



Market Street Pump Station Disinfection System Upgrades
Solicitation Number: CO-00463-FG
Job No.: 21-6008

ADDENDUM 3
November 22, 2021

To Respondent of Record:

This addendum, applicable to work referenced above, is an amendment to the price 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 Respondent Questionnaire.

RESPONSES TO QUESTIONS

- 1. Question: Regarding drawings E-19 and EY-01, please list the required ampacity rating for the four (4) Hydrogen dilution blower disconnects.**

Response: Per Electrical Legends sheet, the rating of all disconnect switches shall be 30A, unless otherwise noted. For the Hydrogen Dilution Blowers, they are rated 30A.

- 2. Question: Regarding drawings EY-03, please list the desired manufacturer and model of the alarm light on the Fill Station Control Panel Rack.**

Response: Drawing EY-03 and Fill Station Control Panel was deleted by Addendum 1 posted on November 4, 2021.

- 3. Question: In spec section #40 63 00 the specs show the PLC with part numbers. Per 2.1.H.3. It says the following. "Analog Inputs & Outputs shall be isolated physically & electronically from each other, and shall be of the 4-20mA type. The way I read this is the AI & AO modules need to be Isolated Modules. The part numbers shown are not for Isolated cards? Please advise.**

Response: Paragraph 2.1.H.3. means that each Analog Input and Analog Output should be isolated with no common negative 24vdc. Each Analog point shall be wired with separate twisted shield pair wires, with an individual 4-20ma surge protection.

- 4. Question: Reference Spec Section 40 61 21 (pg. 5) 3.5 B. 1. A. 2. Please provide class name and training part number.**

B. Training:

1. Manufacturer's Training:

- a. Rockwell PlantPax: This training shall be provided by the ASP.**

1) Provide two weeks of manufacturer's standard training course for six (6) of Owner's personnel in the operation, configuration, programming, and installation of the Rockwell PlantPax software.

2) The following software training shall be provided as a minimum: SAWS IS department will pick the class.

Response: This training shall be provided by the Application Service Provider (ASP), not by the PLC manufacturer, and therefore there is no training name or training part number.



CHANGES TO THE SPECIFICATIONS

- 1. REQUEST FOR COMPETITIVE SEALED PROPOSALS.** The last three paragraphs are hereby modified to read as follows:

“For questions regarding this solicitation, technical questions or additional information, please contact Florinda Gonzales, Contract Administrator, in writing via email to: Florinda.Gonzales@saws.org or by fax to (210) 233-4290 until **4:00 PM (CDT) on December 2, 2021**. Answers to the questions will be posted to the web site by **4:00 PM (CDT) on December 8, 2021** as a separate document or included as part of an addendum. Please be advised that firms responding to this RFCSP (Respondents) are prohibited from communicating with any other SAWS staff, the Consultant, the Developer, or City of San Antonio officials regarding this RFCSP up until the contract is awarded as outlined in the Instructions to Respondents.

Due to the COVID-19 emergency and to protect the health of the public, SAWS is implementing new procedures for the submission of proposals. Proposals will be received electronically only, until 10:00 AM (CDT), December 15, 2021 (CDT). Electronic proposals will be received via the secure SAWS FTP site. See the Electronic Proposal Opening Instructions attachment for additional information regarding an electronic proposal submittal. Electronic proposals shall be accompanied by a bid bond in an amount not less than five percent of the total proposal price. (Or, if providing SAWS with a cashier's check or certified check in an amount not less than five percent of the total proposal price, SAWS will request this within 24 hours from the Respondent who did not submit a bid bond). Proposals will then be publicly opened and read aloud by Contract Administration via WebEx.

<https://saws.webex.com>
Meeting number (access code): 2494 439 6180
Meeting password: cPWbBHm5w53
Audio Connection: (210) 233-2090

Respondents will need to submit a request by **December 14, 2021 at 10:00 AM (CDT)** to receive access to the File Transfer Protocol (FTP) site via email to florinda.gonzales@saws.org. Respondent's email requesting access to the FTP site shall provide the legal name of Respondent's company and the intended recipient's email address and phone number. No requests for FTP site access will be accepted after **December 14, 2021 at 10:00 AM (CDT).**”

- 2. ELECTRONIC PROPOSAL OPENING INSTRUCTIONS.** The header and first two paragraphs are hereby modified to read as follows:

**“MARKET STREET PUMP STATION DISINFECTION SYSTEM UPGRADES
Solicitation Number: CO-00463**

ELECTRONIC PROPOSAL OPENING INSTRUCTIONS **December 15, 2021 at 10:00 AM (CDT)**

In order to receive electronic proposal for this RFCSP, SAWS will utilize a SAWS secured File Transfer Protocol (FTP) site. Only Respondents submitting as Prime Contractors will need to submit their request prior to **December 14, 2021 by 10:00 am (CDT)** to receive access to the FTP site via email to Florinda.gonzales@saws.org. Respondent's email shall provide the legal name of the Respondent's company and the intended recipient's email address and phone number. No requests for FTP site access will be accepted after **December 14, 2021 by 10:00 am (CDT)**. Once a Respondent is approved for access, an email with a

hyperlink to the FTP site and a unique password for the Respondent will be provided to the Respondent's email recipient.

Once access is received, Respondent may upload the required documents per the Respondent's Proposal checklist any time before **December 15, 2021 by 10:00 am (CDT)**. Please ensure to allow sufficient time should Bidder's experience technical difficulties in uploading the required documents. No changes to the proposal price can be made once the Bid has been submitted."

3. SUPPLEMENTARY INSTRUCTIONS TO RESPONDENTS.

E. RESPONSE FORMAT, 3. Project Approach, Schedule, and Availability, b. Project Schedule and Unforeseen Conditions, i. paragraph is hereby modified to read as follows:

"i. Provide a critical path method (CPM) schedule in Primavera or Microsoft Project. The schedule shall include milestones, specific critical processes and critical path items, construction phases, permits, approvals, coordination with stakeholders, and procurements anticipated to complete the project work. The anticipated notice to proceed (NTP) for this Project is **March 16, 2022**. Respondent shall use this date for developing the proposed project schedule."

4. EVALUATION CRITERIA FORM.

3. Project Approach, Schedule, and Availability, b. Project Schedule and Unforeseen Conditions paragraph is hereby modified to read as follows:

"i. Provide a critical path method (CPM) schedule in Primavera or Microsoft Project. The schedule shall include milestones, specific critical processes and critical path items, construction phases, permits and approvals, environmental requirements, coordination with stakeholders, security clearances and procurements anticipated to complete the project work. The anticipated notice to proceed (NTP) for this Project is **March 16, 2022**. Respondent shall use this date for developing the proposed project schedule."

5. Section PP – Price Proposal

Delete the Price Proposal in its entirety, and replace with the same, attached hereto.

6. Section PC – Proposal Certification

Delete the Proposal Certification in its entirety, and replace with the same, attached hereto.

7. Section SC – Special Conditions. Add to Special Conditions the following:

"SC10. Additive Alternate Nos. 7.A & 7.B.: Additive Alternate Nos. 7.A & 7.B include provisions for a temporary sodium hypochlorite feed system for disinfection at the Market Street Pump Station during the time that existing disinfection equipment is removed, and new disinfection system is installed. The Contractor agrees and accepts the responsibilities to coordinate and construct all facilities and provide sodium hypochlorite associated with Additive Alternate Nos. 7.A & 7.B 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 Market Street Pump Station."

8. Section 01 11 00 – Summary of Work

Remove Section 01 11 00 in its entirety, and replace with the same, attached hereto.

9. Section 01 14 16 – Coordination with Owner's Operation

Remove Section 01 14 16 in its entirety, and replace with the same, attached hereto.

10. Section 01 22 13 – Measurement and Payment

Remove Section 01 22 13 in its entirety, and replace with the same, attached hereto.

11. Section 01 51 05 – Temporary Utilities

Remove Section 01 51 05 in its entirety, and replace with the same, attached hereto.

