



DOS RIOS WRC CHLORINE SYSTEM IMPROVEMENTS

Solicitation Number: CO-00197

Job No.: 17-6508

ADDENDUM 5

September 28, 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.

CLARIFICATIONS

The Estimated Cost for this project has been modified from \$6,605,000.00 to \$7,597,000.00 which includes the cost estimates for the Additive Alternate Items No. 1 and No. 2.

CHANGES TO THE CONTRACT DOCUMENTS

- 1. Invitation to Bidders** The fifth paragraph of the Invitation to Bidders is hereby replaced with the following:
For questions regarding this solicitation, technical questions or additional information, please contact **Janie Powell**, Contract Administrator, in writing via email to **Janie.Powell@saws.org** or by fax to (210) 233-5351 until **2:00 PM (CT)** on **October 1, 2018**. Answers to the questions will be posted to the web site by **5:00 PM (CT)** on **October 2, 2018** as a separate document or included as part of an addendum. Please be advised that Bidders are prohibited from communicating with any other SAWS staff, the Consultant, the Developer, or City of San Antonio officials regarding this IFB up until the contract is awarded as outlined in the Instructions to Bidders.
- 2. Instructions to Bidders** Insert Item # 26
Additive Alternate Item(s). SAWS will sum the quantities and the unit prices for the base bid items in the Bid Proposal to determine the total base bid amount. The official total bid amount will be determined by the summation of the base bid plus the added alternative item(s).
The additive alternate item(s) may be used in the evaluation of bids and must be completed by the Bidder. SAWS reserves the right to select any Additive Alternates requested, any combination thereof, or none at SAWS sole discretion. If the Bidder fails to submit all or part of the requested items in the Bid Proposal including the additive alternate item(s), the Bidder shall be considered non-responsive.
The Contract will identify the base bid work and additive alternate(s) work selected to be performed. SAWS makes no guarantee that the additive alternate(s) work will be selected and reserves the right to award a contract with or without the additive alternate item(s).
- 3. Section BP – Bid Proposal**
Remove the Bid Proposal in its entirety, and replace with the same, attached hereto.
- 4. Section SC – Special Conditions**
Add the following to Paragraph 5: "If Additive Alternate Nos. 1 and 2 are selected, SAWS chlorine deliveries will not occur during demolition of the existing gas chlorine system and construction of the new chlorine gas system. SAWS sulfur dioxide deliveries will continue to occur throughout the duration of the project."
Add: "11. Additive Alternate Nos. 1 and 2 include provisions for a temporary sodium hypochlorite feed system for disinfection at the chlorine contact basins. The Contractor agrees and accepts the responsibilities to coordinate and construct all facilities and provide sodium hypochlorite associated with Additive Alternate Nos. 1 and 2 to develop complete and operational facilities that meet the regulatory requirements for the facilities and the requirements set forth by these contract documents. The Contractor shall be paid for the actual chemical deliveries accepted by SAWS for the Dos Rios site."

MODIFICATIONS TO THE SPECIFICATIONS

- 1. Section 01 10 00 – SUMMARY**
Remove Section 01 10 00 in its entirety, and replace with the same, attached hereto.
- 2. Section 01 22 13 – MEASUREMENT AND PAYMENT**
Remove Section 01 22 13 in its entirety, and replace with the same, attached hereto.

3. Section 01 50 00 – TEMPORARY FACILITIES AND CONTROLS
Remove Section 01 50 00 in its entirety, and replace with the same, attached hereto.
4. Section 01 22 13 – MEASUREMENT AND PAYMENT
Remove Section 01 22 13 in its entirety, and replace with the same, attached hereto.
5. Section 01 29 00 – PAYMENT PROCEDURES
Delete Section 01 29 00 1.9.A. and replace as follows:
 - “A. Payment for delivered or stored items will be allowed for major equipment and materials. No partial payments will be made for materials and equipment delivered or stored unless Shop Drawings or preliminary operation and maintenance manuals are acceptable to the Owner. Only approved materials stored on the job site will be eligible for partial payments. All partial payments shall be approved by the Owner. **Materials that will not be paid for prior to installation include, but are not limited to, bulk quantities such as nails, fasteners, conduits, conductors, concrete steel reinforcement, formwork, sand and gravel.**”
6. Section 01 50 00 – TEMPORARY FACILITIES AND CONTROLS
Remove Section 01 50 00 in its entirety, and replace with the same, attached hereto.
7. Section 46 31 11 – CHLORINE GAS FEED SYSTEM
Revise Section 46 31 11.2.1.G.6 as follows:
 - a. Delete “A water circulation pump shall be provided to transfer hot water from the heater to the water bath. The pump shall shut down upon detection of low water bath level.”**Revise** Section 46 31 11.2.1.G.7 as follows:
 - a. Add “If a water circulation pump is provided to transfer hot water from the heater to the water bath, the pump shall shut down upon detection of low water bath level.”

MODIFICATIONS TO THE PLANS

1. Sheet 05-C102
 - a. **Replace** the sheet with the attached.
2. Sheet 05-E103
 - a. **Replace** the sheet with the attached.

This Addendum, including these two (2) pages, is thirty-four (34) pages with attachments in its entirety.

Attachments: Contract Documents: BP – Bid Proposal

Specification Sections: 01 10 00 – Summary, 01 22 13 – Measurement and Payment, and 01 50 00 – Temporary Facilities and Controls

Plan Sheets: 05-C102, 05-E103



Digitally Signed: September 26, 2018
Greg T. Swoboda, P.E. 76706
Garver, LLC.
Registration No. 5713



Digitally Signed: September 26, 2018
Verinder K. Gupta, P.E. 53097
Gupta & Associates, Inc.
Registration No. 2593

BID PROPOSAL

PROPOSAL OF _____

, a corporation a partnership consisting of _____

an individual doing business as _____

THE SAN ANTONIO WATER SYSTEM:

Pursuant to Instructions and Invitation to Bidders, the undersigned proposes to furnish all labor and materials as specified and perform the work required for the project as specified, in accordance with the Plans and Specifications for the following prices to wit:

(PLEASE SEE ATTACHED LIST OF BID ITEMS)

TOTAL BASE BID PRICE \$ _____

TOTAL BASE BID PRICE INCLUDING ADDITIVE ALTERNATES \$ _____

Mobilization and demobilization shall be limited to the maximum percentage shown. **If the percentage exceeds the allowable maximum stated for mobilization and demobilization, SAWS reserves the right to cap the amount at the percentages shown and adjust the extensions of the bid items accordingly.**

BIDDER'S SIGNATURE & TITLE

FIRM'S NAME (TYPE OR PRINT)

FIRM'S ADDRESS

FIRM'S PHONE NO. /FAX NO.

FIRM'S EMAIL ADDRESS

The Contractor herein acknowledges receipt of the following:
Addendum Nos. _____

OWNER RESERVES THE RIGHT TO ACCEPT THE OVERALL MOST RESPONSIBLE BID.

The bidder offers to construct the Project in accordance with the Contract Documents for the contract price, and to complete the Project within **400** calendar days after the start date, as set forth in the Authorization to Proceed. **The bidder understands and accepts the provisions of the Contract Documents relating to liquidated damages of the project if not completed on time.**

Complete the additional requirements of the Bid Proposal, which are included on the following pages.

