology for Small Watersheds.
   6. U.S. Weather Bureau: Rainfall-Frequency Atlas of the U.S. for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years.

1.3 SUBMITTALS

A. Informational Submittals:
   1. General: For products specified to be furnished under this Section, submit product data in accordance with Section 01 33 00.
   2. For Temporary Piping Systems:
      a. Submit layout drawings showing proposed routing of piping, including proposed pipe support and pipe restraint locations.
      b. Submit product data for piping, fittings, appurtenances, restraints, supports, and all other components of the temporary piping system.
   3. For Temporary Pumping Systems:
      a. Submit pump data, performance curves, and other operating information as specified in Section 01 33 00.
      b. Submit sketches showing layout of temporary pumping system, including pump quantity, configuration in wet well, and proposed piping layout specified.
      c. Submit piping headloss calculations based on proposed temporary piping system layout.
   4. Copies of permits and approvals for construction as required by Laws and Regulations and governing agencies.
   5. Temporary Utility Submittals:
      a. Electric power supply and distribution plans.
      b. Water supply and distribution plans.
      c. Drainage plans.
      d. Sanitary sewer.
   6. Temporary Construction Submittals:

a. Access Roads: Routes, cross-sections, and drainage facilities.
b. Parking area plans.
c. Contractor's field office, storage yard, and storage building plans, including gravel-surfaced area.
d. Fencing and protective barrier locations and details.
e. Engineer's field office plans.
f. Staging area location plan.
g. Traffic and Pedestrian Control and Routing Plans: As specified herein, and proposed revisions thereto.

7. Temporary Control Submittals:
   a. Noise control plan.
   b. Plan for disposal of waste materials and intended haul routes.

8. For Temporary Sodium Hypochlorite Storage and Feed System (Additive Alternate No. 1)
   a. Submit layout drawings showing proposed location of temporary storage and feed facility, chemical feed pumping skid, and routing of conduit and piping, including proposed pipe support and pipe restraint locations.
   b. Submit layout drawings showing sodium hypochlorite piping schematic and details of the temporary pumping skid.
   c. Submit product data for piping, fittings, appurtenances, restraints, supports, and all other components of the temporary piping system.
   d. Submit pump data, performance curves, and other operating information as specified in Section 01 33 00.
   e. Submit product data for the sodium hypochlorite storage tanks and chemical containment.
   f. Submit piping headloss calculations based on proposed temporary piping system layout.
   g. Submit chemical dosing calculations based on the concentration of the proposed sodium hypochlorite solution.
9. For Sodium Hypochlorite Solution (Additive Alternate No. 2)
   a. Provide Materials Safety Data Sheet for proposed sodium hypochlorite solution.
   b. Submit delivery information to Engineer/Owner for coordination and approval.

1.4 MOBILIZATION

A. Mobilization shall Include, but Not be Limited to, these Principal Items:
   1. Obtaining required permits.
   2. Moving Contractor's field office and equipment required for first month operations onto Site.
   3. Installing temporary construction power, wiring, and lighting facilities.
   4. Providing onsite communication facilities, including telephones.
   5. Providing onsite sanitary facilities and potable water facilities as specified and as required by Laws and Regulations, and governing agencies.
   6. Arrange for and erection of Contractor's work and storage yard.
   7. Posting OSHA required notices and establishing safety programs and procedures.
   8. Have Contractor's superintendent at Site full time.

B. Use area designated for Contractor's temporary facilities as shown on Drawings.

1.5 PROTECTION OF WORK AND PROPERTY

A. Comply with Owner's safety rules while on Owner's property.

B. Keep Owner informed of serious onsite accidents and related claims.

C. Use of Explosives: No blasting or use of explosives will be allowed onsite.

1.6 VEHICULAR TRAFFIC

A. Traffic Routing Plan: Show sequences of construction affecting use of roadways, time required for each phase of the Work, provisions for decking over excavations and phasing of operations to provide necessary access, and plans for signing, barricading, and striping to provide passages for pedestrians and vehicles.

1.7 TEMPORARY UTILITIES

A. Temporary Electrical Power:
   1. Arrange with local utility to provide adequate temporary electrical service.
   2. Provide and maintain adequate jobsite power distribution facilities conforming to applicable Laws and Regulations.
   3. Provide, maintain, and pay for electric power to the contractor laydown area and contractor trailer area for performance of the Work.