12. Section 40 63 00 – Programmable Logic Controller PLC and Operator Interface Terminal OIT Systems

Paragraph 2.1 – **Delete** in its entirety and **replace** with the following:

2.1 PROGRAMMABLE LOGIC CONTROLLER:

- A. Subject to compliance with the Contract Documents, the following manufacturer is acceptable:
 - 1. Allen Bradley RSLogix Studio 5000 with the latest version in use by SAWS.
- B. Approved Products – NO SUBSTITUTIONS:

<u>DESCRIPTIONS</u>	<u>MANUFACTURER</u>	<u>PART NUMBER</u>
CPU (Processor)	Allen Bradley	5069-L3X0 -ERP
I/O Power Supply Module	Allen Bradley	5069-FPD
8 Channel Analog Input Module	Allen Bradley	5069-IF8
Pre-Wired Cable Analog Input	Allen Bradley	1492-ACAB025ED69
8 Channel Analog Output Module	Allen Bradley	5069-OF8C
Feed-Through 8 Channel Analog IFM	Allen Bradley	1492-AIFM8-3
Pre-Wired Cable Analog Output	Allen Bradley	1492-ACAB025D69
32 Channel Digital DC Input Module	Allen Bradley	1769-IQ32
Digital I/O Ready Cable	Allen Bradley	1492-CAB025RTN32I
32 Channel Digital DC Output Module	Allen Bradley	1769-OB32
Digital I/O Ready Cable	Allen Bradley	1492-CAB025RTN32O
Right to Right bank interconnection	Allen Bradley	1769-CRR3
Right to Left bank interconnection	Allen Bradley	1769-CRL3
Right End Cap/Terminator	Allen Bradley	1769-ECR
Left End Cap/Terminator	Allen Bradley	1769-ECL

- C. The listing of specific manufacturers above does not imply acceptance of their products that do not meet the specified ratings, features and functions.
- D. Two Ethernet ports and USB programming port shall be provided on the CPU (Processor).
- E. The communication protocol used between the SCADA PLC and the Top End HMI (Production Control Room) shall be Ethernet/IP.
- F. Programming:
 - 1. PLC Programming, and top end HMI graphics shall be performed by Application Service Provider (ASP).
 - 2. The PLC programming shall be implemented using the latest version available on Allen Bradley, and HMI graphics programming shall be implemented using Allen Bradley PlantPAX version 4.
- G. Programming Languages:
 - 1. PLC shall support IEC Standard 61131-3 for all of the following programming language:
 - a. Function Block Diagram (FBD)

- H. Physical Construction:
 1. The PLC shall be of the modular construction, consisting of a back plane, plug in modules for the processor, communication modules, I/O modules and expansion modules.
 2. The power supply shall be 120 Volt 60 Hz, and shall be sized for the total cards; including the power requirement of the spare I/O rack slots.
 3. Analog inputs and outputs shall be isolated physically and electronically from each other and shall be of the 4-20mA type.
 4. Discrete inputs shall be 24VDC and individually buffered with relays.
 5. Discrete outputs shall be of the relay type and individually buffered with external relays.
- I. Spare Equipment:
 1. Provide minimum of 20 percent wired spare I/O channels of each type provided.
 2. Provide 1 spare I/O card of each type provided.

CHANGES TO THE PLANS

1. Remove the following sheets dated 10/4/2021 and replace with the attached sheets dated 11/18/2021:
 - Sheet I-06 – Market St. Pump Station P&ID III

CLARIFICATIONS

1. The Engineer’s Opinion of Probable Construction Cost for this project has been modified from \$2,537,000 to \$2,844,000, which includes the cost estimates for the Additive Alternate Items No. 7.A and 7.B.

END OF ADDENDUM

This Addendum is thirty (31) pages to include twenty-five (26) pages of attachments in its entirety.

- Attachments:
- Price Proposal
 - Proposal Certification
 - Section 01 11 00 – Summary of Work
 - Section 01 14 16 – Coordination with Owner’s Operation
 - Section 01 22 13 – Measurement and Payment
 - Section 01 51 05 – Temporary Utilities
 - Sheet I-06 – Market St. Pump Station P&ID III



Ronald C. Emmons, P.E. 85090
 Garcia Infrastructure Consultants, LLC
 Firm Registration No. F-17794



George B. Luke, P.E. 60900
 Gupta & Associates, Inc
 Firm Registration No. F-2593

PRICE 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 Competitive Sealed Proposals, 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 in the bid proposal to wit:

PLEASE SEE ATTACHED LIST OF BID ITEMS.

RESPONDENT'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 PROPOSAL.

The Respondent offers to construct the Project in accordance with the Contract Documents for the contract price, and to complete the Project within **420** calendar days after the start date, as set forth in the Authorization to Proceed. **The Respondent 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 Price Proposal which are included on the following pages.

Statement on President's Executive Orders

Has your firm previously performed work subject to the President's Executive Orders Numbers 11246 and 11375 or any preceding similar executive orders (Numbers 10925 and 11114)? Yes No

Texas Government Code Chapter 2274 Verifications

- (1) Are you, Contractor, held or controlled by individuals who are citizens of China, Iran, North Korea, Russia or a country designated by the Governor of the State of Texas pursuant to Texas Government Code Chapter 2274? Yes No
- (2) Are you, Contractor, held or controlled by a company or other entity, including a governmental entity, that is owned or controlled by citizens of or directly controlled by the government of China, Iran, North Korea, Russia or a country designated by the Governor of the State of Texas pursuant to Texas Government Code Chapter 2274? Yes No
- (3) Are you, Contractor, headquartered in China, Iran, North Korea, Russia or a country designated by the Governor of the State of Texas pursuant to Texas Government Code Chapter 2274? Yes No

Item No.	Item Description	Unit	Quantity	Unit Bid Price	Total
1	DEMOLITION OF EXISTING DISINFECTION SYSTEM	LS	1	\$	\$
2	NEW DISINFECTION SYSTEM INSTALLATION	LS	1	\$	\$
3	ELECTRICAL AND INSTRUMENTATION	LS	1	\$	\$
4	SCADA PROGRAMMING AND INTEGRATION	LS	1	\$	\$
5	DISINFECTION SYSTEM EQUIPMENT, START UP AND TRAINING	ALW	1	\$867,500.00	\$867,500.00
6	PERMITTING FEES	ALW	1	\$5,000.00	\$5,000.00
BASE BID AMOUNT (Items 1-6)					\$

Additive Alternate - Owner reserves the right to award a contract with or without the following additive alternates					
7.A	TEMPORARY SODIUM HYPOCHLORITE STORAGE AND FEED SYSTEM (12.5%)	LS	1	\$	\$
7.B	SODIUM HYPOCHLORITE SOLUTION (12.5%)	GAL	41,000	\$	\$
TOTAL ADDITIVE ALTERNATE (Item 7.A & 7.B)					\$

Mobilization and Demobilization					
100	MOBILIZATION AND DEMOBILIZATION (Max 10% of Line Items 1 to 4)	LS	1	\$	\$
102	INTERMEDIATE DEMOBILIZATION AND REMOBILIZATION	EA	1	\$	\$

TOTAL MOBILIZATION AND DEMOBILIZATION (Item 100 & 102)					\$
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Mobilization and Prep of ROW shall be limited to the maximum percentage shown. If the percentage exceeds the allowable maximum stated for mobilization and or preparation of ROW, SAWS reserves the right to cap the amount at the percentages shown and adjust the extensions of the bid items accordingly.

TOTAL BID PRICE (TO INCLUDE LINE ITEMS 1-6, 7A, 7B, 100 AND 102)					\$
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PROPOSAL CERTIFICATION

Accompanying this proposal is a Bid Bond or Certified or Cashier's Check payable to the Order of the San Antonio Water System for _____ dollars (\$ _____), which amount represents five percent (5%) of the total bid price. Said bond or check is to be returned to the bidder unless the proposal is accepted and the bidder fails to execute and file a contract within **10** calendar days after the award of the Contract, in which case the check shall become the property of said San Antonio Water System, and shall be considered as payment for damages due to delay and other inconveniences suffered by said San Antonio Water System due to the failure of the bidder to execute the contract. The San Antonio Water System reserves the right to reject any and all bids.

It is anticipated that the Owner will act on this proposal within **90** calendar days after the bid opening. Upon acceptance and award of the contract to the undersigned by the Owner, the undersigned shall execute standard San Antonio Water System Contract Documents and make Performance and Payment Bonds for the full amount of the contract within **10** calendar days after the award of the Contract to secure proper compliance with the terms and provisions of the contract, to insure and guarantee the work until final completion and acceptance, and the guarantee period stipulated, and to guarantee payment of all lawful claims for labor performed and materials furnished in the fulfillment of the contract.

It is anticipated that the Owner will provide written Authorization to Proceed within **30** days after the award of the Contract.

The work called for in this Contract shall commence on the date indicated in the SAWS written Authorization to Proceed. Under no circumstances shall the work commence prior to the date provided for in the SAWS issued, written Authorization to Proceed. Work shall be completed in full within **420** consecutive calendar days.

The undersigned further acknowledges compliance with "Wage and Labor Standard Provisions" of this contract and the use of the Blue Book rental rates for establishment of equipment rental rates whether owned or leased during the course of this Contract.

In completing the work contained in this proposal the undersigned certifies that bidder's practices and policies do not discriminate on the grounds of race, color, religion, sex or national origin and that the bidder will affirmatively cooperate in the implementation of these policies and practices.

