

**CONSULTANT AGREEMENT BETWEEN THE CITY OF SANTA ANA AND
PARTNERS IN CONTROL DBA ENTERPRISE AUTOMATION TO PROVIDE
ON-CALL ENGINEERING SERVICES**

THIS AGREEMENT is made and entered into on this 19th day of September, 2023 by and between Partners in Control, Inc. dba Enterprise Automation (“Consultant”), and the City of Santa Ana, a charter city and municipal corporation organized and existing under the Constitution and laws of the State of California (“City”).

RECITALS

- A. On February 14, 2023 the City issued Request for Proposal (“RFP”) No. 23-026 by which it desired to retain a consultant having special skill and knowledge in the field of: engineering services to prepare functional specifications and to provide SCADA source control and change control services on an on-call basis for the City’s Public Works Agency.
- B. Consultant submitted a responsive proposal that was among those selected by the city. Consultant represents that it is able and willing to provide such services described in the scope of work that was included in the RFP No. 23-026.
- C. In undertaking the performance of this Agreement, Consultant represents that it is knowledgeable in its field and that any services performed by Consultant under this Agreement will be performed in compliance with such standards as may reasonably be expected from a professional consulting firm in the field.

NOW THEREFORE, in consideration of the mutual and respective promises, and subject to the terms and conditions hereinafter set forth, the parties agree as follows:

1. SCOPE OF SERVICES

Consultant shall perform the services that were described in the scope of work included in the RFP No. 23-026, during the term of this Agreement, the tasks and obligations including all labor, materials, tools, equipment, and incidental customary work required to fully and adequately complete the services described and set forth in “**Scope of Services - Exhibit A**”, attached hereto and incorporated by reference, and as further described in Consultant’s Proposal, attached hereto and incorporated herein by this reference as “**Consultant’s Proposal - Exhibit B**”.

2. COMPENSATION

- a. City neither warrants nor guarantees any minimum or maximum compensation to Consultant under this Agreement. Consultant shall be paid only for actual services performed under this Agreement at the rates and charges identified in Consultant’s Fee Proposal, which is attached hereto and fully incorporated herein by this reference as “**Compensation - Exhibit C**”. Consultant is one of three (3) separate consultants selected to provide services on an on-call basis under RFP 23-026. The total compensation for services provided by all consultants selected under RFP 23-026 shall not exceed the shared aggregate amount of \$1,250,000.00 during the term of this

Agreement, including any extension periods, as set forth in Section 3, below.

- b. Payment by City shall be made within forty-five (45) days following receipt of proper invoice evidencing work performed, subject to City accounting procedures. Payment need not be made for work which fails to meet the standards of performance set forth in the Recitals which may reasonably be expected by City.
- c. Notwithstanding any contrary terms contained within Consultant's Fee Proposal, Consultant's fees shall not increase by more than 3% annually over the term of this Agreement, including any extension periods, unless directly affected by Prevailing Wage laws, if applicable.

3. TERM

This Agreement shall commence on September 19, 2023 and end on September 18, 2026, with the option for the City to grant up to one (1), two-year extension, exercisable by a writing by the City Manager and the City Attorney, unless terminated earlier in accordance with Section 16, below.

4. PREVAILING WAGES

Consultant is aware of the requirements of California Labor Code Section 1720, et seq., and 1770, et seq., as well as California Code of Regulations, Title 8, Section 16000, et seq., ("Prevailing Wage Laws"), which require the payment of prevailing wage rates and the performance of other requirements on "public works" and "maintenance" projects. If the services being performed are part of an applicable "public works" or "maintenance" project, as defined by the Prevailing Wage Laws, and the total compensation is \$1,000 or more, Consultant agrees to fully comply with such Prevailing Wage Laws. Consultant shall defend, indemnify and hold the City, its elected officials, officers, employees and agents free and harmless from any claim or liability arising out of any failure or alleged failure to comply with the Prevailing Wage Laws.