B. Temporary Electrical Lighting:
   1. In work areas, provide temporary lighting sufficient to maintain lighting levels during working hours not less than lighting levels required by Occupational Safety and Health Administration (OSHA) and state agency which administers OSHA regulations where Project is located.
   2. When available, permanent lighting facilities may be used in lieu of temporary facilities:
      a. Prior to Substantial Completion of the Work, replace bulbs, lamps, or tubes used by Contractor for lighting.

C. Temporary Heating, Cooling, and Ventilating:
   1. Keep the chemical rooms properly ventilated during construction work for worker safety since the chemical rooms are live and in-use facilities housing toxic chemicals. Contractor shall provide additional portable fans to provide additional ventilation in the work area as needed.
   2. Heat and ventilate work areas to protect the Work from damage by freezing, high temperatures, weather, and to provide safe environment for workers.
   3. Permanent heating system may be utilized when sufficiently completed to allow safe operation.

D. Temporary Water:
   1. Pay for and construct facilities necessary to furnish potable water for human consumption and non-potable water for use during construction. Provide separate meter and reimburse Owner for water.
   2. Remove temporary piping and connections and restore affected portions of the facility to original condition before Final Completion.
   3. Pay for water used for construction prior to completion of work.
   4. Non-potable water may be used for testing as necessary or appropriate.

E. Temporary Sanitary Facilities:
   1. Provide suitable and adequate sanitary facilities that are in compliance with applicable Laws and Regulations.
   2. Coordinate location of facilities with Owner.
   3. At completion of the Work, remove sanitary facilities and leave site in neat and sanitary condition.

F. Temporary Fire Protection: Provide sufficient number of fire extinguishers of type and capacity required to protect the Work and ancillary facilities.

G. First Aid: Post first aid facilities and information posters conforming to requirements of OSHA and other applicable Laws and Regulations in readily accessible locations.

H. Utilities in Existing Facilities: See Section 01 10 00, Summary.

1.8 CONSTRUCTION AIDS

A. Provide railings, kick plates, enclosures, safety devices, and controls required by Laws and Regulations and as required for adequate protection of life and property.

B. Use construction hoists, elevators, scaffolds, stages, shoring, and similar temporary facilities of ample size and capacity to adequately support and move loads.

C. Design temporary supports with adequate safety factor to assure adequate load bearing capability:
   1. When requested, submit design calculations by professional registered engineer prior to application of loads.
   2. Submitted design calculations are for information and record purposes only.

D. Accident Prevention:
   1. Exercise precautions throughout construction for protection of persons and property.
   2. Observe safety provisions of applicable Laws and Regulations.
   3. Guard machinery and equipment, and eliminate other hazards.
   4. Make reports required by authorities having jurisdiction, and permit safety inspections of the Work.
   5. Before commencing construction work, take necessary action to comply with provisions for safety and accident prevention.

E. Barricades:
   1. Place barriers at ends of excavations and along excavations to warn pedestrian and vehicular traffic of excavations.
   2. Provide barriers with flashing lights after dark.
   3. Keep barriers in place until excavations are entirely backfilled and compacted.
   4. Barricade excavations to prevent persons from entering excavated areas in streets, roadways, parking lots, treatment plants, or other public or private areas.

F. Warning Devices and Barricades: Adequately identify and guard hazardous areas and conditions by visual warning devices and, where necessary, physical barriers:
   1. Devices shall conform to minimum requirements of OSHA and State agency that administers OSHA regulations where Project is located.

G. Hazards in Public Right-of-Way:
   1. Mark at reasonable intervals, trenches and other continuous excavations in public right-of-way, running parallel to general flow of traffic, with traffic cones, barricades, or other suitable visual markers during daylight hours:
      a. During hours of darkness, provide markers with torches, flashers, or other adequate lights.
   2. At intersections or for pits and similar excavations, where traffic may reasonably be expected to approach head on, protect excavations by continuous barricades:
      a. During hours of darkness, provide warning lights at close intervals.

H. Hazards in Protected Areas: Mark or guard excavations in areas from which public is excluded, in manner appropriate for hazard.