Signed: _____
Company Representative

Company Name

Address

Please return bidder's check to:

Company Name

Address

SECTION 01 11 00
SUMMARY OF WORK

PART 1 - GENERAL

1.1 LOCATION

- A. The work is at the Market Street Pump Station, located at 106 W. Market St., San Antonio, Texas 78205.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- A. The work to be performed under this contract includes but is not limited to constructing the items described below and all related appurtenances:
 - 1. Demolition, including existing pipelines, existing On-Site Sodium Hypochlorite Generation (OSHG) Disinfection System, metering pumps, brine tank, and related appurtenances.
 - 2. Civil, mechanical, structural, architectural, plumbing, and HVAC work related to the new OSHG disinfection system, metering pumps, brine tank, including equipment, equipment piping and valves, plumbing and HVAC support systems, containment area piping and valves, containment area equipment, pumps, tanks, access platforms and related appurtenances, associated signage, manufacturer's field services, installation, testing, startup, and commissioning.
 - 3. Electrical and Instrumentation Controls Improvements associated with the OSHG disinfection system, including electrical equipment, conduit, wiring/cables, instrumentation, instrumentation connections, associated signage, and testing.
 - 4. SCADA Programming and Integration by a Process Control System Integrator, including SCADA programming, SCADA integration, testing, and startup.
 - 5. A temporary sodium hypochlorite storage and feed system.
- B. Contracting Method: Project will be constructed under one prime Contract.

1.3 WORK BY OWNER

- A. OWNER will perform the following in connection with the work:
 - 1. Operate all existing valves, gates, pumps, equipment, and appurtenances that will affect OWNER's operation, unless otherwise specified or indicated.
- B. The OWNER will continue to use the existing pump station during the Project and the OWNER will conduct operational and maintenance work items to maintain existing operations.

1.4 SEQUENCE AND PROGRESS OF WORK

- A. Requirements for sequencing and coordinating with OWNER's Operations, including maintenance of facility operations during construction, and requirements for tie-ins and shutdown, Refer to Section 01 14 16, Coordination with Owner's Operations.

1.5 CONTRACTOR USE OF SITE

- A. CONTRACTOR shall limit his use of the Site as outlined in on the plans by the limits of the construction. If the CONTRACTOR needs to access additional areas not shown on the Plans, submit a written request to the Owner for approval.
- B. Assume full responsibility for the protection and safekeeping of products under this Contract, stored on the site.
- C. Move stored materials and equipment that interfere with operations of OWNER, other contractors, and other performing work for OWNER.
- D. Limits on CONTRACTOR'S use of the Sites are:
 - 1. OWNER shall have full access to existing facilities, including but not limited to; tanks, wells, high service pump stations, temporary chemical feed facilities, and associated electrical, instrumentation, and SCADA systems at all times during construction. The Market Street Pump Station will remain in-service during construction.

1.6 EASEMENTS AND RIGHTS-OF-WAY

- A. General
 - 1. Confine construction operations within OWNERS's property, public rights-of-way, easements, previously obtained by OWNER, and limits shown, and property for which CONTRACTOR has made arrangements directly with property owner(s).
 - 2. Use care in placing construction tools, equipment, excavated materials, and materials and equipment to be incorporated into the Work to avoid damaging property and interfering with traffic.
 - 3. Do not enter private property outside the construction limits without permission from the owner of the property.

1.7 NOTICES TO OWNERS AND AUTHORITIES OF PROPERTIES ADJACENT TO THE WORK

- A. Notify owners of adjacent property and utility owners when prosecution of the Work may affect their property, facilities, or use of property.
- B. Notify utility owners and other concerned entities not less than 48 hours prior to cutting or closing streets or other traffic areas or excavating near Underground Facilities or exposed utilities.

1.8 SALVAGE OF MATERIALS AND EQUIPMENT

- A. Existing materials and equipment removed and not shown or specified to be reused in the Work will become CONTRACTOR's property. SAWS has the right of first refusal on any item shown to be demolished/removed/replaced. CONTRACTOR to request clarification on items for salvage prior to starting demolition.
- B. Existing materials and equipment removed by CONTRACTOR shall not be reused in the Work, except where so specified or indicated.
- C. Removal, Storage, Handling, Reinstallation:
 - 1. Carefully remove in manner to prevent damage all materials and equipment shown or indicated to be salvaged and reused or to remain property of OWNER.
 - 2. Store and protect salvaged items shown or indicated to be used in the Work.
 - 3. Replace in-kind or with new items those items of materials and equipment damaged during removal, storage, or handling through CONTRACTOR's actions, negligence, or improper procedures.
- D. CONTRACTOR may furnish and install new items, with ENGINEER's approval, instead of those specified or indicated to be salvaged and reused, in which case such removed items will become CONTRACTOR's property.

1.9 PERMITS

- A. Furnish necessary permits for construction of the 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 the permits or work orders, inspections during construction, and final acceptance. Some permits may be paid by the OWNER (needs coordinated) and require an official invoice from the agency.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Provide materials in accordance with the requirements of the individual Sections.

PART 3 - EXECUTION – NOT USED

END OF SECTION

SECTION 01 14 16
COORDINATION WITH OWNER'S OPERATIONS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope:
 - 1. This Section includes requirements for coordinating with OWNER's operations during the Project and includes requirements for tie-ins and shutdowns necessary to complete the Work without impact on OWNER's operations except as allowed in this Section.
 - 2. CONTRACTOR shall provide all labor, materials, equipment, tools, and incidentals shown, specified, and required to coordinate with OWNER's operations during the Work in accordance with this Section.
 - 3. Unscheduled interruptions to OWNER'S operations, damage, and spills shall be remedied immediately by the CONTRACTOR at no additional cost to the OWNER.
- B. Coordination:
 - 1. Review construction procedures under other Specifications sections and coordinate Work that will be performed with or before the Work specified in this Section.
- C. Related Sections:
 - 1. Section 01 11 00, SUMMARY OF WORK.
 - 2. Section 01 51 05, TEMPORARY UTILITIES.
 - 3. Section 01 73 29, CUTTING AND PATCHING
- D. Except for shutdowns specified in this Section, perform the Work such that OWNER's facilities remain in continuous satisfactory operation during the Project. Schedule and conduct the Work such that the Work does not: impede OWNER's production or processes, create potential hazards to operating equipment and personnel, reduce the quality of the facility's products or effluent, cause odors or other nuisances, or affect the public health, safety, and convenience.
- E. Work not specifically covered in this Section or in referenced Sections may, in general, be completed, within the Contract Times, at any time during regular working hours in accordance with the Contract Documents, subject to the requirements in this Section.
- F. As a substitute to the procedures specified in this Section, CONTRACTOR may propose providing additional temporary facilities that can eliminate or mitigate a constraint without additional cost to OWNER, provided such additional temporary facilities: do not present hazards to the public, personnel, structures, and equipment; that such additional temporary facilities do not adversely affect OWNER's ability to comply with Laws and Regulations, permits, and operating requirements; that such temporary facilities do not generate or foster the generation of odors and other nuisances; and that requirements of the Contract Documents are fulfilled.
- G. Coordinate shutdowns with OWNER and ENGINEER. When possible, combine multiple tie-ins into a single shutdown to reduce impacts on OWNER's operations and processes.
- H. Operation of Existing Systems and Equipment during the Work:
 - 1. Do not shut off or disconnect existing operating systems or equipment, unless accepted by OWNER and ENGINEER in writing.
 - 2. Operation of existing systems and equipment will be by OWNER unless otherwise specified or indicated.
 - 3. Where necessary for the Work, CONTRACTOR shall seal or bulkhead OWNER-operated gates and valves to prevent leakage that may affect the Work, OWNER's operations, or both.
 - 4. Provide temporary watertight plugs, bulkheads, and line stops as required. After completing the Work, remove seals, plugs, bulkhead, and line stops to satisfaction of ENGINEER.
- I. Requirements for temporary utilities are in Section 01 51 05, Temporary Utilities. Requirements for temporary utilities associated with specific shutdowns are indicated in this Section.

1.2 SUBMITTALS

- A. Action Submittals: Submit the following:

SAN ANTONIO WATER SYSTEM
MARKET STREET PUMP STATION DISINFECTION SYSTEM UPGRADES

1. Substitute Sequence Submittal: When deviation from specified sequence or procedures is proposed, furnish submittal explaining in detail the proposed sequence or procedures and associated effects, including evidence that OWNER's operations will not be adversely affected, to an extent greater than originally contemplated in the Contract Documents, by proposed substitution. List benefits of proposed substitution, including benefits to Progress Schedule. Submit in accordance with requirements of the Contract Documents regarding substitution requests.
- B. Informational Submittals: Submit the following:
 1. Shutdown Planning Submittal:
 - a. For each shutdown, submit an inventory of labor, materials, and equipment required to perform the shutdown and tie-in tasks, an estimate of time required to accomplish the complete shutdown including time for OWNER to take down and start up existing equipment, systems, or conduits, and written description of steps required to complete the Work associated with the shutdown.
 - b. Furnish submittal to ENGINEER not less than 30 days prior to proposed shutdown start date. Do not start shutdown until obtaining ENGINEER's acceptance of shutdown planning submittal.
 2. Shutdown Notification: After ENGINEER's acceptance of shutdown planning submittal and prior to starting the shutdown, submit written notification to OWNER and ENGINEER of date and time each shutdown is to start. Submit notification not less than 14 days in advance of each shutdown.