5. INDEPENDENT CONTRACTOR

Consultant shall, during the entire term of this Agreement, be construed to be an independent contractor and not an employee of the City. This Agreement is not intended nor shall it be construed to create an employer-employee relationship, a joint venture relationship, or to allow the City to exercise discretion or control over the professional manner in which Consultant performs the services which are the subject matter of this Agreement; however, the services to be provided by Consultant shall be provided in a manner consistent with all applicable standards and regulations governing such services. Consultant shall pay all salaries and wages, employer's social security taxes, unemployment insurance and similar taxes relating to employees and shall be responsible for all applicable withholding taxes.

6. OWNERSHIP OF MATERIALS

This Agreement creates a non-exclusive and perpetual license for City to copy, use,

modify, reuse, or sublicense any and all copyrights, designs, and other intellectual property embodied in plans, specifications, studies, drawings, estimates, and other documents or works of authorship fixed in any tangible medium of expression, including but not limited to, physical drawings or data magnetically or otherwise recorded on computer diskettes, which are prepared or caused to be prepared by Consultant under this Agreement (“Documents & Data”). Consultant shall require all subcontractors to agree in writing that City is granted a non-exclusive and perpetual license for any Documents & Data the subcontractor prepares under this Agreement. Consultant represents and warrants that Consultant has the legal right to license any and all Documents & Data. Consultant makes no such representation and warranty in regard to Documents & Data which were provided to Consultant by the City. City shall not be limited in any way in its use of the Documents and Data at any time, provided that any such use not within the purposes intended by this Agreement shall be at City’s sole risk.

7. INSURANCE

Consultant shall procure and maintain for the duration of the contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder and the results of that work by the Consultant, its agents, representatives, employees or subcontractors.

- a. Consultant shall not commence work for the City until it has provided evidence satisfactory to the City that it has secured all insurance required under this Section. In addition, Consultant shall not allow any subconsultant to commence work on any subcontract until it has secured all insurance required under this Section.
- b. Insurance coverage shall be at least as broad as:
 - (i) Commercial General Liability (CGL): Insurance Services Office Form CG 00 01 covering CGL on an “occurrence” basis, including products and completed operations, property damage, bodily injury and personal & advertising injury with limits no less than \$2,000,000.00 per occurrence. If a general aggregate limit applies, either the general aggregate limit shall apply separately to this project/location (ISO CG 25 03 or 25 04) or the general aggregate limit shall be twice the required occurrence limit.
 - (ii) Automobile Liability: Insurance Services Office Form Number CA 0001 covering, Code 1 (any auto), or if Consultant has no owned autos, Code 8 (hired) and 9 (non-owned), with limit no less than \$1,000,000.00 per accident for bodily injury and property damage.
 - (iii) Workers’ Compensation insurance as required by the State of California, with Statutory Limits, and Employer’s Liability Insurance with limit of no less than \$1,000,000.00 per accident for bodily injury or disease.