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Solicitation No. CO-00197

Item No.	Quote Category	SOV Item	Item Description	Unit	Quantity	Unit Bid Price	Total Price
1	General Water Bid Item	01.4600.00.0002 - Construction	Civil/Demolition for Chlorine and Sulfur Dioxide Systems: All costs associated with demolition for preparation for installation of pipelines, feed systems, injectors, roll-up doors and their components. It shall include demolition, saw cutting, hauling, temporary erosion controls, salvage, disposal of all items unused/removed in accordance with the Contract Documents, complete in-place for the lump sum price.	LS	1.00	\$	\$
2	General Water Bid Item	01.4600.00.0002 - Construction	Civil/Structural/ Mechanical for Chlorine and Sulfur Dioxide Systems: All costs associated with fabrication, delivery, installation, and testing of the chlorine and sulfur dioxide systems. It shall include procurement, installation, structural items, field testing, start-up and commissioning, performance testing, training, manufacturer's field services, submittals and O&M manuals in accordance with the Contract Documents, complete in-place for the lump sum price.	LS	1.00	\$	\$
3	General Water Bid Item	01.4600.00.0002 - Construction	Civil/Structural/ Mechanical for Roll-up Doors: All costs associated with fabrication, delivery, installation, and testing of the roll-up doors. It shall include procurement, installation, structural items, field testing, start-up and commissioning, performance testing, training, manufacturer's field services, submittals and O&M manuals in accordance with the Contract Documents, complete in-place for the lump sum price.	LS	1.00	\$	\$
4	General Water Bid Item	01.4600.00.0002 - Construction	Civil/Structural/ HVAC for Chlorine and Sulfur Dioxide Storage Rooms: All costs associated with fabrication, delivery, installation, and testing of the heating units. It shall include procurement, installation, structural items, field testing, start-up and commissioning, performance testing, training, manufacturer's field services, submittals and O&M manuals in accordance with the Contract Documents, complete in-place for the lump sum price.	LS	1.00	\$	\$
5	General Water Bid Item	01.4600.00.0002 - Construction	Electrical/I&C Improvements for Chlorine and Sulfur Dioxide System: All costs associated with the demolition and replacement of the chlorine and sulfur dioxide systems including work associated with control panels, leak detection systems, heating units and roll-up doors to include electrical, conduit, wiring/cables, instrumentation, connections, submittals, manufacturer's field services, testing, startup, training, and commissioning, complete in-place for the lump sum price.	LS	1.00	\$	\$

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Item No.	Quote Category	SOV Item	Item Description	Unit	Quantity	Unit Bid Price	Total Price
6	General Water Bid Item	01.4600.00.0002 - Construction	Emergency valve shut-off systems associated with the chlorine gas feed system and sulfur dioxide feed equipment for the project. This shall include furnishing all equipment, materials, incidentals and start-up and operator training services required for the emergency valve shut-off systems.	LS	1.00	\$	\$
7	General Water Bid Item	01.4600.00.0002 - Construction	Pre-startup/Commissioning: Construction Items: Allowance for \$200,000 for unforeseen construction related items (not included in the scope) associated with pre-start up and start-up services necessary to provide for an operational and functional system. It shall include furnishing all labor, materials, tools, equipment and incidentals required to construct these project related items at SAWS request, and to be negotiated under the contract terms and conditions, complete in place.	LS	1.00	\$200,000.00	\$200,000.00
8	General Water Bid Item	01.4600.00.0002 - Construction	Emerson Process Management Services: Allowance for Emerson Process Management in the amount of \$664,789.00 associated with the project. This shall include furnishing all labor, materials, tools, equipment and incidentals required to construct the I&C related items, complete in place.	LS	1.00	\$664,789.00	\$664,789.00
9	General Water Bid Item	01.4600.00.0002 - Construction	Permitting Fees: Allowance for \$5,000 for fees associated with this project. This shall include furnishing all labor, materials, tools, equipment, incidentals, required to obtain all necessary permits. Contractor to pay and be reimbursed actual amount by SAWS.	LS	1.00	\$5,000.00	\$5,000.00
10	General Water Bid Item	01.4600.00.0002 - Construction	Subsurface Utility Investigation: Allowance for \$10,000 for completion of a subsurface utility investigation. This shall include furnishing all tools, labor, materials, equipment and incidentals necessary for the completion of this item that does not harm the existing utilities. Contractor to pay and be reimbursed actual amount by SAWS.	LS	1.00	\$10,000.00	\$10,000.00
11	General Water Bid Item	01.4600.00.0002 - Construction	Mobilization and Demobilization: This item shall include project move-in and move-out of personnel and equipment, for all work including furnishing all labor, materials, tools, equipment and incidentals required to mobilize, demobilize, clean site upon project completion, and bond and insure the Work in accordance with the Contract Documents, complete in place. Maximum of 10% of the total of Line Items 1 through 6.	LS	1.00	\$	\$
TOTAL BASE BID AMOUNT (Items 1-11)							\$

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ADDITIVE ALTERNATE – Owner reserves the right to award a contract with or without the following additive alternates							
12	General Water Bid Item	01.4600.00.0002 - Construction	Additive Alternate No. 1: Temporary Sodium Hypochlorite Feed System – Cost to provide and install temporary sodium hypochlorite feed system. It shall include procurement, installation, field testing and start-up, performance testing, training, and submittals in accordance with the contract documents, complete and in place for the lump sum price.	LS	1.00	\$	\$
13	General Water Bid Item	01.4600.00.0002 - Construction	Additive Alternate No. 2: Sodium Hypochlorite Solution – Cost to provide up to 450,000 gallons of 12.5% sodium hypochlorite solution. Contractor to pay and be reimbursed by SAWS for the ACTUAL amount accepted by SAWS.	GAL	450,000	\$	\$
TOTAL ADDITIVE ALTERNATE BID AMOUNT (Items 12-13)							\$

SECTION 01 10 00 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Contract description.
 - 2. Work by Owner or other Work at the Site.
 - 3. Owner-furnished products.
 - 4. Contractor's use of Site and premises.
 - 5. Future work.
 - 6. Work sequence.
 - 7. Owner occupancy.
 - 8. Permits.
 - 9. Specification conventions.

1.2 CONTRACT DESCRIPTION

- A. Work of the Project consists of construction of the Dos Rios WRC Chlorine System Improvements. This project includes the removal and replacement of the chlorine system, sulfur dioxide system, removal and replacement of roll-up doors in the chlorine and sulfur dioxide storage rooms, additional heating in the chlorine and sulfur dioxide storage rooms, yard piping, removal and replacement of injectors, and all associated electrical, instrumentation and control improvements.
- B. The Work is located at Dos Rios Water Recycling Center, 3495 Valley Road, San Antonio, TX 78221.
- C. Perform Work of the Contract according to Conditions of Contract.
- D. Work of the Contract is identified in the Specifications and on Drawings.

1.3 WORK BY OWNER OR OTHERS

- A. There is no Work planned by the Owner or by Others in the project area. The Owner will continue to use the existing facilities during the Project and the Owner will conduct operational and maintenance work items to maintain system operations.
- B. If the Owner-awards contracts that interfere with each other due to work being performed at the same time or at the same Site, Owner will determine the sequence of work under all contracts according to "Work Sequence" and "Contractor's Use of Site and Premises" Articles in this Section.
- C. Coordinate Work with the Owner.
- D. Remove and deliver to Owner the following items:
 - 1. Sensalerts with controllers

1.4 OWNER-FURNISHED PRODUCTS

- A. There are no Owner furnished items except for items shown in the specification sections or on the Drawings to be reused in the Project Work for installation by Contractor.

1.5 CONTRACTOR'S USE OF SITE AND PREMISES

- A. Limit use of Site and premises to allow:
 - 1. Owner occupancy. The Owner will utilize the existing chlorine and sulfur dioxide systems during the project. The chlorine and sulfur dioxide systems shall be maintained in operation at all times per the construction sequence. Contractor shall coordinate work items with the Owner.
 - 2. Use of Site. Contractor shall limit Work to the areas described in the specifications and shown on the Drawings.
- B. Access to Site: Limited to SAWS working hours.
- C. Construction Operations: Limited to areas indicated on Drawings
 - 1. Noisy and Disruptive Operations (such as Use of Jack Hammers and Other Noisy Equipment): Coordinate and schedule such operations with Owner to minimize disruptions.
- D. Time Restrictions for Performing Work: SAWS working hours. See General Conditions.
- E. Utility Outages and Shutdown:
 - 1. Coordinate and schedule electrical and other utility outages with Owner.
 - 2. Outages: Allowed only at previously agreed upon times. Schedule outages at times when facility is not being used
 - 3. At least two weeks before scheduled outage, submit Outage Request Plan to Owner /Engineer itemizing the dates, times, and duration of each requested outage.
- F. Construction Plan: Before start of construction, post electronic file to Project website on CPMS of construction plan regarding access to Work, use of Site, and utility outages for acceptance by Owner. After acceptance of plan, construction operations shall comply with accepted plan unless deviations are accepted by Owner in writing.