1.3 GENERAL CONSTRAINTS

- A. Indicated in the Contract Documents are the sequence and shutdown durations, where applicable, for OWNER'S equipment, systems, and conduits (including piping and ducting) that are to be taken out of service temporarily for the Work. New materials, equipment, and systems may be used by OWNER after the specified field quality controls and testing are successfully completed and the materials or equipment are Substantially Complete in accordance with the Contract Documents.
- B. The following constraints apply to coordination with OWNER's operations:
 1. Operational Access: OWNER'S personnel shall have access to equipment and areas of the facility that remain in operation.
 2. Temporary Partitions and Enclosures: Provide temporary partitions and enclosures necessary to maintain dust-free, heated, and ventilated spaces in areas of the facility that are adjacent to the Work and that must be kept operational. Comply with Section 01 51 05, Temporary Utilities.
 3. Schedule and perform equipment and system start-ups for Monday through Thursday. Equipment and systems shall not be placed into operation on Friday, Saturday, and Sunday without prior approval of OWNER, unless specifically indicated otherwise in the Contract Documents.
 4. Dead End Valves or Conduits: Provide blind flanges, watertight bulkheads, or valve at temporary and permanent terminuses of conduits, including piping and ducting. Blind flanges and bulkheads shall be suitable for the service and braced and blocked, as required, or otherwise restrained as directed by ENGINEER. Temporary valves shall be suitable for their associated service. Where valve is provided at permanent terminus of conduit, including piping or ducting, also provide on downstream side of valve a blind flange with drain/flushing connection.
 5. CONTRACTOR shall provide OWNER's Operations Crews access to the Market Street Pump Station Facility Entrance/Exit access roads throughout the site at all times during construction. Coordination with SAWS Operations Crews throughout the project will be required to ensure that SAWS staff has the ability to use the existing access roads.
 6. Contractor shall coordinate with OWNER's Operations prior to scheduled shutdowns. Market Street Pump Station will remain in operation during construction. Refer to Section 1.4.

1.4 SUGGESTED SEQUENCE OF WORK

- A. The existing Market Street Pump Station will remain in service for the duration of the project. CONTRACTOR shall coordinate with OWNER for any shutdowns necessary to accomplish the Work. Such shutdowns will be limited to 4-hours maximum. Suggested sequence is summarized as follows:

SAN ANTONIO WATER SYSTEM
MARKET STREET PUMP STATION DISINFECTION SYSTEM UPGRADES

1. Stage I-Install temporary disinfection system and tie-in to existing water system. Ensure the OWNER required chlorine residual is achieved continuously for five (5) days. Take samples two (2) times daily and submit to OWNER for review/approval.
2. Stage II-Initiate demolition of existing OSHG System and associated piping, electrical system, and instrumentation and controls.
3. Stage III-Construct new OSHG System and associated piping, electrical system, and instrumentation and controls.
4. Stage IV-Tie-in to existing system, commission, and startup new OSHG System.
5. Stage V-Decommission the temporary disinfection system.
6. Stage VI-Clean up Market Street Pump Street Pump Station.

1.5 TIE-INS

- A. CONTRACTOR shall perform tie-ins required to complete the Work as shown on the plans.

1.6 SHUTDOWNS

A. General:

1. Terminology: A "shutdown" is when a portion of the normal operation of OWNER's facility, whether equipment, systems, conduit (including piping and ducting), has to be temporarily suspended or taken out of service to perform the Work.
2. Work that may interrupt normal operations shall be accomplished at times convenient to OWNER unless otherwise indicated in the Contract Documents.
3. Furnish at the Site, in close proximity to the shutdown and tie-in work areas, tools, materials, equipment, spare parts, both temporary and permanent, necessary to successfully perform the shutdown. Complete to the extent possible, prefabrication of piping and other assemblies prior to commencing the associated shutdown. Demonstrate to ENGINEER's satisfaction that CONTRACTOR has complied with such requirements before commencing the shutdown.
4. If CONTRACTOR's operations cause an unscheduled interruption of OWNER's operations, immediately re-establish satisfactory operation for OWNER at no additional cost to the OWNER.
5. Unscheduled shutdowns or interruptions of continued safe and satisfactory operation of OWNER's facilities that result in fines or penalties by authorities having jurisdiction shall be paid solely by CONTRACTOR if, in ENGINEER's opinion, CONTRACTOR did not comply with requirements of the Contract Documents, or was negligent in the Work, or did not exercise proper precautions in performing the Work and complying with applicable permits, Laws, and Regulations.
6. Shutdowns shall be in accordance with Section 01 14 16 Part 1.6.B of this Section. Work requiring service interruptions for tie-ins shall be performed during scheduled shutdowns.
7. Temporary, short-term shutdowns of smaller conduits (including piping and ducting), equipment, and systems may not be included in Section 01 14 16 Part 1.6.B. Coordinate requirements for such shutdowns with ENGINEER and OWNER. Where necessary, obtain ENGINEER's interpretation or clarification before proceeding.

B. Shutdowns of Electrical Systems:

1. Comply with Laws and Regulations, including the National Electric Code.
2. CONTRACTOR shall lock out and tag circuit breakers and switches operated by OWNER and shall verify that affected cables and wires are de-energized to ground potential before shutdown Work is started.
3. Upon completion of shutdown Work, remove the locks and tags and notify ENGINEER that facilities are available for use.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.1 GENERAL

- A. In addition to requirements of this Section, comply with other Contract Documents applicable to Work associated with shutdowns, tie-ins, temporary pumping (where applicable), and similar work.

END OF SECTION

SECTION 01 22 13
MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 SCOPE SUMMARY

- A. Procedures for measurement and payment plus conditions for nonconformance assessment and non-payment for rejected products.

1.2 AUTHORITY

- A. Measurement methods delineated in Specification sections are intended to complement the criteria of this section. In the event of conflict, the requirements of the Specification section shall govern.

1.3 UNIT QUANTITIES SPECIFIED

- A. **NO ADDITIONAL PAY SHALL BE PROVIDED IF THE ACTUAL WORK REQUIRED IS GREATER THAN THOSE INDICATED IN THE BID FORM. IF NO BID ITEM IS PROVIDED FOR WORK SHOWN ON THE DRAWINGS, IT SHALL BE CONSIDERED INCIDENTAL TO ONE OF THE OTHER BID ITEMS.**

1.4 ADMINISTRATIVE SUBMITTALS

- A. Schedule of Values: Submit schedule on a format that is compatible with OWNER's Contract and Project Management System (CPMS) Program. Format may be provided by OWNER.
- B. Schedule of Estimated Progress Payments:
 - 1. Submit with initially acceptable schedule of values.
 - 2. Submit adjustments thereto with Application for Payment.
- C. Application for Payment.
- D. Final Application for Payment.

1.5 SCHEDULE OF VALUES

- A. Prepare a separate schedule of values for each schedule of Work under the Agreement.
- B. Unit Price Work: Reflect unit price quantity and price breakdown from conformed Bid Form.
- C. An unbalanced or front-end loaded schedule will not be acceptable.
- D. Summation of the complete schedule of values representing all Work shall equal the Contract Price.
- E. Refer to Section 01 29 73, SCHEDULE OF VALUES.

1.6 PROGRESS PAYMENTS

- A. Scope:
 - 1. CONTRACTOR's requests for payment shall be in accordance with the Agreement, General Conditions and Supplementary Conditions, and the Specifications.
 - 2. Form: Applications for Payment shall be in the form of Engineers Joint Contract Documents Committee (EJCDC) document EJCDC® C-620, "Contractor's Application for Payment", 2013 edition or later.
- B. Procedure:
 - 1. Review with SAWS Inspections/Field Engineer quantities and the Work proposed for inclusion in each progress payment. Application for Payment shall cover only the Work and quantities recommended by the SAWS Inspections/Field Engineer.

2. CONTRACTOR will be required to review with ENGINEER or SAWS Inspections/Field Engineer the status of record documents in connection with OWNERS's review of each Application for Payment. Failure to maintain record document current will be just cause for ENGINEER to recommend a reduction in payment for record documents in accordance with Section 01 29 73, Schedule of Values, and will entitle OWNER to set-offs in accordance with the Contract Documents.
 3. Submit to SAWS CPMS System.
 4. ENGINEER will act on request for payment in accordance with the General Conditions and Supplementary Conditions.
- C. Each request for progress payment shall include:
1. Completed Application for Payment form, including summary/signature page, progress estimate sheets, and stored materials summary. Progress estimate sheets shall have the same level of detail as the Schedule of Values.
 2. Documentation for Stored Materials and Equipment:
 - a. For materials and equipment not incorporated in the Work but suitably stored, submit documentation in accordance with the General Conditions and Supplementary Conditions.
 - b. Legibly indicate on invoice or bill of sale the specific materials or equipment included in the payment request and corresponding bid/payment item number for each.
 3. Listing of Subcontractors and Suppliers:
 - a. In accordance with the General Conditions, submit not less than monthly updated listing of all Subcontractors and Suppliers known to CONTRACTOR, whether or not such entities have a contract directly with CONTRACTOR.
 - b. Submit complete information using the form attached to this Section.
 4. Record drawings redlines.
- D. Final Payment:
1. Requirements for request for final payment are in the General Conditions, as may be modified by the Supplementary Conditions.