- (iv) Professional Liability (Errors and Omissions) Insurance appropriate to the Consultant's profession, with limit no less than \$1,000,000.00 per occurrence or claim, \$2,000,000.00 aggregate.
 - (v) If the Consultant maintains broader coverage and/or higher limits than the minimums shown above, the City requires and shall be entitled to the broader coverage and/or the higher limits maintained by the Consultant. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to the City.
- c. Other Insurance Provisions. The insurance policies are to contain, or be endorsed to contain, the following provisions:
 - (i) **Additional Insured Status.** The City, its officers, officials, employees, and volunteers are to be covered as additional insureds on the CGL policy with respect to liability arising out of work or operations performed by or on behalf of the Consultant including materials, parts, or equipment furnished in connection with such work or operations. General liability coverage can be provided in the form of an endorsement to the Consultant's insurance (at least as broad as ISO Form CG 20 10 11 85 or both CG 20 10, CG 20 26, CG 20 33, or CG 20 38; and CG 20 37 forms if later revisions used).
 - (ii) **Primary Coverage.** For any claims related to this contract, the Consultant's insurance coverage shall be primary insurance primary coverage at least as broad as ISO CG 20 01 04 13 as respects the City, its officers, officials, employees, and volunteers. Any insurance or self-insurance maintained by the City, its officers, officials, employees, or volunteers shall be excess of the Consultant's insurance and shall not contribute with it.
 - (iii) **Notice of Cancellation.** Each insurance policy required above shall state that coverage shall not be canceled, except with notice to the City.
 - (iv) **Waiver of Subrogation.** Consultant hereby grants to City a waiver of any right to subrogation which any insurer of said Consultant may acquire against the City by virtue of the payment of any loss under such insurance. Consultant agrees to obtain any endorsement that may be necessary to affect this waiver of subrogation, but this provision applies regardless of whether or not the City has received a waiver of subrogation endorsement from the insurer.
 - (v) **Self-Insured Retentions.** Self-insured retentions must be declared to and approved by the City. The City may require the Consultant to purchase coverage with a lower retention or provide proof of ability to pay losses and related investigations, claim administration, and defense expenses within the retention. The policy language shall provide, or be

endorsed to provide, that the self-insured retention may be satisfied by either the named insured or City.

(vi) **Acceptability of Insurers.** Insurance is to be placed with insurers authorized to conduct business in the state with a current A.M. Best's rating of no less than A:VII, unless otherwise acceptable to the City.

(vii) **Claims Made Policies.** If any of the required policies provide coverage on a claims-made basis:

- The Retroactive Date must be shown and must be before the date of the contract or the beginning of contract work.
- Insurance must be maintained and evidence of insurance must be provided for at least five (5) years after completion of the contract of work.
- If coverage is canceled or non-renewed, and not replaced with another claims-made policy form with a Retroactive Date prior to the contract effective date, the Consultant must purchase "extended reporting" coverage for a minimum of five (5) years after completion of contract work.

(viii) **Verification of Coverage.** Consultant shall furnish the City with original Certificates of Insurance including all required amendatory endorsements (or copies of the applicable policy language effecting coverage required by this clause) and a copy of the Declarations and Endorsement Page of the CGL policy listing all policy endorsements to City before work begins. However, failure to obtain the required documents prior to the work beginning shall not waive the Consultant's obligation to provide them. The City reserves the right to require complete, certified copies of all required insurance policies, including endorsements required by these specifications, at any time.

(ix) **Subcontractors.** Consultant shall require and verify that all subcontractors maintain insurance meeting all the requirements stated herein, and Consultant shall ensure that City is an additional insured on insurance required from subcontractors.

(x) **Special Risks or Circumstances.** City reserves the right to modify these requirements, including limits, based on the nature of the risk, prior experience, insurer, coverage, or other special circumstances.

8. INDEMNIFICATION

Consultant agrees to defend, and shall indemnify and hold harmless the City, its officers, agents, employees, contractors, special counsel, and representatives from liability: (1) for personal

injury, damages, just compensation, restitution, judicial or equitable relief arising out of claims for personal injury, including death, and claims for property damage, which may arise from the negligent operations of the Consultant, its subcontractors, agents, employees, or other persons acting on its behalf which relates to the services described in section 1 of this Agreement; and (2) from any claim that personal injury, damages, just compensation, restitution, judicial or equitable relief is due by reason of the terms of or effects arising from this Agreement. This indemnity and hold harmless agreement applies to all claims for damages, just compensation, restitution, judicial or equitable relief suffered, or alleged to have been suffered, by reason of the events referred to in this Section or by reason of the terms of, or effects, arising from this Agreement. The Consultant further agrees to indemnify, hold harmless, and pay all costs for the defense of the City, including fees and costs for special counsel to be selected by the City, regarding any action by a third party challenging the validity of this Agreement, or asserting that personal injury, damages, just compensation, restitution, judicial or equitable relief due to personal or property rights arises by reason of the terms of, or effects arising from this Agreement. City may make all reasonable decisions with respect to its representation in any legal proceeding. Notwithstanding the foregoing, to the extent Consultant's services are subject to Civil Code Section 2782.8, the above indemnity shall be limited, to the extent required by Civil Code Section 2782.8, to claims that arise out of, pertain to, or relate to the negligence, recklessness, or willful misconduct of the Consultant.