I. Above Grade Protection: On multi-level structures, provide safety protection that meets requirements of OSHA and State agency that administers OSHA regulations where Project is located.

J. Protect existing structures, trees, shrubs, and other items to be preserved on Project site from injury, damage or destruction by vehicles, equipment, worker or other agents with substantial barricades or other devices commensurate with hazards.

1.9 SECURITY

A. Make adequate provision for protection of the work area against fire, theft, and vandalism.

1.10 ACCESS ROADS

A. General:
   1. Build and maintain access roads to and on site of the Work to provide for delivery of material and for access to existing and operating plant facilities on site.
   2. Build and maintain dust free roads that are suitable for travel at 15 miles per hour.

B. On-Site Access Roads:
   1. Maintain access roads to storage areas and other areas to which frequent access is required.
   2. Maintain similar roads to existing facilities on site of the Work to provide access for maintenance and operation.
   3. Protect buried vulnerable utilities under temporary roads with steel plates, wood planking, or bridges.
   4. Maintain on-site access roads free of mud. Under no circumstances shall vehicles leaving the site track mud off the site onto the public right-of-way.

1.11 TEMPORARY CONTROLS

A. Dust Control:
   1. Prevent dust nuisance caused by operations, unpaved roads, excavation, backfilling, demolition, or other activities.
   2. Control dust by sprinkling with water, use of dust palliatives, modification of operations, or other means acceptable to agencies having jurisdiction.

B. Noise Control:
   1. Perform operations in manner to minimize noise.

   2. Mud Control:
      1. Prevent mud nuisance caused by construction operations, unpaved roads, excavation, backfilling, demolition, or other activities.

1.12 PROJECT SIGN

A. Provide and maintain Project identification sign in accordance with the Owner's standard specification. At a minimum, the sign shall consist of painted 8 foot wide by 4 foot high exterior grade plywood and minimum 10 foot long 4 by 4 lumber posts, set in ground at least 3 feet, with exhibit lettering by professional sign painter using no more than 5 sign colors:
   1. List at least the title of the Project, and names of the Owner, Engineer, and Contractor.

B. Erect Project identification sign where directed by Owner.

1.13 REMOVAL

A. Remove temporary buildings and furnishings before inspection for project completion or when directed.

B. Clean and repair damage caused by installation or use of temporary facilities.

C. Remove underground installations to minimum depth of 24 inches and grade to match surrounding conditions.

D. Restore existing facilities used during construction to specified or original condition.

1.14 TEMPORARY PROCESS PIPING

A. Contractor shall provide all piping, appurtenances, and other materials as required to provide temporary piping systems as specified herein, as indicated on the Drawings, and as needed to perform the Work.

B. Contractor shall field route piping as needed and as field conditions dictate, unless otherwise indicated on the Drawings, and determine appropriate lengths of piping and quantity/type of pipe fittings needed to construct temporary piping system. Do not block access points such as stairs, doors, and walkways to existing facilities unless approved in writing by the Owner.

C. Restrain piping at valves and at fittings where piping changes direction, changes sizes, and at ends:
   1. When piping is buried, use concrete thrust block or mechanical restraints.
   2. When piping is exposed or under water, use mechanical or structural restraints.
   3. Determine thrust forces required for proper restraint.

D. Temporary piping systems shall be installed in a manner that will not damage existing or new facilities.

E. Unless indicated otherwise, piping material, including gaskets, shall be suitable for the process fluid requiring temporary piping.

F. After Temporary Piping System is no longer required:
   1. Remove temporary piping system.
   2. Clean and repair damage caused by installation or use of temporary piping system.
   3. Restore existing facilities to original condition.

1.15 TEMPORARY PROCESS PUMPING

A. For this contract, no temporary pumping is believed to be required to complete the work. To achieve the Contractor's plan to complete the work, Contractor may require and shall provide temporary pumping system to pump flow as required to complete the work.
   1. Anticipated pressure will vary based on headlosses developed and the final length of installed temporary piping. Contractor shall calculate headlosses and provide pump with sufficient pressure to meet flow requirements. Calculations shall be sealed and signed by a professional engineer registered in the state in which the project is located.
   2. Pump(s) shall be capable of passing a solid with a sphere size of 3 inches.
   3. Temporary pumps shall be capable of matching plant flow rates through the use of variable flow rate pumping. The use of cycled pumping (i.e, on/off) is not acceptable. Provide all wiring and controls necessary to match plant flow rate based on 4-20 mA signal available at the Operations Building.