1.7 PAYMENT FOR STORED MATERIALS AND EQUIPMENT

- A. Observation of Stored Materials and Equipment Prior to Application for Payment:
1. General:
 - a. Prior to materials or equipment suitably stored but not yet incorporated into the Work can be eligible for payment, ENGINEER or SAWS Inspector shall visit the storage location and verify the extent, condition, and storage environment of the stored items.
 - b. When the same material or equipment item is stored for more than two months, such visits to storage location shall be not less than once every two months.
 2. Cost Responsibility for Observations:
 - a. When storage location is less than 20 miles from the Site or less than 20 miles from ENGINEER's office, CONTRACTOR is not responsible for reimbursing OWNER for cost of ENGINEER's time and expenses for observing stored materials and equipment.

1.8 MEASUREMENT – GENERAL

- A. Weighing, measuring, and metering devices used to measure quantity of materials for Work shall be suitable for purpose intended and conform to tolerances and specifications as specified in National Institute of Standards and Technology, Handbook 44.
- B. Whenever pay quantities of material are determined by weight, the material shall be weighed on scales furnished by CONTRACTOR and certified accurate by the state agency responsible. A weight or load slip shall be obtained from the weigher and delivered to the OWNER's representative at the point of delivery of the material.
- C. If material is shipped by rail, the car weights will be accepted provided that actual weight of material only will be paid for and not minimum car weight used for assessing freight tariff and provided further that car weights will not be acceptable for material to be passed through mixing plants.
- D. Vehicles used to haul material being paid for by weight shall be weighed empty daily and at such additional times as required by ENGINEER. Each vehicle shall bear a plainly legible identification mark.

SAN ANTONIO WATER SYSTEM
 MARKET STREET PUMP STATION DISINFECTION SYSTEM UPGRADES

- E. All materials which are specified for measurement by the cubic yard measured in the vehicle shall be hauled in vehicles of such type and size that the actual contents may be readily and accurately determined. Unless all vehicles are of uniform capacity, each vehicle must bear a plainly legible identification mark indicating its water level capacity. All vehicles shall be loaded to at least their water level capacity. Loads hauled in vehicles not meeting the above requirements or loads of a quantity less than the capacity of the vehicle, measured after being leveled off as above provided, will be subject to rejection, and no compensation will be allowed for such material.
- F. Quantities will be based on ground profiles shown.
- G. Where measurement of quantities depends on elevation of existing ground, elevations obtained during construction will be compared with those shown on Drawings. Variations of 1 foot or less will be ignored, and profiles shown on Drawings will be used for determining quantities.
- H. Units of measure shown on the Bid Form shall be as follows unless specified otherwise.

Item	Method of Measurement
AC	Acre—Field Measure by ENGINEER
CY	Cubic Yard—Field Measure by ENGINEER within the limits specified or shown
CY-VM	Cubic Yard—Measured in the Vehicle by Volume
EA	Each—Field Count by ENGINEER
GAL	Gallon—Field Measure by ENGINEER
HR	Hour
LB	Pound(s)—Weight Measure by Scale
LF	Linear Foot—Field Measure by ENGINEER
LS	Lump Sum—Unit is one; no measurement will be made
SF	Square Foot
SY	Square Yard
TON	TON Ton—Weight Measure by Scale (2,000 pounds)

1.9 PAYMENT

- A. Payment for lump sum work covers all Work necessary to furnish and install the following items.

Item No.	Description
1	<p>DEMOLITION OF EXISTING DISINFECTION SYSTEM.</p> <p>Measurement: This item includes all costs to remove the existing On-Site Sodium Hypochlorite (OSHG) Disinfection System to include the Metering Pumps, Brine Tank, and all related appurtenances as shown on the plans. It shall include but not limited to saw cutting, hauling, salvage, and disposal of all valves, piping, pipe supports, instruments, concrete rebar, and associated equipment shown for removal. It includes all labor materials, tools, required to perform the work in accordance with the contract documents, complete in place for the lump sum price.</p> <p>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.</p>
2	<p>NEW DISINFECTION SYSTEM INSTALLATION.</p> <p>Measurement: This item includes all structural, mechanical, plumbing, and HVAC construction to install the new On-Site Sodium Hypochlorite (OSHG) Disinfection System to include the Metering Pumps, Brine Tank, and all related appurtenances as shown on the plans. It shall include but not limited to equipment, piping, valves, pumps, tanks, access platforms, related appurtenances, signage, plumbing, and HVAC building support systems. It includes all labor materials, tools, submittals, O&M Manuals, etc. required to perform the work in accordance with the contract documents, complete in place for the lump sum price.</p> <p>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.</p>

SAN ANTONIO WATER SYSTEM
 MARKET STREET PUMP STATION DISINFECTION SYSTEM UPGRADES

Item No.	Description
3	<p>ELECTRICAL AND INSTRUMENTATION.</p> <p>Measurement: This item includes all electrical, instrumentation, and controls related to the new On-Site Sodium Hypochlorite (OSHG) Disinfection System as shown on the plans. It includes but is not limited to electrical equipment, conduits, wiring/cables, lighting, instrumentation, instrumentation connections, submittals, and testing. It includes all labor materials, tools, required to perform the work in accordance with the contract documents, complete in place for the lump sum price.</p> <p>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.</p>
4	<p>SCADA PROGRAMMING AND INTEGRATION.</p> <p>Measurement: This item includes SCADA Programming and Integration by a Process Control System Integrator per Section 40 61 13 of the technical specifications. This item includes, but is not limited to, SCADA programming, SCADA Integration, submittals, testing, and startup. It includes all labor materials, tools, required to perform the work in accordance with the contract documents, complete in place for the lump sum price.</p> <p>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.</p>

B. Allowance

Item No.	Description
5	<p>DISINFECTION SYSTEM EQUIPMENT, START UP AND TRAINING:</p> <p>Measurement: Allowance for \$867,500 for all the Microclor Equipment. This item includes all costs to provide all equipment associated with the Microclor System. It shall include but is not limited to electrolytic cells, rectifier, brine pump, piping, valves, instrumentation controls, pre-assembled, piped, wired, and factory tested. This item includes manufacturer field services, including installation assistance, installation inspection, system start up, commissioning, and operator training. Associated submittals and O&M manuals are also included.</p> <p>Payment: Contractor to pay and submit invoices to be reimbursed actual amount by OWNER.</p>
6	<p>PERMITTING FEES:</p> <p>Measurement: Allowance for \$5,000 fees associated with this project. This shall include furnishing all labor, materials, tools, equipment, incidentals, required to obtain all necessary permits.</p> <p>Payment: Contractor to pay and submit invoices to be reimbursed actual amount by OWNER.</p>

C. Additive Alternates

Item No.	Description
7.A	<p>TEMPORARY SODIUM HYPOCHLORITE STORAGE AND FEED SYSTEM (12.5%):</p> <p>Measurement: All costs associated with delivery, installation, and testing of the temporary sodium hypochlorite feed system. It shall include design, 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.</p> <p>Payment: Lump sum payment for Item 7.A will be full compensation for completing the Work as shown or indicated under Division 01.</p>

SAN ANTONIO WATER SYSTEM
 MARKET STREET PUMP STATION DISINFECTION SYSTEM UPGRADES

Item No.	Description
7.B	<p>SODIUM HYPOCHLORITE SOLUTION (12.5%):</p> <p>Measurement: All costs associated with the procurement and delivery of 41,000 gallons of 12.5% sodium hypochlorite solution.</p> <p>Payment: Contractor to pay and submit invoices to be reimbursed actual amount by OWNER.</p>

D. Mobilization and Demobilization

Item No.	Description
100	<p>MOBILIZATION AND DEMOBILIZATION, MAX 10% OF LINE ITEMS 1 -4:</p> <p>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 for the Project, in accordance with the Contract Documents, complete in place. Maximum of 10% of the total of Line Items 1 through 4.</p> <p>Payment: Lump sum payment for Item 100 will be full compensation for completing the Work, as shown on the Contract Documents, or indicated under Division 01 through Division 46.</p>
102	<p>INTERMEDIATE DEMOBILIZATION AND REMOBILIZATION:</p> <p>Measurement: This item shall govern Contractor expenses for an Owner-directed intermediate Project demobilization of personnel and equipment that occurs after the Contract Notice to Proceed has been given and work has been commenced, and the subsequent remobilization of personnel and equipment to complete the project. Related work shall include furnishing all labor, materials, tools, equipment, testing, and incidentals required to demobilize and remobilize for the Project, in accordance with the Contract Documents, Complete in Place.</p> <p>Payment: Each Intermediate Demobilization and Remobilization shall only be authorized upon a written directive by Owner. Unit price payment for this item will be full compensation for completing the Work, as shown on the Contract Documents, or indicated under Division 01 through Division 46 for actual intermediate mobilization/demobilization up to quantity shown in the Proposal Form.</p>

1.10 ALLOWANCES

- A. Work that will be paid under an allowance will be authorized in OWNER's written instructions to CONTRACTOR.
- B. Do not perform Work under an allowance without OWNER's written authorization.