9. INTELLECTUAL PROPERTY INDEMNIFICATION

Consultant shall defend and indemnify the City, its officers, agents, representatives, and employees against any and all liability, including costs, for infringement of any United States' letters patent, trademark, or copyright infringement, including costs, contained in the work product or documents provided by Consultant to the City pursuant to this Agreement.

10. RECORDS

Consultant shall keep records and invoices in connection with the work to be performed under this Agreement. Consultant shall maintain complete and accurate records with respect to the costs incurred under this Agreement and any services, expenditures, and disbursements charged to the City for a minimum period of three (3) years, or for any longer period required by law, from the date of final payment to Consultant under this Agreement. All such records and invoices shall be clearly identifiable. Consultant shall allow a representative of the City to examine, audit, and make transcripts or copies of such records and any other documents created pursuant to this Agreement during regular business hours. Consultant shall allow inspection of all work, data, documents, proceedings, and activities related to this Agreement for a period of three (3) years from the date of final payment to Consultant under this Agreement.

11. CONFIDENTIALITY

If Consultant receives from the City information which due to the nature of such information is reasonably understood to be confidential and/or proprietary, Consultant agrees that it shall not use or disclose such information except in the performance of this Agreement, and further agrees to exercise the same degree of care it uses to protect its own information of like importance, but in no event less than reasonable care. "Confidential Information" shall include all

nonpublic information. Confidential information includes not only written information, but also information transferred orally, visually, electronically, or by other means. Confidential information disclosed to either party by any subsidiary and/or agent of the other party is covered by this Agreement. The foregoing obligations of non-use and nondisclosure shall not apply to any information that (a) has been disclosed in publicly available sources; (b) is, through no fault of the Consultant disclosed in a publicly available source; (c) is in rightful possession of the Consultant without an obligation of confidentiality; (d) is required to be disclosed by operation of law; or (e) is independently developed by the Consultant without reference to information disclosed by the City.

12. CONFLICT OF INTEREST CLAUSE

Consultant covenants that it presently has no interests and shall not have interests, direct or indirect, which would conflict in any manner with performance of services specified under this Agreement.

13. NON-DISCRIMINATION

Consultant shall not discriminate because of race, color, creed, religion, sex, marital status, sexual orientation, gender identity, gender expression, gender, medical conditions, genetic information, or military and veteran status, age, national origin, ancestry, or disability, as defined and prohibited by applicable law, in the recruitment, selection, teaching, training, utilization, promotion, termination or other employment related activities or any services provided under this Agreement. Consultant affirms that it is an equal opportunity employer and shall comply with all applicable federal, state and local laws and regulations.

14. EXCLUSIVITY AND AMENDMENT

This Agreement represents the complete and exclusive statement between the City and Consultant, and supersedes any and all other agreements, oral or written, between the parties. In the event of a conflict between the terms of this Agreement and any attachments hereto, the terms of this Agreement shall prevail. This Agreement may not be modified except by written instrument signed by the City and by an authorized representative of Consultant. The parties agree that any terms or conditions of any purchase order or other instrument that are inconsistent with, or in addition to, the terms and conditions hereof, shall not bind or obligate Consultant or the City. Each party to this Agreement acknowledges that no representations, inducements, promises or agreements, orally or otherwise, have been made by any party, or anyone acting on behalf of any party, which is not embodied herein.