4. Contractor shall provide connection to power temporary process piping. Power cost will be paid by SAWS.
5. All electrical and instrumentation components will comply with applicable code requirements for the area where the temporary pump is located.
6. Temporary pumping will be required 24 hours per day during the time period when pumping is required and is critical to the proper operation of the Owner's treatment plant. Provide 24-hour on-site supervision of pumps to ensure that pumps are always operational and performing as required. Notify the Owner immediately if temporary pumping cannot be provided.
7. Contractor shall be responsible for repairing any damage or reimbursing the Owner for any regulatory fines or additional plant staff time resulting from the Contractor's failure to maintain temporary pumping.
8. Provide 100 percent backup (a.k.a., standby, redundant, etc.) pumping capacity equal to the required process flow rate. Backup system shall be capable of providing required pumping capacity immediately upon failure of primary pumping system.
9. All necessary spare equipment and appurtenances shall be available on-site to allow immediate repair and/or replacement of any pumping system component that is not functioning properly.

B. Providing temporary piping systems as specified in Paragraph 1.14.

C. Temporary pumping of other process flows is not allowed unless approved in writing by the Owner.

D. After Temporary Process Pumping System is no longer required:
1. Remove temporary process pumping system.
2. Clean and repair damage caused by installation or use of temporary process pumping system.
3. Restore existing facilities to original condition.

1.16 TEMPORARY SODIUM HYPOCHLORITE STORAGE AND FEED SYSTEM (ADDITIVE ALTERNATE NO. 1)

A. Contractor shall provide a temporary sodium hypochlorite system to provide disinfection during the construction period. The system shall include: sodium hypochlorite storage tanks with containment, piping, skid-mounted chemical metering pumps, chemical piping, fittings, valves, and appurtenances.

B. Performance requirements:
1. The temporary sodium hypochlorite storage equipment shall be sized to provide 10 – 15 days of sodium hypochlorite storage at average flow and dosing conditions.
2. The temporary sodium hypochlorite feed equipment shall be sized to dose sodium hypochlorite to four feed points in the existing chlorine contact chambers. Specifically, sodium hypochlorite shall be dosed in the zone of turbulence on the discharge side of each existing chlorine induction pump.
3. Sodium hypochlorite shall be dosed proportionally to each active dosing point and dosing shall be manually flow-paced over the following range of flows and dosages:

	Minimum	**Average**	**Maximum**
Process Flow (MGD)	51	91	250
Sodium Hypochlorite Dose (mg/L-Cl_2)	3.3	5	6
Total Sodium Hypochlorite Usage* (gpm)	0.8	2.1	6.8
Sodium Hypochlorite Usage Per Dosing Point*† (gpm)	0.2	0.5	1.7
*Usage calculated based on 12.5% sodium hypochlorite solution. †Assumes all four feed locations within the chlorine contact chambers are active.			

4. Contractor shall submit chemical dosing calculations for the anticipated sodium hypochlorite solution provided. These calculations shall include provisions for sodium hypochlorite decay during storage.

C. Temporary Sodium Hypochlorite Storage Facility:
   1. Provide three to six sodium hypochlorite storage tanks of equal size with a maximum capacity of 15 days of sodium hypochlorite storage at average flow and dosing conditions. The maximum tank diameter shall be 12-ft.
   2. Tanks shall be suitable for outdoor installation.
   3. Tanks are to be opaque and shall have a closed top with a domed roof. Tanks shall be of fiberglass reinforced plastic or high density polyethylene construction, and all materials are to be compatible with 12.5% sodium hypochlorite solution.
   4. Contractor shall be responsible for the structural design of the tanks, and for sizing and placing the following nozzles: fill, outlet/drain, overflow, and vent.
   5. Tanks shall be labeled with the chemical to be stored and shall have an external liquid-depth indicator.
   6. Storage tank piping shall be designed to prevent a combined release of multiple tanks' contents.
   7. Secondary containment shall be provided equal to 125% of the volume of the largest storage tank. Provide a means of removing accumulated rainwater and neutralized spills.
   8. Contractor shall supply a tank filling station in a location accessible by chemical tanker trucks. Filling station location shall be acceptable to the Owner.
   9. Contractor shall provide a potable water supply near the temporary facility.