1.6 WORK SEQUENCE

- A. Construct Work in stages to accommodate Owner's occupancy requirements during construction period. Coordinate construction schedule and operations with Owner/Engineer:
- B. The construction of this project will occur while the plant is operating to meet specific, critical permit requirements. The operations necessary to meet these requirements are of higher priority than construction activities. Owner may not permit certain construction work during Biomonitoring testing. Owner will provide advance notification of the days for the testing. Schedules of connections, renovations and modifications shall be submitted to the Owner for approval, and all such items shall be coordinated throughout the entire construction period. These schedules shall permit full and normal treatment of wastewater.
- C. The Contractor shall prepare and submit a project schedule in accordance with the General Conditions and as shown in Section 01 32 00, for all work as well as outlining the schedule and time requirements for each item involving an existing treatment unit, piece of equipment, and conveyance system. The project schedule, schedule of values, schedule of estimated progress payments, and safety plan must be approved by the Owner before the initial estimate for partial payment is submitted.
- D. The Contractor shall notify the Owner in writing at least 14 calendar days in advance and again 3 calendar days prior to beginning work on a particular area, and coordinate with the Owner the specific items to be isolated and duration for each.

- E. Obtain written approval from the Owner prior to each shutdown. High flow conditions or equipment outages may require the rescheduling of an approved shutdown. Any cost associated with rescheduling will be considered as incidental to the Contractor's cost of the project.
- F. The Contractor shall notify the Owner in writing at least 14 calendar days prior to any testing of a unit or facility, and coordinate with the Owner the specifics of the testing. Obtain written approval from the Owner prior to the test. If the Contractor conducts the testing in the absence of the Owner, it shall be at the Contractor's risk, and the Owner may ask the Contractor to repeat the testing in the Owner's presence.
- G. The Contractor shall not operate any valves or equipment in the existing plant.
- H. Prior to beginning work on shutdowns and process connections, the Contractor shall have on-site all materials, equipment, and personnel necessary to complete the work in the time scheduled. The Contractor shall also perform all possible tasks to the most complete state possible. For example all exposed bolts and nuts on valves, flanges, or fittings which are to be disassembled shall be removed and replaced one at a time prior to shutdown and connections; thus allowing for as timely completion as possible.
- I. Failure of the Contractor to properly plan and perform the work in the prescribed manner may result in discharge of inadequately treated wastewater. In this case, the Contractor may be liable for payment of fines, fees or other charges imposed upon the Owner by state or federal regulatory agencies, and all other costs associated with the inadequately treated discharge. The Owner may recover monetary sums by retention.
- J. Access to all existing plant facilities must be maintained at all times.
- K. Plugged pipelines, in which water, silt, sand, or debris has been standing, shall be cleaned by the Contractor of debris prior to conducting Work in the project area/locations.
- L. The Contractor shall be required to maintain the access roads utilized during construction in a reasonably clean condition. Weekly road cleaning and scraping will be required as directed by the Owner.
- M. Access roads shall not be utilized for storage of materials.

1.7 SEQUENCE ITEMS

- A. Perform work in sequence listed below to accommodate Owner's occupancy during the construction period and to ensure completion of the work in the contract time. Work items 1.7.D., E., F., G., H., I., and J. can be constructed concurrently. The Contractor is encouraged to adhere to this sequence but may develop an alternate sequence for discussion and approval with Owner and Engineer prior to beginning construction. Some construction activities may be conducted concurrently. Completion dates of the various stages shall be in accordance with the approved construction schedule submitted by the Contractor.
- B. Contractor shall install erosion control measures per the drawings and requirements of the specifications.
- C. Chlorine and Sulfur Dioxide Gas Alarm Panel.
 1. Contractor shall coordinate with the Owner and provide written notice to the Owner prior to beginning work.
 2. Demolish the existing TC enclosure that is located inside the Chlorine Building Control Room as shown in contract documents. As such, the identification (field verification) of the

existing wiring/signal will determine if the signals should be retained (then rerouted) or demolished in its entirety.

3. Install and make operational the new RIO-CL2 with the existing Controller 7/57.
4. Install and make operational the new CL2 & SO2 Gas Alarm Panel and associated Gas sensors, horns/beacons equipment, etc.
5. Once the new CL2 & SO2 Gas Alarm Panel and associated equipment is operational and monitored on the Emerson Control System via RIO-CL2 perform a Functional Acceptance Test (FAT).
6. The CL2 & SO2 Gas Alarm Panel startup should be complete/operational, FAT performed and signed off/approved by the Owner/Engineer prior to proceeding with the Chlorine System Phase No.1 startup.
7. Demolish the existing CL2 & SO2 instrumentation and wiring from the existing Blue Control Panel in addition to the existing Horn/Beacon equipment.
8. Install and make operational the new RIO-SO2 with the existing Controller 7/57.

D. Chlorine Feed System

1. Contractor shall coordinate with the Owner and provide written notice to the Owner prior to beginning work.
2. If Additive Alternate Nos. 1 and 2 are selected, the entire chlorine system (chlorine cylinder storage banks, chlorine evaporators and chlorinators) can be taken out of service at the same time.
3. If Additive Alternate Nos. 1 and 2 are not selected, only one-half of the chlorine system (chlorine cylinder storage banks, chlorine evaporators and chlorinators) can be taken out of service at a time.
 - a. The eastern half of the chlorine system shall be taken off line first. The eastern half of the chlorine system generally consists of four (4) chlorine cylinder storage banks, three (3) evaporators and four (4) chlorinators and associated piping and valves. The Contractor, coordinating with the Owner, shall isolate the eastern half of the chlorine system from the western half. Prior to removing the eastern half of equipment and piping, the Owner shall be allowed to operate the western half of the chlorine system for seven (7) calendar days with the eastern system still in place. After the seven (7) calendar days of successful operation of the western half, the eastern half of the system can be removed from service.
 - b. It is noted that as part of normal operations, SAWS replaces empty chlorine cylinders. During the replacement of the cylinders, the Contractor will be required to stop work and vacate the room. See Special Conditions.
 - c. After the eastern half of the chlorine system has been replaced and the equipment operation demonstrated for fourteen (14) calendar days, the western half of the chlorine system can be removed from service. The western half chlorine system generally consists of four (4) chlorine cylinder storage banks, three (3) evaporators and five (5) chlorinators and associated piping and valves.
4. The electrical, instrumentation and controls shall be coordinated such that the Owner maintains the instrumentation and controls for operations during the removal and replacement of the equipment. Refer to Specification Section 40 61 00 for more detail.
5. After the removal and replacement of the eastern and western sides, the Contractor shall demonstrate the operation of the system (eastern and western sides) in the presence of the Owner.

E. Sulfur Dioxide Feed System

1. Contractor shall coordinate with the Owner and provide written notice to the Owner prior to beginning work. Work will be accomplished concurrently with the chlorine feed system.
2. It is noted that as part of normal operations, SAWS replaces empty sulfur dioxide cylinders. During the replacement of the cylinders, the Contractor will be required to stop work and vacate the room. See Special Conditions.
3. Only one evaporator may be taken out of service at a time.
4. Only one Sulfonator may be taken out of service at a time.