1.11 NONPAYMENT FOR REJECTED OR UNUSED PRODUCTS

- A. Payment will not be made for following:
 1. Loading, hauling, and disposing of rejected material.
 2. Quantities of material wasted or disposed of in manner not called for under Contract Documents.
 3. Rejected loads of material, including material rejected after it has been placed by reason of failure of CONTRACTOR to conform to provisions of Contract Documents.
 4. Material not unloaded from transporting vehicle.
 5. Defective Work not accepted by OWNER.
 6. Material remaining on hand after completion of Work.

1.12 PARTIAL PAYMENT FOR STORED MATERIALS AND EQUIPMENT

- A. Partial Payment: 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 OWNER.

SAN ANTONIO WATER SYSTEM
MARKET STREET PUMP STATION DISINFECTION SYSTEM UPGRADES

- B. Final Payment: Will be made only for products incorporated in Work; remaining products, for which partial payments have been made, shall revert to CONTRACTOR unless otherwise agreed, and partial payments made for those items will be deducted from final payment.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

SECTION 01 51 05
TEMPORARY UTILITIES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all temporary utilities and temporary facilities required for the Project, including the following:
 - a. Electricity.
 - b. Lighting.
 - c. Telephone and communications.
 - d. Heating, cooling, ventilating, and temporary enclosures.
 - e. Water.
 - f. Sanitary facilities.
 - g. First-aid facilities.
 - h. Fire protection.
 - i. Disinfection system.
2. Make all arrangements with utility owners for temporary utilities and with others as appropriate for temporary facilities. Obtain required permits and approvals for temporary utilities and temporary facilities.
3. Pay all service costs for utilities and facilities indicated in this Section as CONTRACTOR's responsibility, including cost of electricity, water, fuel, and other utility services and temporary facilities required for the Work.
4. Continuously maintain adequate temporary utilities and temporary facilities for all purposes for the Project, until removal of temporary utilities and temporary facilities. At minimum, provide and maintain temporary utilities and temporary facilities through Substantial Completion and removal of temporary field offices and sheds unless otherwise approved in writing by ENGINEER.
5. Should OWNER occupy part of the Work prior to Substantial Completion of the entire Work, cost of utilities consumed via temporary utilities serving the portion occupied by OWNER will be shared proportionately by OWNER and CONTRACTOR as mutually agreed to by the parties.
6. Maintain, including cleaning, temporary utilities and temporary facilities, and continuously provide consumables as required.
7. Temporary utilities and temporary facilities shall be adequate for personnel using the Site and the needs of the Project.
8. Provide temporary utilities and temporary facilities in compliance with Laws and Regulations and, when applicable, requirements of utility owners.

1.2 REQUIREMENTS FOR TEMPORARY UTILITIES AND TEMPORARY FACILITIES

A. Electrical:

1. Provide temporary electrical service required for the Work, including continuous power for temporary field offices and sheds. Provide temporary outlets with circuit breaker protection and ground fault protection.

B. Lighting:

1. Provide lighting at the Site of not less than five foot-candles for open areas and not less than ten foot-candles for stairs and shops. Provide not less than one, 300-watt lamp every 15 feet in indoor work areas. Provide night security lighting of not less than five foot-candles within 50 feet of all parts of the Site during hours of darkness, controlled by photocell.
2. Do not work in areas with insufficient lighting. Where lighting is insufficient for the work activities to be performed, provide additional temporary lighting.
3. Provide temporary lighting sufficient for observation of the Work by ENGINEER and inspection by CONTRACTOR and authorities having jurisdiction. Where required by ENGINEER, provide additional temporary lighting.

SAN ANTONIO WATER SYSTEM
MARKET STREET PUMP STATION DISINFECTION SYSTEM UPGRADES

- C. Water:
1. General:
 - a. Provide temporary water facilities including piping, valves, meters if not provided by owner of existing waterline, backflow preventers, pressure regulators, and other appurtenances. Provide freeze-protection as required.
 - b. Continuously maintain adequate water flow and pressure for all purposes during the Project, until removal of temporary water systems.
 2. Water for Construction Purposes:
 - a. Provide water for Site maintenance and cleaning and, water necessary for construction activities, and water for disinfecting and testing of systems.
 - b. CONTRACTOR may use existing hose bibbs for short-term wash-downs and intermittent use of water for work areas in the existing building. Obtain consent of ENGINEER and OWNER if connections to existing hose bibbs and similar existing connections will be used for more than one day at a time.
 - c. OWNER may allow the CONTRACTOR to use Non-Potable Water for filling and testing purposes.
 3. Water for Human Consumption and Sanitation:
 - a. Provide potable water in accordance with Laws and Regulations for consumption by personnel at the Site, for field offices, and for sanitary facilities.
 - b. When necessary, provide bottled, potable water for use and consumption by personnel at the Site, including CONTRACTOR, ENGINEER, and visitors to the Site.
- D. Sanitary Facilities.
1. Provide suitably enclosed chemical or self-contained toilets for CONTRACTOR's employees, Subcontractors, Suppliers, ENGINEER, and visitors to the Site. Location of temporary toilets shall be acceptable to OWNER and ENGINEER.
 2. Refer to Paragraph 1.2.C of this Section for requirements for water intended for human consumption during construction.
 3. Provide suitable temporary washing facilities for employees and visitors.
- E. First-aid Facilities.
1. Provide temporary first-aid stations at or immediately adjacent to the Site's work areas, and inside CONTRACTOR's temporary field office. Locations of first-aid stations shall be determined by CONTRACTOR's safety representative. Replenish supplies in first-aid stations as items are used, prior to expiration of items, and as necessary. Monitor and log inventory of supplies in first-aid stations.
 2. Provide list of emergency telephone numbers at each hardwired telephone at the Site.
- F. Fire Protection.
1. Provide temporary fire protection, including portable fire extinguishers rated not less than 2A or 5B in accordance with NFPA 10, Portable Fire Extinguish-ers, for each temporary building and for every 3,000 square feet of floor area under construction.
 2. Provide Class A (ordinary combustibles), Class B (combustible liquids and gases), and Class C (electrical equipment) fire extinguishers, as necessary.
 3. Comply with NFPA 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations, and requirements of fire marshals and authorities having jurisdiction at the Site.
- G. Dewatering.
1. Provide dewatering systems as necessary to dewater and maintain facilities in a dry environment.
- H. Disinfection facilities.
1. Provide temporary disinfection system as detailed in either paragraph 1.12 of this Section. CONTRACTOR shall provide all professional services, labor, materials, equipment, and incidentals as specified and required to design, permit, furnish, install, and operate a temporary disinfection system. CONTRACTOR shall retain registered professional engineer legally qualified to practice in the State of Texas. Professional engineer shall have at least 5 years of experience in the design of sodium hypochlorite disinfection systems.
 - a. Responsibilities of professional engineer include:
 - 1) Reviewing temporary disinfection system performance and design criteria stated in this specification.
 - 2) Preparing written requests for clarifications or interpretations of performance or design criteria for submittal to ENGINEER by CONTRACTOR.

- 3) Preparing or supervising preparation of design calculations, specifications, and drawings.
 - 4) Signing and sealing all calculations, specifications, and drawings and permitting documents.
 - 5) Reviewing shop drawings, product data, testing data, and other required submittals for compliance with approved and permitted system.
2. Code requirements:
- a. Design of the temporary sodium hypochlorite system shall be in accordance with all relevant Federal, State, and Local rules and regulations, including but not limited to:
 - 1) TAC §290.110(b)(2) The residual disinfectant in the water entering the distribution system shall be at least 0.2 milligram per liter (mg/L) free chlorine or 0.5 mg/L chloramine (measured as total chlorine).
 - 2) TAC §290.110(b)(5): The running average of the free chlorine or chloramine residual (measured as total chlorine) of the water within the distribution system shall not exceed an MRDL of 4.0 mg/L.
 - 3) TAC §290.42(e)(3)(A): Disinfection equipment shall have a capacity at least 50% greater than the highest expected dosage to be applied at any time. It shall be capable of satisfactory operation under every prevailing hydraulic condition.
 - 4) TAC §290.42(f)(1)(A): Bulk storage facilities at the plant shall be adequate to store at least a 15-day supply of all chemicals needed to comply with minimum treatment technique and maximum contaminant level (MCL) requirements. The capacity of these bulk storage facilities shall be based on the design capacity of the treatment plant.
 - 5) TAC §290.42(f)(1)(E)(ii): Excepted as provided in this clause, adequate containment facilities shall be provided for all liquid chemical storage tanks.
 - 6) TAC §290.42(f)(1)(E)(ii)(I): Containment facilities for a single container or for multiple interconnected containers must be large enough to hold the maximum amount of chemical that can be stored with a minimum freeboard of six vertical inches or to hold 110% of the total volume of the container(s), whichever is less.
 - b. City of San Antonio Historic and Design Review Commission (HDRC).
 - c. Structural design shall meet, at a minimum, the following:
 - 1) Ss (maximum short-term spectral response acceleration) = 0.051g.
 - 2) S1 (maximum 1-second spectral response acceleration) = 0.023g.
 - 3) SDs (design short-term spectral response acceleration) = 0.054g.
 - 4) SD1 (design 1-second spectral response acceleration) = 0.037g.
 - 5) Ie (Seismic Importance Factor) = 1.5.
 - a) To be verified in delegated design.
 - 6) Occupancy Category = III.
 - 7) Seismic Design Category = A.
 - 8) Site Class = D.
 - 9) Ultimate Wind Speed = 115 MPH.
 - 10) Ground Snow Load = 5 PSF.
 - d. Contractor shall meet Occupational Safety and Health Administration (OSHA) requirements regarding the installation of an emergency shower/eye wash station.
 - e. All equipment shall be NSF-certified per TCEQ requirements.
3. The temporary disinfection system shall be located on the Owner's property as coordinated and agreed upon with the Owner.
 4. The temporary disinfection system injection feed point shall be on the well system influent feed line into the ground storage tank.
 5. All components of the temporary disinfection system shall be fully screened from public view during the time of delivery, installation, operation, decommissioning, and removal from site.
 6. Contractor shall provide a potable water supply near the temporary facility for emergency shower/eye wash station.