D. Temporary Sodium Hypochlorite Piping:
   1. Temporary sodium hypochlorite piping shall be provided between all components of the temporary sodium hypochlorite storage and feed system, and between the feed pumps and the dosing points.
   2. Contractor shall provide all piping, appurtenances, and other materials as required to provide temporary sodium hypochlorite piping systems as specified herein, and as needed to perform the Work. Piping material, including gaskets, shall be suitable for 12.5% sodium hypochlorite solution.
   3. Contractor shall field route sodium hypochlorite piping as needed and as field conditions dictate, unless otherwise indicated on the Drawings, and determine appropriate lengths of piping and quantity/type of pipe fittings needed to construct temporary piping system. Do not block access points such as stairs, doors, and walkways to existing facilities unless approved in writing by the Owner.
   4. Exposed piping routed through traffic areas shall be provided with traffic-rated protection.
   5. Temporary sodium hypochlorite piping systems shall be installed in a manner that will not damage existing or new facilities.

E. Temporary Sodium Hypochlorite Pumping:
   1. Provide five skid-mounted temporary sodium hypochlorite pumps (4 duty, 1 standby) of equal capacity. Piping shall be configured such that the standby pump shall be capable of providing required pumping capacity immediately upon failure of any one of the four duty pumps.
   2. Temporary pumps shall be peristaltic hose pumps complete with specified appurtenances. Pumps shall be capable of running dry without damage to the pump or hose, and materials shall be compatible with 12.5% sodium hypochlorite solution.
   3. Pumps shall provide a minimum 25-ft suction lift.
   4. Anticipated pressure will vary based on headlosses developed and the final length of installed temporary piping. Contractor shall calculate headlosses and provide pump with sufficient pressure to meet flow requirements. Calculations shall be sealed and signed by a professional engineer registered in Texas.

5. Temporary pumps shall be sized to operate continuously to supply sodium hypochlorite solution over the range of doses specified above. Contractor shall consider anticipated degradation of sodium hypochlorite solution for the expected storage duration and temperatures while sizing the pumps.
6. Temporary pumps shall be capable of 24-hour, manually flow paced operation using variable flow rate pumping. The use of cycled pumping (i.e, on/off) is not acceptable.
7. Each pump shall be supplied with a pump-mounted VFD to allow manual adjustment of pump feed rate.
    a. The VFD shall be compatible with the supplied pumps.
    b. The VFD shall be rated for outdoor installation with ambient temperatures up to 105°F.
    c. The VFD shall be provided with a NEMA 4X Indoor/Outdoor use enclosure.
    d. Input voltage shall be 115 VAC +/-15%, Single-Phase.
    e. Protective features shall include overcurrent, overvoltage fault, ground fault, short circuit, drive temperature.
    f. The VFD shall have 8 preset speeds or frequencies.
    g. The VFD shall have an integral keypad with six to ten keys and a display for digital programming.
8. All electrical and instrumentation components will comply with applicable code requirements for the area where the temporary pump system is located.
9. Temporary sodium hypochlorite pumping will be required 24 hours per day during the time period when chlorine system modifications are being constructed and chlorine feed is critical to the proper operation of the Owner's treatment plant. Contractor shall maintain the pumps and repair or replace any pump that is not functioning properly within 24 hours.
10. Contractor shall be responsible for repairing any damage or reimbursing the Owner for any regulatory fines or additional plant staff time resulting from the Contractor's failure to maintain the temporary sodium hypochlorite feed system.

F. Temporary Pumping Skid:
1. One pump skid shall be provided for all five pumps. The skid shall be sized to provide a minimum of 18-inches of clear space between pumps to facilitate access for maintenance. Provide a minimum of 3-ft of clear space in front of the pump skid, and a minimum of 3-ft clearance on the sides. Pumps shall be mounted at accessible height, approximately 2.5-ft from finished floor. Pumps shall not be installed within the chemical storage area's chemical containment volume.
2. Install the skid on a flat, graveled area that is 4-ft wider than the skid on all sides.
3. The skid system shall be completely self-contained, including pumps, piping, fittings, accessories, and controls. The mounted components shall include, but not be limited to: peristaltic metering pumps with VFDs, pressure relief valves, calibration columns, isolation valves, pulsation dampeners, y-strainers, pressure gauges, and integral wiring.
4. The skid shall be constructed of wood, FRP, polypropylene sheeting, or high density polyethylene.
5. All piping and accessories support shall be from the skid base or rear panel. Piping and/or accessory support from above is not acceptable.
6. All piping and accessories shall be securely fastened to the frame or supported with stand-offs.