5. Only one Injector may be taken out of service at a time.
6. Phase 1- Remove and Replace Evaporator No. 1, Sulfonator No. 1, and Injector No. 1.
 - a. Existing Evaporator No. 1- Offline
 - b. Existing Sulfonator No. 1- Offline
 - c. Existing Injector No. 1-Offline
 - d. Existing Evaporator No. 2 & 3- Online
 - e. Existing Sulfonator No. 2 & 3- Online
 - f. Existing Injector No. 2 & 3- Online
 - g. Remove Evaporator No. 1 and Sulfonator No. 1 and all associated piping and valves. Contractor shall coordinate with Owner to ensure that remaining Evaporators (# 2 and 3), Sulfonators (2 & 3), and Injectors (2 and 3) are operational.
 - h. Individual feed lines between Evaporator and Sulfonators are present with interconnection to allow any evaporator to feed any sulfonator. A single header line is available for the SO2GV Line from the outlet side of the Sulfonators to outside the Sulfonator Building. All three (3) sulfonator outlets are interconnected to this single header. A temporary line (or one of the two proposed SO2GV lines) is required between the sulfonator to the SO2GV Line outside the building in Phase 2. This allows demolition of equipment in Phase 2. Existing Sulfonator Nos. 1 and 2 are now online.
 - i. Replace SO2GV Yard Main No. 1 and maintain existing SO2GV Yard Main No. 2 in Service.
 - j. Once the new Evaporator, Sulfonator, and Injector No. 1 and SO2GV Yard Main are successfully operational for a period of new less than 7 calendar days; proceed to Phase 2.
7. Phase 2
 - a. New Evaporator No. 1- Online
 - b. New Sulfonator No. 1- Online
 - c. New Injector No. 1- Online
 - d. Existing Evaporator No. 2- Offline
 - e. Existing Sulfonator No. 2- Offline
 - f. Existing Injector No. 2- Offline
 - g. Existing Evaporator No. 3- Online
 - h. Existing Sulfonator No. 3- Online
 - i. Existing Injector No. 3- Online
 - j. Remove Evaporator No. 2, Sulfonator No. 2, and Injector No. 2 and all associated piping and valves. Contractor shall coordinate with Owner to ensure that remaining Evaporators (# 1 and 3), Sulfonators (1 & 3), and Injectors (1 and 3) are operational.
 - k. Individual feed lines between Evaporator and Sulfonators are present with interconnection to allow any evaporator to feed any sulfonator. A single header line is available for the SO2GV Line from the outlet side of the Sulfonators. All three (3) sulfonator outlets are interconnected to this single header. A temporary line (or one of the two proposed SO2GV Lines) is required between the sulfonator to the SO2GV Line outside the building to allow demolition of equipment in Phase 2. This allows demolition of Sulfonator No. 2. Connect existing Sulfonator No. 3 on a temporary basis to new SO2GV Lines. New Sulfonator No. 1 and existing Sulfonator No. 3 are now online.
 - l. Install second SO2GV Line and tie-in Sulfonator No. 2 to each SO2GV.
 - m. Replace SO2GV Yard Main No. 2 and maintain the new SO2GV Yard Main in Service.
 - n. Once the new Evaporator, Sulfonator, and Injector No. 2 and SO2GV Yard Main No. 2 are successfully operational for a period of new less than 7 calendar days; proceed to Phase 3.
8. Phase 3
 - a. New Evaporator No. 1- Online
 - b. New Sulfonator No. 1- Online
 - c. New Injector No. 1- Online

- d. New Evaporator No. 2- Online
 - e. New Sulfonator No. 2- Online
 - f. New Injector No. 2- Online
 - g. Existing Evaporator No. 3- Offline
 - h. Existing Sulfonator No. 3- Offline
 - i. Existing Injector No. 3- Offline
 - j. Remove Evaporator No. 3, Sulfonator No. 3, and Injector No. 3 and all associated piping and valves. Contractor shall coordinate with Owner to ensure that remaining Evaporators (# 1 and 2), Sulfonators (1 & 2), and Injectors (1 and 2) are operational.
 - k. Individual feed lines between Evaporator and Sulfonators are present with interconnection to allow any evaporator to feed any sulfonator. A single header line is present for the SO2GV Line from the outlet side of the Sulfonators. All three (3) sulfonator outlets are interconnected to this single header. Connect Sulfonator No. 3 to both new SO2GV Line. All three new sulfonators are now online.
 - l. Continue to utilize and operate new SO2GV Yard Main No. 1 and 2.
9. Sequentially replace SO2 Diffuser in the chlorine contact basin. Maintain in service at least one basin during this work.
 10. Electrical, instrumentation, and controls shall be coordinated such that the Owner maintains the instrumentation and controls for operation during the removal and replacement of equipment. Refer to Specification Section 40 61 00 for more detail.

F. Injectors

1. Contractor shall coordinate with the Owner and provide written notice to the Owner prior to beginning work for each location. Work can only be done at one (1) location at a time unless Additive Alternate Nos. 1 and 2 are selected. If Additive Alternate Nos. 1 and 2 are selected, chlorine feed to the 1st Stage RAS, 2nd Stage RAS, Filters, and Recycled Water is not required while the temporary sodium hypochlorite system is operating.
2. Chlorine System – 1st Stage RAS
 - a. There are two (2) Chlorine RAS Injector Stations at the 1st Stage Facilities. The Contractor shall isolate one (1) Chlorine RAS Injector Station at a time while maintaining the other station in service. The Contractor shall complete the removal and replacement of the injectors and associated piping and valves within five (5) calendar days per location.
 - b. See Special Conditions for work in this area.
3. Chlorine System – 2nd Stage RAS
 - a. There is one (1) Chlorine RAS Injector Station at the 2nd Stage Facilities. The Contractor shall complete the removal and replacement of the injector and associated piping and valves within five (5) calendar days.
 - b. See Special Conditions for work in this area.
4. Chlorine System – Filters
 - a. There is one (1) Chlorine Filter Injector Station for the South Filters. The Contractor shall complete the removal and replacement of the injectors and associated piping and valves within three (3) calendar days.
5. Chlorine System – Recycle Water
 - a. There is one (1) Chlorine Injector Station for the Recycle Water. The Contractor shall complete the removal and replacement of the injector and associated piping and valves within three (3) calendar days.
6. Sulfur Dioxide System
 - a. There are three (3) SO2 Injectors at the Injector Panel. Replace each injector according to the sequence plan noted in Section D. Complete the removal and replacement of the injector and associated piping and valves of each corresponding injector prior to moving to the next injector. Maintain two injectors operational at all times.

G. Distribution Panels

1. Chlorine System – Contact Basins

- a. There is one (1) Chlorine Distribution Panel per Chlorine Contact Basin. The Contractor shall provide temporary chlorine piping during replacement of the chlorine distribution panel or construction of any interconnections between new and existing chlorine lines at the Chlorine Contact Basins. The temporary piping shall be sized to match the existing chlorine piping. Temporary piping shall be tested in the presence of the Owner before interrupting chlorine service to the Chlorine Contact Basins through existing and/or new permanent piping. The Contractor shall provide covers over the temporary chlorine piping for protection for 1-ton vehicular traffic in traffic areas. After the temporary chlorine piping has been tested, the Contractor shall complete the removal and replacement of the distribution panel and associated piping and valves or construction of interconnections within three (3) calendar days.

H. Yard Piping

1. Contractor shall coordinate with the Owner and provide written notice to the Owner prior to beginning work for each location.

2. Chlorine System – 1st Stage RAS

- a. The Contractor shall coordinate with the Owner and identify the two existing chlorine lines for the two 1st Stage RAS injector panels. The Contractor shall maintain one (1) 1st Stage RAS Chlorine line in service while replacing the other buried chlorine line. The second existing 1st Stage RAS chlorine piping shall not be removed until the first new 1st Stage RAS chlorine line has been tested and placed into service.
- b. If Additive Alternate Nos. 1 and 2 are selected, the Contractor may install both 1st Stage RAS chlorine lines at the same time.