1.3 USE OF OWNER'S SYSTEM

- A. Existing Utility Systems: Do not use systems in existing buildings or structures for temporary utilities without OWNER's written permission and mutually acceptable basis agreed upon by the parties for proportionate sharing of costs between OWNER and CONTRACTOR.
- B. Use of Permanent Utility Systems Provided Under the Project:
 1. Permanent electrical, lighting, water, heating, ventilating, and fire protection systems and first-aid facilities may be used to provide temporary utilities and temporary facilities if the following are met:

SAN ANTONIO WATER SYSTEM
MARKET STREET PUMP STATION DISINFECTION SYSTEM UPGRADES

- a. Obtain OWNER's written permission to use permanent systems.
 - b. Permanent systems to be used for temporary utilities or temporary facilities shall be substantial complete, including complete functionality of all controls.
 - c. CONTRACTOR shall pay all costs while using permanent system, including operation, maintenance, replacement of consumables, and provide replacement parts.
2. Do not use the following permanent facilities:
 - a. Telephone and communication facilities.
 - b. Sanitary facilities.

1.4 SUBMITTAL

- A. Informational Submittals:
 1. General: For products specified to be furnished under this Section, submit product data in accordance with Section 01 33 00. Drawings, specifications, and calculations for the temporary disinfection system shall be submitted to OWNER's ENGINEER for review. Product data relevant to the temporary disinfection system shall be reviewed by CONTRACTOR's ENGINEER.
 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. 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 Feed System (12.5%) (Additive Alternate No. 7.A)
 - a. Calculations for temporary disinfection system signed and sealed by a professional engineer registered in the State of Texas.
 - b. Specifications for temporary disinfection system signed and sealed by a professional engineer registered in the State of Texas.
 - c. Drawings for temporary disinfection system signed and sealed by a professional engineer registered in the State of Texas.
 - d. A list of all parameters, ratings, or other characteristics where the proposed system deviates from the requirements set forth in this specification.
 - e. The proposed temporary system must be submitted to the Texas Commission on Environmental Quality (TCEQ) for plan review under the seal of an engineer registered in Texas prior to installation. Such review may take up to 60 days if the equipment meets the TAC §290.42(e) rules for disinfection. The temporary system plans and specifications will need to be reviewed by the OWNER and ENGINEER prior to submittal to TCEQ.

1.5 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.

1.6 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.

1.7 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.

1.8 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.

SAN ANTONIO WATER SYSTEM
MARKET STREET PUMP STATION DISINFECTION SYSTEM UPGRADES

- 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.

1.9 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.

SAN ANTONIO WATER SYSTEM
 MARKET STREET PUMP STATION DISINFECTION SYSTEM UPGRADES

- 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.

1.10 SECURITY

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

1.11 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.

1.12 TEMPORARY SODIUM HYPOCHLORITE STORAGE AND FEED SYSTEM (12.5%) (ADDITIVE ALTERNATE NO. 7.A)

- A. Contractor shall provide a temporary sodium hypochlorite system to provide disinfection during the construction period of October 2022 through March 2023. The system shall include: sodium hypochlorite storage tanks with containment, piping, skid-mounted chemical metering pumps, chemical piping, fittings, valves, and appurtenances. All temporary system components shall be contained per regulatory requirements.
- B. Performance requirements:
 - 1. The temporary sodium hypochlorite storage equipment shall be sized to provide a minimum of 15 days of sodium hypochlorite storage at maximum flow and average dosing conditions.
 - 2. The temporary sodium hypochlorite feed equipment shall be sized to dose sodium hypochlorite to the feed line into the ground storage tank.
 - 3. Sodium hypochlorite shall be dosed to the dosing point on the well influent line into the ground storage tank and dosing shall be automatically flow-paced over the following range of flows and dosages:

Table 01 51 05-A: Temporary Sodium Hypochlorite System Metering Pump Sizing

	Minimum	Maximum	TCEQ Maximum
Process Flow (MGD)	4.67	13.54	13.54
Sodium Hypochlorite Dose (mg/L-Cl ₂)	1.0	2.0	3.0*
Sodium Hypochlorite Usage** (gph)	1.37	7.95	11.93
*TCEQ Requirement for 1.5 x Maximum Dose			
**Usage calculated based on 12.5% sodium hypochlorite solution.			

- 4. The daily Sodium Hypochlorite Requirement (maximum flow at average dose) is 144 gpd.
- 5. Contractor shall submit chemical dosing calculations for the anticipated sodium hypochlorite solution provided. These calculations shall include provisions for sodium hypochlorite decay during storage. TCEQ requires these calculations to be submitted with the plan review process.
- C. Temporary Sodium Hypochlorite Storage Facility:
 - 1. Provide one to two sodium hypochlorite storage tanks of equal size with a minimum capacity of 15 days of sodium hypochlorite storage at average flow and dosing conditions. The system shall include either a day tank with transfer pump or process control instrumentation and procedures to prevent chemical overfeed incidents.
 - 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.

SAN ANTONIO WATER SYSTEM
MARKET STREET PUMP STATION DISINFECTION SYSTEM UPGRADES

6. Storage tank piping shall be designed to prevent a combined release of multiple tanks' contents.
 7. Secondary containment shall be provided per TCEQ §290.42(f)(1)(E)(ii)(II). 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 two skid-mounted temporary sodium hypochlorite pumps (1 duty, 1 standby) of equal capacity with a 6:1 turndown ratio as required to meet the dosing requirements. Piping shall be configured such that the standby pump shall be capable of providing required pumping capacity immediately upon failure of the duty pump.
 2. Temporary pumps shall be peristaltic pumps complete with specified appurtenances. Pumps shall be capable of running dry without damage to the pump or tubing, 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 OSHG modifications are being constructed and disinfection 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.

SAN ANTONIO WATER SYSTEM
MARKET STREET PUMP STATION DISINFECTION SYSTEM UPGRADES

F. Temporary Pumping Skid:

1. One pump skid shall be provided for all two 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. Pumps shall not be installed within the chemical storage area's chemical containment volume.
2. Install the skid on a flat, paved area.
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 shall be supported 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. Utilize an existing spare 70 A, 2-pole, circuit breaker in Power Panel A in in the Control Room. Confirm breaker sizing is appropriate for the Disinfection Unit. Replace breaker as needed with proper size.
2. Install wire and conduit from Power Panel A to Disinfection Unit.
 - a. Size conductors for specific needs at Disinfection Unit. All wire sizing, conduit fill, and breaker sizing determined based on NEC requirements.
 - b. Utilize rigid aluminum conduit for all above grade and indoor routing.
 - c. Utilize Schedule 40 PVC conduit for all below grade, direct buried routing.
 - d. Install maximum size of 1-1/4" rigid aluminum conduit above grade to cross driveway. Protect conduit the entire length of the driveway crossing with 2"x4" wood studs in parallel with the conduit on both sides.
3. Install a single-phase 120/240V circuit breaker panel at the Disinfection Unit.
 - a. Feed this panel from the Power Panel A in the Control Room.
 - b. Size power conductors, conduit, and circuit breakers for specific needs at Disinfection Unit for such loads as heat tracing, eye wash station, convenience receptacles, etc.
4. Install ground rod and equipment ground bonding jumpers at Disinfection Unit.
5. All power conductors, conduit, grounding, circuit breakers, mounting hardware, etc. to be as per Division 26.
6. Conduit shall not block access points such as stairs, doors, and walkways to existing facilities unless approved in writing by the Owner.