15. ASSIGNMENT

Inasmuch as this Agreement is intended to secure the specialized services of Consultant, Consultant may not assign, transfer, delegate, or subcontract any interest herein without the prior written consent of the City and any such assignment, transfer, delegation or subcontract without the City's prior written consent shall be considered null and void. Nothing in this Agreement shall be construed to limit the City's ability to have any of the services which are the subject to this

Agreement performed by City personnel or by other consultant and/or contractors retained by City.

16. TERMINATION

This Agreement may be terminated by the City upon thirty (30) days written notice of termination. In such event, Consultant shall be entitled to receive and the City shall pay Consultant compensation for all services performed by Consultant prior to receipt of such notice of termination, subject to the following conditions:

- a. As a condition of such payment, the Executive Director may require Consultant to deliver to the City all work product(s) completed as of such date, and in such case such work product shall be the property of the City unless prohibited by law, and Consultant consents to the City's use thereof for such purposes as the City deems appropriate.
- b. Payment need not be made for work which fails to meet the standard of performance specified in the Recitals of this Agreement.

17. WAIVER

No waiver of breach, failure of any condition, or any right or remedy contained in or granted by the provisions of this Agreement shall be effective unless it is in writing and signed by the party waiving the breach, failure, right or remedy. No waiver of any breach, failure or right, or remedy shall be deemed a waiver of any other breach, failure, right or remedy, whether or not similar, nor shall any waiver constitute a continuing waiver unless the writing so specifies.

18. JURISDICTION - VENUE

This Agreement has been executed and delivered in the State of California and the validity, interpretation, performance, and enforcement of any of the clauses of this Agreement shall be determined and governed by the laws of the State of California. Both parties further agree that Orange County, California, shall be the venue for any action or proceeding that may be brought or arise out of, in connection with or by reason of this Agreement.

19. PROFESSIONAL LICENSES

Consultant shall, throughout the term of this Agreement, maintain all necessary licenses, permits, approvals, waivers, and exemptions necessary for the provision of the services hereunder and required by the laws and regulations of the United States, the State of California, the City of Santa Ana and all other governmental agencies. Consultant shall notify the City immediately and in writing of its inability to obtain or maintain such permits, licenses, approvals, waivers, and exemptions. Said inability shall be cause for termination of this Agreement.

20. NOTICE

Any notice, tender, demand, delivery, or other communication pursuant to this Agreement shall be in writing and shall be deemed to be properly given if delivered in person or mailed by

first class or certified mail, postage prepaid, or sent by fax or other telegraphic communication in the manner provided in this Section, to the following persons:

To City:

Jennifer L. Hall
City Clerk
City of Santa Ana
20 Civic Center Plaza (M-30)
P.O. Box 1988
Santa Ana, CA 92702-1988
Fax: 714- 647-6956

With courtesy copies to:

Nabil Saba
Executive Director, Public Works Agency
City of Santa Ana
20 Civic Center Plaza
P.O. Box 1988
Santa Ana, CA 92702

To Consultant:

Scott Pickford
Principal
Enterprise Automation
9050 Irvine Center Dr.
Irvine, CA 92618

A party may change its address by giving notice in writing to the other party. Thereafter, any communication shall be addressed and transmitted to the new address. If sent by mail, communication shall be effective or deemed to have been given three (3) days after it has been deposited in the United States mail, duly registered or certified, with postage prepaid, and addressed as set forth above. If sent by fax, communication shall be effective or deemed to have been given twenty-four (24) hours after the time set forth on the transmission report issued by the transmitting facsimile machine, addressed as set forth above. For purposes of calculating these time frames, weekends, federal, state, County or City holidays shall be excluded.

21. MISCELLANEOUS PROVISIONS

- a. Each undersigned represents and warrants that its signature herein below has the power, authority and right to bind their respective parties to each of the terms of this Agreement, and shall indemnify City fully, including reasonable costs and

attorney's fees, for any injuries or damages to City in the event that such authority or power is not, in fact, held by the signatory or is withdrawn.