3. Chlorine System – 2nd Stage RAS

- a. The Contractor shall coordinate with the Owner and identify one (1) existing chlorine line for the removed Odor Control System. The Contractor shall utilize the existing buried pipe trench location for the odor control pipe for locating the new 2nd Stage RAS chlorine piping. The existing 2nd Stage RAS chlorine piping shall not be removed and replaced until the new piping has been tested and placed into service.
- b. If Additive Alternate Nos. 1 and 2 are selected, the Contractor may install both 2nd Stage RAS chlorine lines at the same time.

4. Chlorine System – Filters

- a. The Contractor shall coordinate with the Owner and identify one (1) existing chlorine line for the removed Odor Control System. The Contractor shall utilize the existing buried pipe trench location for the odor control pipe for locating the new Filter chlorine piping. The existing Filter chlorine piping shall not be removed and replaced until the new piping has been tested and placed into service.
- b. If Additive Alternate Nos. 1 and 2 are selected, the Contractor may install both Filter chlorine lines at the same time.

5. Chlorine System – Recycle Water

- a. The Contractor shall maintain one (1) Recycle Water Chlorine line in service while replacing the other buried chlorine line. The existing Recycle Water chlorine piping shall not be removed and replaced until the new piping has been tested and placed into service. If Additive Alternate Nos. 1 and 2 are selected, the Contractor may install both Recycle Water chlorine lines at the same time.

6. Chlorine System – Contact Basins

- a. The Contractor shall install two new buried chlorine lines to serve the Chlorine Contact Basins using the location of an existing capped pipe within the pipe trench and a new location near the bottom of the pipe trench. The existing Chlorine piping shall not be removed and replaced until the new piping has been tested in the presence of the Owner and placed into service. The Contractor shall maintain chlorine service to the Chlorine Contact Basins at all times.
- b. If Additive Alternate Nos. 1 and 2 are selected, the Contractor may install the four Chlorine Contact Basin chlorine lines at the same time. The Contractor shall

maintain chlorine or sodium hypochlorite service to the Chlorine Contact Basins at all times.

7. Sulfur Dioxide System
 - a. Maintain SO₂GV lines in services according to the sequence plan noted in Section D. Contractor shall utilize existing buried pipe trench. The existing SO₂GV line may not be removed until the new piping has been tested in placed into service.

I. Diffusers

1. Contractor shall coordinate with the Owner and provide written notice to the Owner prior to beginning work for each location.
2. Chlorine System – Filters (South)
 - a. The Contractor shall provide the means to isolate filters from the common Filter Influent Channel to replace the filter diffusers. The Contractor will be allowed to remove two (2) filters from service at a time, which shall consist of an east filter and a west filter. After isolating from the common Filter Influent Channel, the Contractor shall dewater and clean the channels for the diffuser installation. The Contractor shall remove, replace and test the diffusers for two (2) filters within five (5) calendar days.
3. Sulfur Dioxide System – Chlorine Contact Basins
 - a. The chlorine contact basin must remain in service and may not be taken offline to replace diffuser system. Diffuser in each basin must be replaced one at a time.

J. Roll-up Doors

1. Contractor shall coordinate with the Owner and provide written notice to the Owner prior to beginning work for each location.
2. Chlorine Storage
 - a. The Contractor shall remove and replace the overhead roll-up door in the Chlorine Storage Room. The Contractor shall remove, replace and test the door and demonstrate the door operation within four (4) calendar days if the existing or new gas chlorine system is in operation.
3. Sulfur Dioxide Storage
 - a. The Contractor shall remove and replace the overhead roll-up door in the Sulfur Dioxide Storage Room. The Contractor shall remove, replace and test the door and demonstrate the door operation within four (4) calendar days.

1.8 OWNER OCCUPANCY

- A. Owner will utilize systems during entire period of construction to conduct normal plant operations unless Additive Alternate Nos. 1 and 2 are selected.
- B. Coordinate with Owner to minimize conflict and to facilitate Owner's operations.
- C. Schedule the Work to accommodate Owner's use of the systems.

1.9 PERMITS

- A. Furnish necessary permits for construction of Work. Portions of this project may be subject to review and acceptance by various agencies. The Contractor will be required to coordinate with these agencies and pay fees for such items as issuance of permits or work orders, inspections during construction, and final acceptance. The agencies for this project that may require coordination include but are not limited to the following:
 1. City of San Antonio.
 2. San Antonio Water System.
 3. Texas Commission on Environmental Quality.
 4. CPS Energy.

1.10 SPECIFICATION CONVENTIONS

- A. These Specifications are written in imperative mood and streamlined form. This imperative language is directed to Contractor unless specifically noted otherwise. The words "shall be" are included by inference where a colon (:) is used within sentences or phrases.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION

SECTION 01 22 13 – MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Scope:
1. Items listed starting in Article 1.3 of this Section refer to and are the same pay items listed in the Bid Form and constitute all pay items for completing the Work.
 2. No direct or separate payment will be made for providing miscellaneous temporary or accessory works, plant or facility services, Contractor's or Engineer's field offices, layout surveys, project signs, sanitary requirements, testing, safety provisions and safety devices, submittals and record drawings, water supplies, power and fuel, maintenance of traffic, removal of waste, security, coordination with Owner's operations, information technology (including hardware, software, and services) required during construction, commissioning where specified, bonds, insurance, or other requirements of the General Conditions, Supplementary Conditions, Division 01 Specifications, and other requirements of the Contract Documents.
 3. Compensation for all services, items, materials, and equipment shall be included in prices stipulated for lump sum and unit price pay items listed in this Section and included in the Contract.
- B. Each lump sum and unit price, as bid, shall include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

1.2 RELATED PROVISIONS

- A. Payments to Contractor: Refer to General Conditions, Supplementary Conditions, Agreement, and Section 01 29 00, Payment Procedures.
- B. Changes in Contract Price: Refer to General Conditions and Supplementary Conditions.
- C. Schedule of Values: Refer to General Conditions, Supplementary Conditions, and Section 01 29 73, Schedule of Values.

1.3 CONTRACT NO. 1 – GENERAL CONSTRUCTION

- A. Item 1 – Civil/Demolition for Chlorine and Sulfur Dioxide Systems:
1. Measurement: All costs associated with demolition for preparation for installation of pipelines, feed systems, injectors, roll-up doors and their components. It shall include demolition, saw cutting, hauling, temporary erosion controls, salvage, disposal of all items unused/removed in accordance with the Contract Documents, complete in-place for the lump sum price.
 2. Payment: Lump sum payment for Item 1 will be full compensation for completing the Work, as shown or indicated under Division 01 through Division 46. Additional work items that Contractor may be ordered by Owner to perform are described below.
- B. Item 2 – Civil/Structural/Mechanical for Chlorine and Sulfur Dioxide Systems:
1. Measurement: All costs associated with fabrication, delivery, installation, and testing of the chlorine and sulfur dioxide systems. It shall include procurement, installation, structural items, field testing, start-up and commissioning, performance testing, training, manufacturer's field services, submittals and O&M manuals in accordance with the Contract Documents, complete in-place for the lump sum price.