G. Temporary Electrical Requirements:
1. Contractor shall provide connection to power the temporary sodium hypochlorite storage and feed system. Power cost will be paid by SAWS.
2. Contractor shall provide and install the following:
3. A 30A 480V Single phase breaker in MCC DB1, located in the existing Disinfection Building.
4. Two (2) #10 AWG, #10 G in 1" conduit to the location of the temporary storage and feed system.
5. A means of protecting the conduits. Exterior conduits should be direct-buried.

6. Mini-Load Centers:
    a. Mini-load centers shall include a main primary breaker, a dry-type transformer and circuit breaker-type load center in a common NEMA 3R enclosure, suitable for indoor/outdoor operation.
    b. kVA and voltage ratings shall be as shown on the Drawings. Main primary breaker shall have an interrupting rating of 14kA at 277/480 volts and a secondary load center rated at 10 kA at 120/240 or 120/208 volts as shown on the drawings. Transformer sound levels shall not exceed the following ANSI and NEMA levels for self-cooled ratings: Up to 9KVA = 40 db. 10 to 30kVA = 45 db.
    c. Transformer shall be copper wound, 115 degrees C rise and epoxy-resin encapsulated. The core of the transformer shall be grounded to the enclosure. Provide two (2) 5% FCBN taps. All interconnecting wiring between the primary breaker and transformer, secondary main breaker and transformer and load center shall be of copper and factory installed.
    d. Load center shall have copper bus, and be complete with all circuit breakers as shown on the drawings. Breakers shall have an interrupting rating of 10 kA minimum, and shall be of the bolt-on type.
7. Breakers appropriately sized for the pumps, and ancillary equipment in the temporary storage and feed system area.
8. Wire, #12 AWG min, and conduit, ½" min, appropriately sized per NEC to all the loads in the temporary storage and feed system.
9. Above-grade conduit shall be aluminum.
10. Below-grade conduit shall be Sch. 40 PVC.
11. Conduit shall not block access points such as stairs, doors, and walkways to existing facilities unless approved in writing by the Owner.

H. Contractor shall provide training on the Temporary Sodium Hypochlorite Storage and Feed System operation to Owner's staff in four training sessions. Training sessions shall be scheduled into two morning (6 am to 6 pm) and two night sessions (6 pm to 6 am) to accommodate the Owner's work shifts. Contractor shall coordinate the training sessions with the Owner.

I. Contractor shall demonstrate the operation of the temporary system in the presence of the Owner for three (3) days.

J. The Owner shall be allowed to operate the temporary system for five (5) calendar days with the existing chlorine gas system still in place. After five (5) calendar days, modifications to the existing chlorine gas system may begin.

K. After Temporary Sodium Hypochlorite Storage and Feed System is no longer required:
1. Remove temporary sodium hypochlorite storage and feed system, including associated piping and electrical conduit and wiring.
2. Clean and repair damage caused by installation or use of temporary process pumping system.
3. Restore existing facilities to original condition, including patching of any wall penetrations required for temporary conduit.
4. Restore area of temporary facility location to original condition.

1.17 SODIUM HYPOCHLORITE SOLUTION (ADDITIVE ALTERNATE NO. 2)

A. The Contractor is responsible for purchasing and providing sodium hypochlorite solution.

B. Performance Requirements:
1. Contractor shall provide sodium hypochlorite solution at a concentration of 12.5% by weight throughout the operation of the temporary sodium hypochlorite system. The Owner will coordinate with the Contractor to order sodium hypochlorite solution, and the Contractor will order and pay for sodium hypochlorite solution.

C. Contractor shall be responsible for repairing any damage or reimbursing the Owner for any regulatory fines or additional plant staff time resulting from the Contractor's failure to maintain an adequate volume of sodium hypochlorite onsite.