- b. All Exhibits referenced herein and attached hereto shall be incorporated as if fully set forth in the body of this Agreement.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement the date and year first above written.

ATTEST:

CITY OF SANTA ANA

JENNIFER L. HALL
City Clerk

KRISTINE RIDGE
City Manager

APPROVED AS TO FORM:
SONIA R. CARVALHO
City Attorney

CONSULTANT:

By: 

JONATHAN T. MARTINEZ
Assistant City Attorney



SCOTT PICKFORD
Principal

RECOMMENDED FOR APPROVAL:

NABIL SABA
Executive Director
Public Works Agency

EXHIBIT A

SCOPE OF SERVICES

CITY OF SANTA ANA
RFP NO.: 23-026
WATER RESOURCES FUNCTIONAL SPECIFICATIONS DEVELOPMENT AND SCADA
PROGRAMMING SERVICES

Appendix
ATTACHMENT 1: SCOPE OF WORK

CITY OF SANTA ANA
RFP NO.: 23-026
WATER RESOURCES FUNCTIONAL SPECIFICATIONS DEVELOPMENT AND SCADA
PROGRAMMING SERVICES

SCOPE OF WORK

A. INTRODUCTION AND BACKGROUND

The City of Santa Ana Public Works Agency – Water Resources Division oversees and maintains the daily operations of the Water System and Sanitary Sewer System. The City's water system has an average day demand of about 30 million gallons (MG) with 45,000 service connections. It is comprised of approximately 478 miles of water main, 45 MG of storage at five (5) sites, seven (7) MWD connections, 21 groundwater wells, seven (7) pump stations, four (4) pressure regulating stations and utilizes two (2) pressure zones.

B. CONSULTANT RESPONSIBILITIES

The City desires to retain a qualified Consultant to prepare functional specifications, control panel drawings, programming and testing specifications and provide SCADA systems source control and change control services for the City's water production facilities. The selected vendor is intended to, among other items previously stated, provide and institute oversight mechanisms for the City's contracted controls programmers. The City's facilities are controlled by the Dynac ES SCADA software as provided by Kapsch TrafficCom USA, Inc. The City is also utilizing Wonderware by AVEVA.

The Consultant shall provide all labor, materials, services, and equipment necessary for the services described herein. The Consultant shall possess all Federal, State and Local permits, licenses, and approvals necessary to provide good/services required in the Scope of Work.

C. SCOPE OF SERVICES

The City is seeking qualified Consultants to provide (1) control panel drawings, (2) functional specifications, (3) programming and testing specifications, (4) source control, and (5) change control described in the following sections:

1. CONTROL PANEL DRAWINGS

The Consultant shall be capable of providing and reviewing control panel drawings as they relate to the City's instrumentation and electrical components. The City's water production sites utilize the following components:

- Modicon Momentum Programmable Logic Computers (PLC) – (Modicon M340 and M580 and other various models)
- Variable Frequency Drives (VFD) – (Various models such as ABB and Danfoss)
- Limitorque and AUMA motor operated valves (MOV)
- Mag meters (various brands) and other related appurtenances
- Magelis human machine interfaces (HMI) or a Unitronics display

The Consultant shall have experience working with the aforementioned instruments and shall recommend retrofits when applicable. It is the City's desire that all site control reside within

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the site PLC with the HMI acting primarily as a site control interface relaying operator commands to the site PLC.