2. Payment: Lump sum payment for Item 2 will be full compensation for completing the Work, as shown or indicated under Division 01 through Division 46. Additional work items that Contractor may be ordered by Owner to perform are described below.
- C. Item 3 – Civil/Structural/Mechanical for Roll-up Doors:
1. Measurement: All costs associated with fabrication, delivery, installation, and testing of the roll-up doors. It shall include procurement, installation, structural items, field testing, start-up and commissioning, performance testing, training, manufacturer's field services, submittals and O&M manuals in accordance with the Contract Documents, complete in-place for the lump sum price.
 2. Payment: Lump sum payment for Item 3 will be full compensation for completing the Work, as shown or indicated under Division 01 through Division 46. Additional work items that Contractor may be ordered by Owner to perform are described below.
- D. Item 4 – Civil/Structural/HVAC for Chlorine and Sulfur Dioxide Storage Rooms:
1. Measurement: All costs associated with fabrication, delivery, installation, and testing of the heating units. It shall include procurement, installation, structural items, field testing, start-up and commissioning, performance testing, training, manufacturer's field services, submittals and O&M manuals in accordance with the Contract Documents, complete in-place for the lump sum price.
 2. Payment: Lump sum payment for Item 4 will be full compensation for completing the Work, as shown or indicated under Division 01 through Division 46. Additional work items that Contractor may be ordered by Owner to perform are described below.
- E. Item 5 – Electrical/I&C Improvements for Chlorine and Sulfur Dioxide Systems:
1. Measurement: All costs associated with the demolition and replacement of the chlorine and sulfur dioxide systems including work associated with control panels, leak detection systems, heating units and roll-up doors to include electrical, conduit, wiring/cables, instrumentation, connections, submittals, manufacturer's field services, testing, startup, training, and commissioning, complete in-place for the lump sum price.
 2. Payment: Lump sum payment for Item 5 will be full compensation for completing the Work, as shown or indicated under Division 01 through Division 46. Additional work items that Contractor may be ordered by Owner to perform are described below.
- F. Item 6 – Emergency Valve Shut-off Systems:
1. Measurement: Emergency valve shut-off systems associated with the chlorine gas feed system and sulfur dioxide feed equipment for the project. This shall include furnishing all equipment, materials, incidentals, and start-up and operator training services required for the emergency valve shut-off systems.
 2. Payment: Lump sum payment for Item 6 will be full compensation for completing the Work, as shown or indicated under Division 01 through Division 46. Additional work items that Contractor may be ordered by Owner to perform are described below.
- G. Item 7 – Pre-startup/Commissioning Construction Items:
1. Measurement: Allowance for \$200,000.00 for unforeseen construction related items (not included in the scope) associated with pre-start up and start-up services necessary to provide for an operational and functional system. It shall include furnishing all labor, materials, tools, equipment and incidentals required to construct these project related items at SAWS request, and to be negotiated under the contract terms and conditions, complete in place.
 2. Payment: Contractor to pay lump sum and be reimbursed for negotiated actual amount by SAWS.

- H. Item 8 – Emerson Process Management Services:
 - 1. Measurement: Emerson Process Management Services: Allowance for Emerson Process management in the amount of \$664,789.00 associated with the project. This shall include furnishing all labor, materials, tools, equipment and incidentals required to construct the I&C related items, complete in place.
 - 2. Payment: Contractor to pay lump sum and be reimbursed for actual amount by SAWS.

- I. Item 9 – Permitting Fees:
 - 1. Measurement: Allowance for \$5,000.00 fees associated with this project. This shall include furnishing all labor, materials, tools, equipment, incidentals, required to obtain all necessary permits. Contractor to pay and be reimbursed actual amount by SAWS.
 - 2. Payment: Contractor to pay lump sum and be reimbursed for actual amount by SAWS.

- J. Item 10 – Subsurface Utility Investigation:
 - 1. Measurement: Allowance for \$10,000.00 for completion of a subsurface utility investigation. This shall include furnishing all tools, labor, materials, equipment and incidentals necessary for the completion of this item that does not harm the existing utilities. Contractor to pay and be reimbursed actual amount by SAWS.
 - 2. Payment: Contractor to pay lump sum and be reimbursed for actual amount by SAWS.

- K. Item 11 – Mobilization and Demobilization:
 - 1. Measurement: This item shall include project move-in and move-out of personnel and equipment, for all work including furnishing all labor, materials, tools, equipment and incidentals required to mobilize, demobilize, clean site upon project completion, and bond and insure the Work in accordance with the Contract Documents, complete in place. Maximum of 10% of the total of Line Items 1 through 6.
 - 2. Payment: Lump sum payment for Item 9 will be full compensation for completing the Work, as shown or indicated under Division 01 through Division 46. Additional work items that Contractor may be ordered by Owner to perform are described below.

1.4 CONTRACT NO. 1 – ADDITIVE ALTERNATES

- A. Item 12 – Additive Alternate No. 1: Temporary Sodium Hypochlorite Feed System:
 - 1. Measurement: All costs associated with delivery, installation, and testing of the temporary sodium hypochlorite feed system. It shall include procurement, installation, field testing, and start-up, performance testing, training, and submittals in accordance with the Contract Documents, complete in-place for the lump sum price.
 - 2. Payment: Lump sum payment for Item 12 will be full compensation for completing the Work, as shown or indicated in the contract documents. It shall include procurement and submittals in accordance with the Contract Documents.

- B. Item 13 – Additive Alternate No. 2: Sodium Hypochlorite Solution:
 - 1. Measurement: All costs associated with the procurement and delivery of 450,000 gallons of 12.5% sodium hypochlorite solution.
 - 2. Payment: Contractor shall submit invoices to SAWS and be reimbursed by SAWS for ACTUAL amount used.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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. Provide and pay for all power required to operate temporary pumps.

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
Sodium Hypochlorite Usage* (gpm)	0.2	0.5	1.7
*Usage calculated based on 12.5% sodium hypochlorite solution.			

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 four sodium hypochlorite storage tanks of equal size with a maximum capacity of 15 days of sodium hypochlorite storage at average flow and dosing conditions.
 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. 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.
 4. 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.
 5. 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.
 6. Each pump shall be supplied with a pump-mounted VFD to allow manual adjustment of pump feed rate.

- a. The VFD shall be rated for outdoor installation with ambient temperatures up to 110°F.
 - b. The VFD shall be provided with a NEMA 4X Outdoor use enclosure.
 - c. The VFD shall have an integral keypad and display.
7. All electrical and instrumentation components will comply with applicable code requirements for the area where the temporary pump system is located.
 8. 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.
 9. 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. A 15KVA Single Phase Mini Load Center Panelboard. The enclosure shall be NEMA 4X Stainless Steel. Provide 3-ft minimum clearance from this item.
 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.

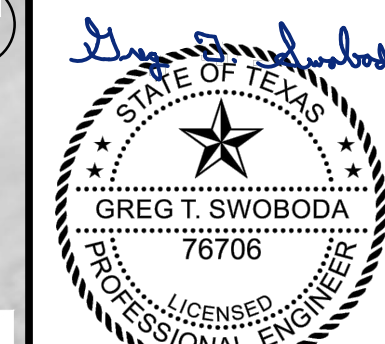
- B. Wet down exterior surfaces prior to sweeping to prevent blowing of dust and debris. At least weekly, sweep all floors (basins, tunnels, platforms, walkways, roof surfaces), and pick up all debris and dispose.
- C. Provide approved containers for collection and disposal of waste materials, debris, 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