H. Temporary Disinfection System Controls:

1. The CONTRACTOR shall furnish and install a complete instrumentation and control system that provides automatic/manual operation for the Disinfection Unit.
2. CONTRACTOR shall coordinate and cooperate with the plant Operations for all interfaces between the Disinfection Unit and the plant PCS system.
3. Program an analog output signal in PLC-Market Street in the Control Room to provide Pump Station Effluent Flow signal to Disinfection System for flow pacing.
 - a. Install 1-Pr#16 TSP, 3/4" conduit from PLC-Market Street to the Disinfection Unit.
 - b. Utilize rigid aluminum conduit for all above grade and indoor routing.
 - c. Utilize Schedule 40 PVC conduit for all below grade, direct buried routing.
 - d. Install rigid aluminum conduit above grade to cross driveway. Protect conduit the entire length of the driveway crossing with 2"x4" wood studs in parallel with the conduit on both sides.
 - e. This conduit and signal wiring are to be separated from any other wiring and not comingled.
4. Install signal splitters at the Disinfection Unit as needed to provide the flow signal to pump controllers, etc. Note, only the flow reading is being provided from the Plant PLC. The control system for the Disinfection Unit is to utilize this flow reading to calculate the and implement required flow paced disinfection.
5. Install surge protective devices on analog circuit from PLC at the PLC cabinet termination and the termination at the Disinfection Unit.
6. All analog conductors, conduit, grounding, circuit breakers, mounting hardware, etc. to be as per Divisions 26 and 40.

SAN ANTONIO WATER SYSTEM
MARKET STREET PUMP STATION DISINFECTION SYSTEM UPGRADES

- I. 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.
- J. CONTRACTOR shall be responsible for operation of the Temporary Sodium Hypochlorite System. CONTRACTOR shall retain a Class A Operator for the operation of the Temporary Sodium Hypochlorite System in accordance with TCEQ regulations.
- K. Contractor shall demonstrate the operation of the temporary system in the presence of the Owner for five (5) days. After five (5) calendar days, modifications to the existing OSHG system may begin upon Owner's approval.
- L. 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.

1.13 SODIUM HYPOCHLORITE SOLUTION (12.5%) (ADDITIVE ALTERNATE NO. 7.B)

- A. If providing a disinfection system under Additive Alternate No. 7.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 MATERIALS AND EQUIPMENT

- A. Materials and equipment for temporary utilities and temporary facilities may be new or used but shall be adequate for purposes intended and shall not create unsafe conditions, and shall comply with Laws and Regulations.
- B. Provide required materials, equipment, and facilities, including piping, cabling, controls, and appurtenances.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install temporary utilities and temporary facilities in neat, orderly, manner, and make structurally, mechanically, and electrically sound throughout.
- B. Location of Temporary Utilities and Temporary Facilities:
 - 1. Locate temporary systems for proper function and service.
 - 2. Temporary systems shall not interfere with or provide hazards or nuisances to: the Work under this and other contracts, movement of personnel, traffic areas, materials handling, hoisting systems, storage areas, finishes, and work of utility owners and others.
 - 3. Do not install temporary utilities on the ground, except for temporary extension cords, hoses, and similar systems in place for short durations.
- C. Modify and extend temporary systems as required by progress of the Work.

3.2 USE

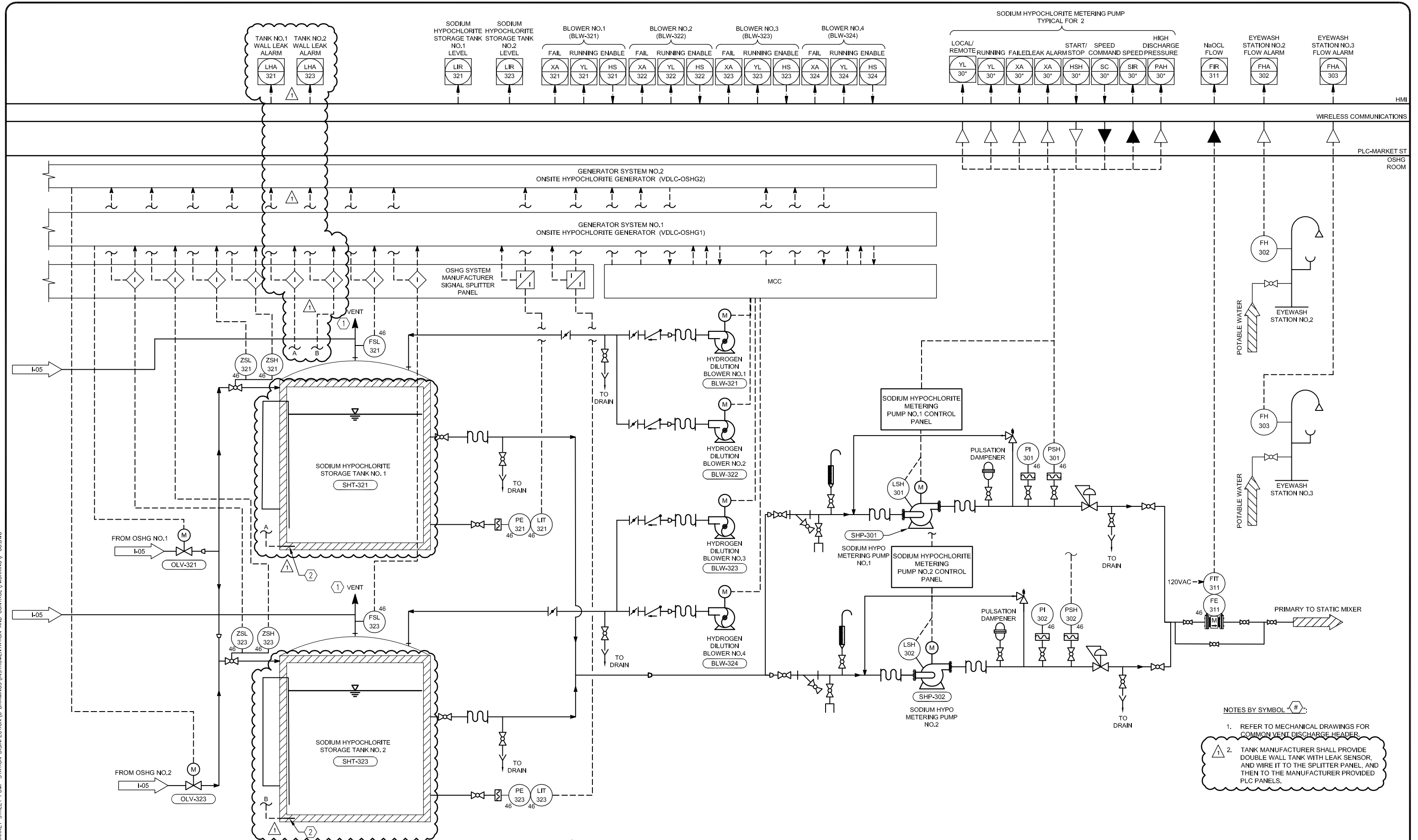
- A. Maintain temporary systems to provide safe, continuous service as required.
- B. Properly supervise operation of temporary systems:
 - 1. Enforce compliance with Laws and Regulations.
 - 2. Enforce safe practices.
 - 3. Prevent abuse of services.
 - 4. Prevent nuisances and hazards caused by temporary systems and their use.
 - 5. Prevent damage to finishes.
 - 6. Ensure that temporary systems and equipment do not interrupt continuous progress of construction.
- C. At end of each workday, check temporary systems and verify that sufficient consumables are available to maintain operation until work is resumed at the Site. Provide additional consumables if the supply on hand is insufficient.

3.3 REMOVAL

- A. Completely remove temporary utilities, temporary facilities, equipment, and materials when no longer required. Repair damage caused by temporary systems and their removal and restore the Site to condition required by the Contract Documents; if restoration of damaged areas is not specified, restore to preconstruction condition.
- B. Where temporary utilities are disconnected from existing utility, provide suitable, watertight or gastight (as applicable) cap or blind flange, as applicable, on service line, in accordance with requirements of utility owner.
- C. Where permanent utilities and systems were used for temporary utilities, upon Substantial Completion replace all consumables such as filters and light bulbs and parts used during the Work.

END OF SECTION

8/30/2021 W:\SAWS\1982_SAWS MARKET STREET PUMP STATION\DISINFECTION\DRAWINGS\INSTRUMENTATION AND CONTROL\WORKING\I-06.DWG



- NOTES BY SYMBOL (#):
- 1. REFER TO MECHANICAL DRAWINGS FOR COMMON VENT DISCHARGE HEADER.
 - 2. TANK MANUFACTURER SHALL PROVIDE DOUBLE WALL TANK WITH LEAK SENSOR AND WIRE IT TO THE SPLITTER PANEL, AND THEN TO THE MANUFACTURER PROVIDED PLC PANELS.

Proj. No.:	1065
Designed:	FA
Drawn:	MG
Approved:	BD
File:	I-06.DWG
Revision	
Date	11/18/21
Description	ADDENDUM NO.3

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SAWS
SAN ANTONIO WATER SYSTEM
MARKET STREET PUMP STATION
DISINFECTION SYSTEM UPGRADES
SAWS Job No. 21-6008
San Antonio, Texas

MARKET ST. PUMP STATION
P&ID III

I-06
SHT 69 OF 69