PART 2 - PRODUCTS

2.1 FIELD OFFICES AND SHEDS

A. Contractor's Field Office:
1. Maintain on Project Site weathertight space in which to keep copies of Contract Documents, progress schedule, shop drawings, and other relevant documents.
2. Provide field office with adequate space to for project meetings, to examine documents, and provide lighting and telephone service and related facilities in that space.

PART 3 - EXECUTION

3.1 TEMPORARY UTILITIES

A. Power:
1. Electric power is available at or near Site. Determine type and amount available and make arrangements for obtaining temporary electric power service, metering equipment, and pay all costs for electric power used during contract period for the contractor laydown area and contractor trailer area.
2. Cost of electric power for all other areas will be borne by the Contractor in the contractor laydown and trailer area. SAWS will pay for power costs at other locations.

B. Lighting: Provide temporary lighting to meet applicable safety requirements to allow erection, application, or installation of materials and equipment, and observation or inspection of the Work.

C. Heating, Cooling, and Ventilating:
1. Provide as required to maintain adequate environmental conditions to facilitate progress of the Work, to meet specified minimum conditions for installation of materials, and to protect materials, equipment, and finishes from damage due to temperature or humidity. Costs shall be borne by Contractor.
2. Provide adequate forced air ventilation of enclosed areas to cure installed materials, to dispense humidity, and to prevent hazardous accumulations of dust, fumes, vapors, or gases.
3. Pay all costs of installation, maintenance, operation, removal, and fuel consumed.
4. Provide portable unit heaters, complete with controls, oil- or gas-fired, and suitably vented to outside as required for protection of health and property.

D. Water:
1. Potable water is available at the site. Secure written permission for connection and use from Owner and meet requirements for use. Contractor shall pay cost to connect water during construction and pay cost for water used during construction.
2. Provide backflow prevention in accordance with applicable laws and regulations.

E. Sanitary and Personnel Facilities:
1. Provide and maintain facilities for Contractor's employees, Subcontractors, and all other onsite employers' employees. Service, clean, and maintain facilities and enclosures.

F. Telephone Service:
1. Contractor: Arrange and provide onsite telephone service for use during construction by Contractor. Pay costs of installation and monthly bills.

G. Fire Protection: Furnish and maintain on Site adequate firefighting equipment capable of extinguishing incipient fires. Comply with applicable parts of National Fire Prevention Standard for Safeguarding Building Construction Operations (NFPA No. 241).

3.2 PROTECTION OF WORK AND PROPERTY

A. General:
   1. Protect, shore, brace, support, and maintain underground pipes, conduits, drains, and other underground utility construction uncovered or otherwise affected by construction operations.
   2. Do not impair operation of existing treatment plant. Prevent construction material, pavement, concrete, earth, volatile and corrosive wastes, and other debris from entering pipes, pump stations, or other structures.
   3. Maintain original Site drainage.

B. Site Security:
   1. Provide and maintain temporary security fences as necessary to protect the Work and Contractor-furnished products and materials not yet installed.

C. Trees and Plantings:
   1. Protect from damage and preserve trees, shrubs, and other plants outside limits of the Work and within limits of the Work, which are designated on the Drawings to remain undisturbed.

D. Finished Construction: Protect finished floors and concrete floors exposed as well as those covered with composition tile or other applied surfacing.

E. Waterways: Keep ditches, culverts, and natural drainages continuously free of construction materials and debris.

F. Dewatering: Construct, maintain, and operate cofferdams, channels, flume drains, sumps, pumps, or other temporary diversion and protection works. Furnish materials required, install, maintain, and operate necessary pumping and other equipment for the environmentally safe removal and disposal of water from the various parts of the Work. Maintain foundations and parts of the Work free from water.

3.3 TEMPORARY CONTROLS

A. Air Pollution Control:
   1. Minimize air pollution from construction operations.
   2. Burning: Of waste materials, rubbish, or other debris will not be permitted.
   3. Conduct operations of dumping rock and of carrying rock away in trucks to cause a minimum of dust. Give unpaved streets, roads, detours, or haul roads used in construction area a dust-preventive treatment or periodically water to prevent dust. Strictly adhere to applicable environmental regulations for dust prevention.
   4. Provide and maintain temporary dust-tight partitions, bulkheads, or other protective devices during construction to permit normal operation of existing facilities. Construct partitions of plywood, insulating board, plastic sheets, or similar material. Construct partitions in such a manner that dust and dirt from demolition and cutting will not enter other parts of existing building or facilities. Remove temporary partitions as soon as need no longer exists.