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REGISTRATION NO. F-5713



DIGITALLY SIGNED 9/26/18

REV.	DATE	DESCRIPTION	BY
1	09/26/18	ADDENDUM NO. 5	GTS



SAN ANTONIO WATER SYSTEM
 SAN ANTONIO, TEXAS
DOS RIOS WRC CHLORINE SYSTEM IMPROVEMENTS

CONSTRUCTION LAYDOWN AND STAGING AREA/ EROSION CONTROL PLAN

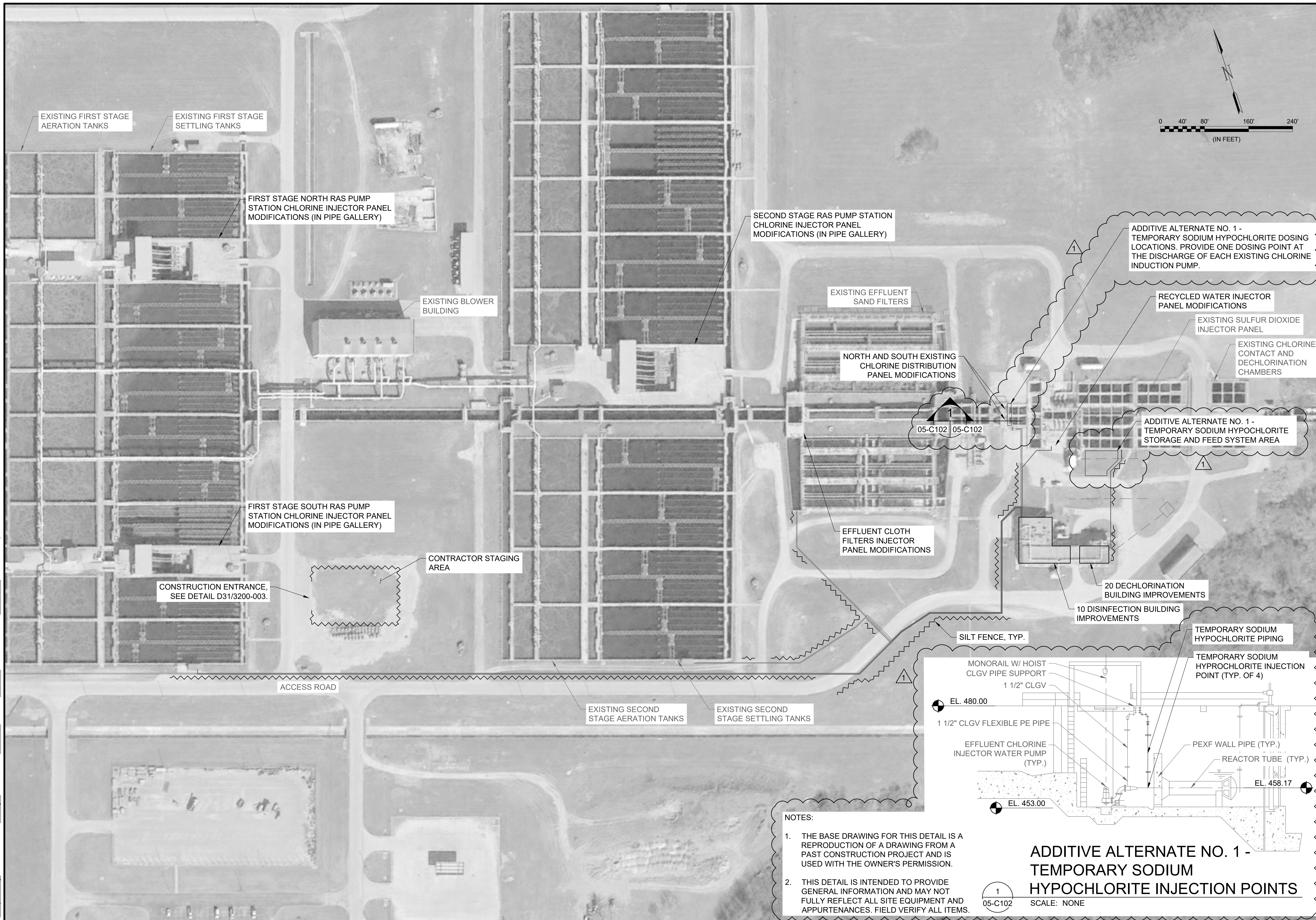
JOB NO.: 17238115
 DATE: AUG. 2018
 DESIGNED BY: GTS
 DRAWN BY: PLJ

BAR IS ONE INCH ON ORIGINAL DRAWING
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRAWING NUMBER

05-C102

SHEET NUMBER **19**



- NOTES:
1. THE BASE DRAWING FOR THIS DETAIL IS A REPRODUCTION OF A DRAWING FROM A PAST CONSTRUCTION PROJECT AND IS USED WITH THE OWNER'S PERMISSION.
 2. THIS DETAIL IS INTENDED TO PROVIDE GENERAL INFORMATION AND MAY NOT FULLY REFLECT ALL SITE EQUIPMENT AND APPURTENANCES. FIELD VERIFY ALL ITEMS.

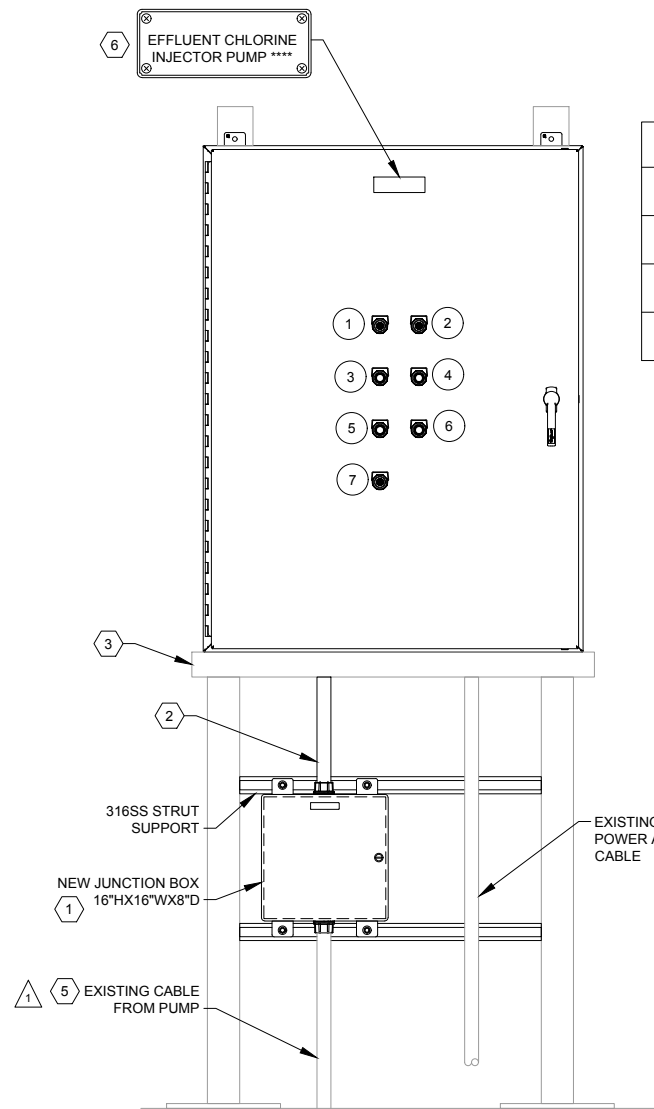
1
05-C102

**ADDITIVE ALTERNATE NO. 1 -
 TEMPORARY SODIUM
 HYPOCHLORITE INJECTION POINTS**

SCALE: NONE

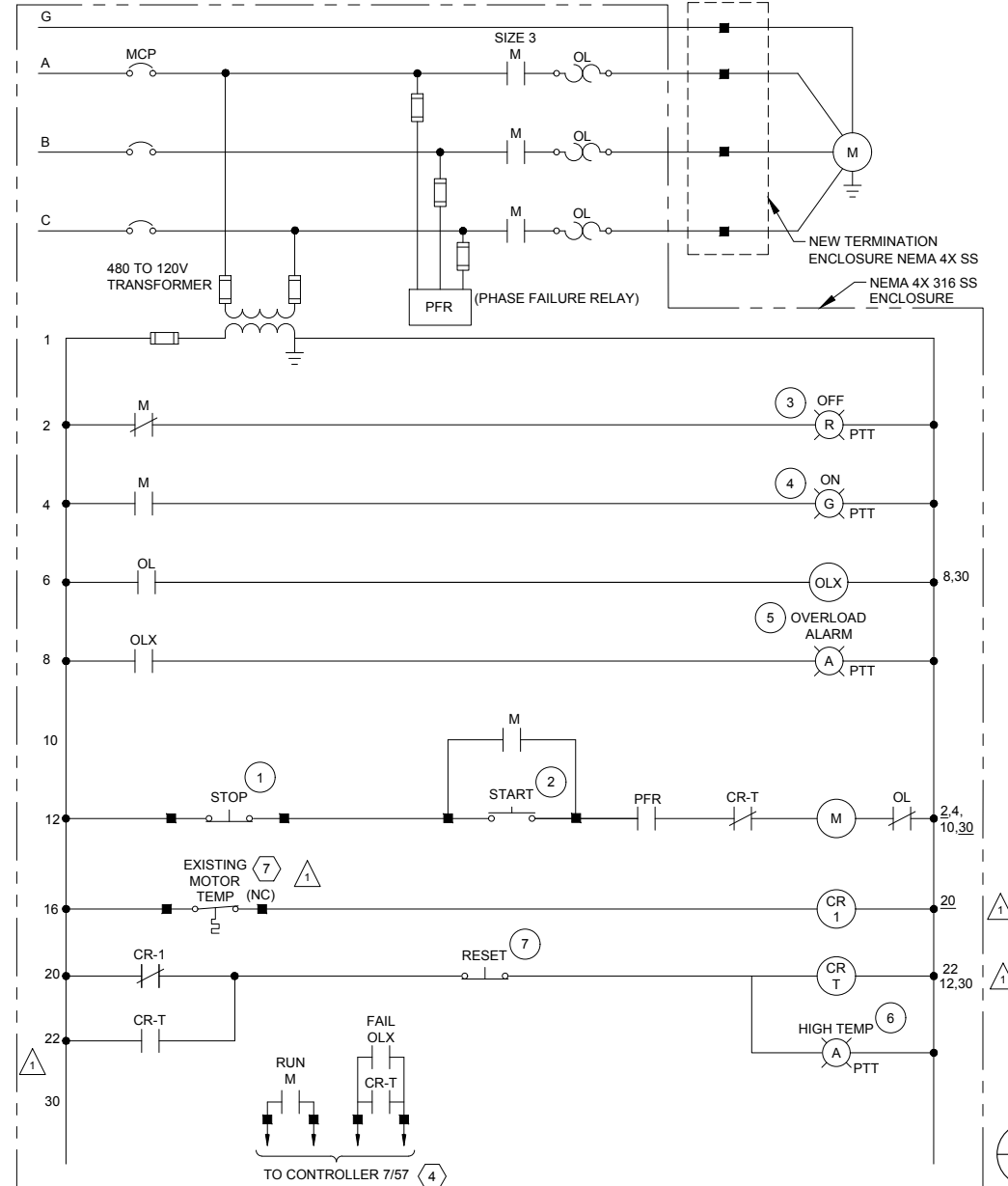
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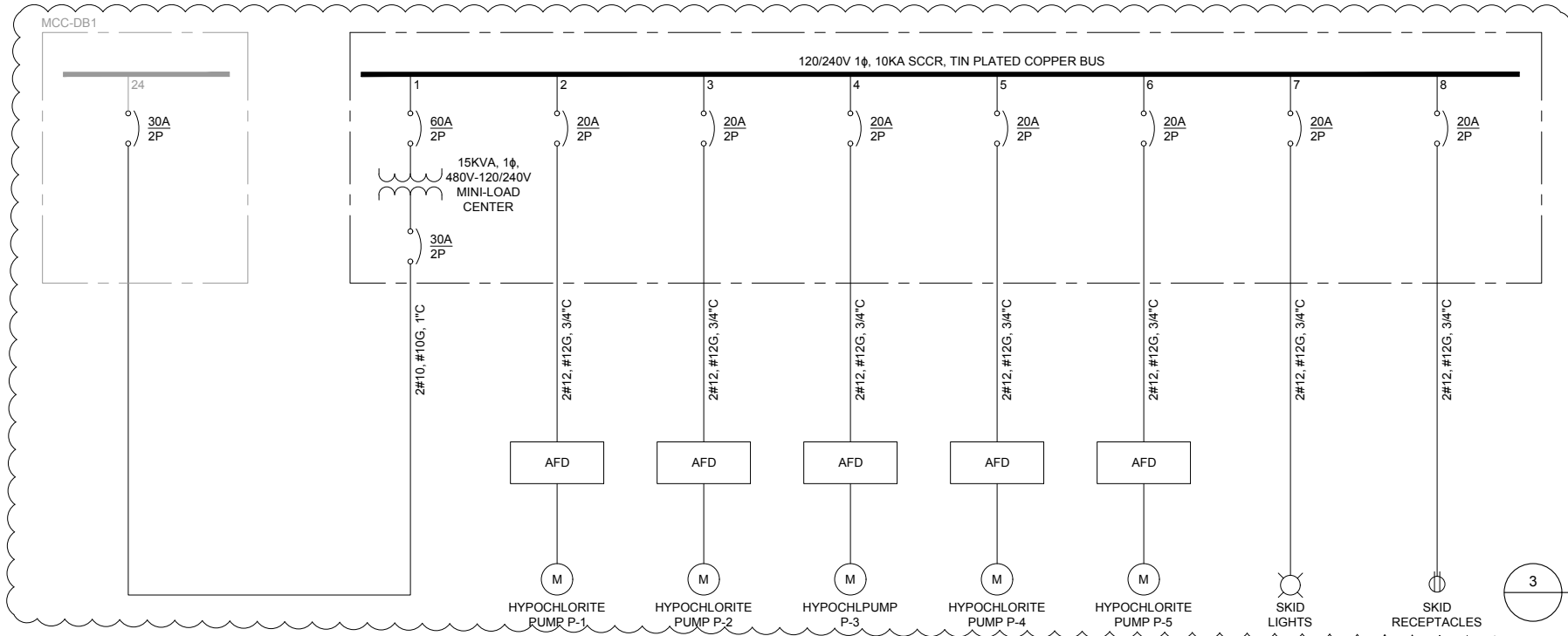


1 INJECTOR PUMP TERMINATION PANEL
 SCALE: NONE (TYP. OF 4)

TABLE FOR DETAIL-1	
PUMP 1A	
PUMP 1B	
PUMP 2A	
PUMP 2B	



2 INJECTOR PUMP SCHEMATIC
 SCALE: NONE (TYP. OF 4)



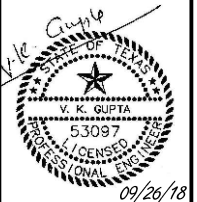
3 MINI-LOAD CENTER ONE-LINE DIAGRAM
 SCALE: NONE

- NOTES:
- 1 INSTALL A NEW TERMINATION BOX FOR WIRES FROM THE PUMP.
 - 2 NEW WIRE AND CONDUIT TO THE NEW STARTER.
 - 3 INSTALL NEW STARTER ON EXISTING SUPPORTS.
 - 4 REUSE EXISTING CONTROL WIRES BETWEEN NEW STARTER AND CONTROLLER 7/57 IN CHLORINE BUILDING.
 - 5 REUSE EXISTING POWER WIRE BETWEEN NEW STARTER AND EXISTING MCC IN CHLORINE BUILDING. REFER TO SHEET 10-E501 & 10-E502 FOR SOURCE OF POWER.
 - 6 NAME PLATE SHALL MATCH EXISTING.
 - 7 FIELD VERIFY THE PUMP MOTOR PROTECTION SYSTEM AND MODIFY THE SCHEMATIC AS NECESSARY TO PROVIDE PROPER CONTROL OPERATIONS.

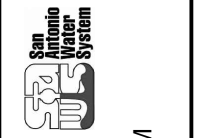


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REGISTRATION NO. F-5713



REV.	DATE	DESCRIPTION	BY	TH
1	09/19/18	ADDENDUM NO. 3		
2	09/26/18	ADDENDUM NO. 5		



SAN ANTONIO WATER SYSTEM
 SAN ANTONIO, TEXAS
DOS RIOS WRC CHLORINE SYSTEM IMPROVEMENTS

CHLORINE CONTACT BASIN DETAILS & SCHEMATICS

JOB NO.: 17238115
 DATE: AUG. 2018
 DESIGNED BY: TH
 DRAWN BY: JH



GAI
 Gupta & Associates, Inc.
 CONSULTING ENGINEERING
 Registration No. F-2583

DRAWING NUMBER
05-E103
 SHEET NUMBER
28