B. Noise Control:

1. Noise Control Plan: Propose plan to mitigate construction noise and to comply with noise control ordinances, including method of construction, equipment to be used, and acoustical treatments.

C. Water Pollution Control:
1. Divert sanitary sewage and non-storm waste flow interfering with construction and requiring diversion to sanitary sewers. Do not cause or permit action to occur which would cause an overflow to existing waterway.
2. Comply with procedures outlined in U.S. Environmental Protection Agency manuals entitled, “Guidelines for Erosion and Sedimentation Control Planning,” “Implementation, Processes, Procedures, and Methods to Control Pollution Resulting from All Construction Activity,” and “Erosion and Sediment Control- Surface Mining in Eastern United States.”
3. Do not dispose of volatile wastes such as mineral spirits, oil, chemicals, or paint thinner in storm or sanitary drains. Disposal of wastes into streams or waterways is prohibited. Provide acceptable containers for collection and disposal of waste materials, debris, and rubbish.

D. Erosion, Sediment, and Flood Control: Provide, maintain, and operate temporary facilities to control erosion and sediment releases, and to protect the Work and existing facilities from flooding during construction period.

3.4 STORAGE YARDS AND BUILDINGS

A. Coordinate requirements with Section 01 60 00, PRODUCT REQUIREMENTS.

B. Temporary Storage Yards: Construct temporary storage yards for storage of products that are not subject to damage by weather conditions.

C. Temporary Storage Buildings:
1. Provide environmental control systems that meet recommendations of manufacturers of equipment and materials stored.
2. Arrange or partition to provide security of contents and ready access for inspection and inventory.
3. Store combustible materials (paints, solvents, fuels) in a well-ventilated and remote building meeting safety standards.

3.5 ACCESS ROADS

A. Construct access roads as required and within easements, rights-of-way, or Project limits. Obtain Engineer’s approval of access roads.

B. Maintain drainage ways. Install and maintain culverts to allow water to flow beneath access roads. Provide corrosion-resistant culvert pipe of adequate strength to resist construction loads.

C. Provide gravel, crushed rock, or other stabilization material to permit access by all motor vehicles at all times.

D. Maintain road grade and crown to eliminate potholes, rutting, and other irregularities that restrict access.

E. Coordinate with Owner detours and other operations affecting traffic and access. Provide at least 5 days’ notice to Owner of operations that will alter access to the Site.

F. Where access road crosses existing fences, install and maintain gates.

G. Upon completion of construction, restore ground surface disturbed by access road construction to original grade. Replace damaged or broken culverts with new culvert pipe of same diameter and material.

3.6 PARKING AREAS

A. Control vehicular parking to preclude interference with public traffic or parking, access by emergency vehicles, Owner's operations, or construction operations.

B. Provide parking facilities for personnel working on the Project. No employee or equipment parking will be permitted on Owner's existing parking areas, except as specifically designated for Contractor's use.

3.7 TRAFFIC

A. Conduct the Work to interfere as little as possible with plant traffic, whether vehicular or pedestrian.

B. Whenever it is necessary to cross, close, or obstruct roads, driveways, and walks, provide and maintain suitable and safe bridges, detours, or other temporary expedients for accommodation of public and private travel.

C. Coordinate traffic routing with that of others working in same or adjacent areas.

3.8 CLEANING DURING CONSTRUCTION

A. In accordance with General Conditions, as may be specified in other specification sections, and as required herein.

B. Wet down exterior surfaces prior to sweeping to prevent blowing of dust and debris. At least weekly, sweep all floors (basins, tunnels, platforms, walkways, roof surfaces), and pick up all debris and dispose.

C. Provide approved containers for collection and disposal of waste materials, debris, and rubbish. At least at weekly intervals, dispose of such waste materials, debris, and rubbish offsite.

D. At least weekly, brush sweep entry drive and roadways, and all other streets and walkways affected by the Work and where adjacent to the Work.

END OF SECTION