A. DELIVERABLES

Upon request, the Consultant shall prepare detailed control panel drawings and specifications for City water production sites. Control panel drawings shall be complete and sufficiently detailed to provide to panel manufacturers and obtain bids for their construction. Control panel drawings shall be in conformance with the City's Control Panel Standards and Specifications and include at a minimum the following:

1. Front Panel Layout Drawing
2. Back Panel Layout Drawing
3. Power Distribution Drawing
4. Communication Network Drawing
5. Analog Inputs/Outputs Drawing
6. Digital Inputs/Outputs Drawing
7. Bill of Materials
8. I/O List with Tag Names
9. Specifications for:
 - a. DC Power Components (standard provided by City)
 - b. Ethernet and Networking Components (standard provided by City)
 - c. Telemetry Components (standard provided by City)
 - d. Control Panel Construction (standard provided by City)

In addition, the consultant shall provide the following for each requested site:

1. I/O List
2. Complete set of Drawings
3. Complete set of associate specification

2. FUNCTIONAL SPECIFICATIONS

The Consultant shall develop functional specifications based on the future/proposed operation/capabilities gained from updating instrumentation and control devices for the Water Production sites upon request from the City. The Functional Specifications are intended to reflect the ultimate desired operation of each site and not be limited to the operation as it exists currently. The Consultant shall be capable of performing the following tasks:

1. Conduct existing condition work sessions with the City Water Production Team to identify existing operational settings, hardware and controls equipment for the Sites. The Consultant shall catalogue all existing controls and equipment and provide recommendations for enhancement and conformance to City's standards.
 - a. The Consultant shall create an I/O database to catalogue all system I/O and communications, which shall include summaries of the use and function of each. The format and fields shall be developed in collaboration with the City Water Production

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- Team. The type of I/O captured in this database shall include, but not be limited to, PLCs, local and remote HMIs, remote I/O modules, radio transmitter modems, backup power, wiring and termination blocks.
- b. The Consultant shall provide recommendations for control hardware upgrades and standardization.
 - c. The purpose of this task is to document existing I/O, configurations and Site equipment for use in preparing the proposed/future I/O list, control panel drawings, functional specifications and related documents.
2. Conduct operations workshops with the City Water Production Team to develop and document operating procedures for the Sites. The Consultant shall provide recommendations for enhancement to operational practices based on currently available technologies and industry best practices.
- a. The Consultant is expected to develop a detailed understanding of each of the Site's operational function including all equipment, controls, instrumentation, and communication systems. Consultant shall research as necessary to fully understand the capabilities and limitation of the Sites.
 - b. It is anticipated that one (1) workshop per pump station Site (8 hours each) will be needed to complete this task. In addition, the City may request the following additional trainings:
 - i. Field testing and training for staff
 - ii. Detailed workshops per functional specification
3. Create Functional Specifications for each Site that includes at minimum the following:
- a. Narrative overview of the function and operation of the Site;
 - b. Identification of all component of the Site (i.e., equipment, instrumentation, etc.)
 - c. Narrative description of the functionality of each component of the Site (e.g., pumps, tanks, VFDs, valves, meters, sensors/transmitters, monitors, etc.);
 - d. Narrative description of all operational modes for the Site;
 - e. Description of the process control strategies for the Site
 - f. Narrative description of each process control strategy;
 - g. Identification of the specific I/O, setpoints, commands, and communications associated with each strategy;
 - h. Detailed description of the control logic for each component/strategy, including permissives, interlocks, PID controls, etc.;
 - i. Description of the SCADA interfaces (Dynac ES provided by Kapsch TrafficCom USA, Inc. and Wonderware provided by AVEVA)
 - j. Narrative and detailed description of system alarms and other notification functionality.

Prior to finalizing the functional specification, the Consultant shall host a functional specification review workshop to review the content of the documents and receive City's approval to finalize. Upon request, the Consultant shall also be able to provide field testing and training for staff.

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3. PROGRAMMING AND TESTING SPECIFICATIONS

Upon request, the Consultant shall develop programming and testing specifications based on City standards for the new control panels. The Consultant shall perform the following tasks:

1. Consultant shall develop comprehensive Factory Acceptance Test (FAT) and Site Acceptance Test (SAT) protocols for the new control panels and related components. Consultant will be tasked with reviewing, enhancing and providing approval recommendations for test protocols and other control system submittals associated with the planned Site improvements to ensure that the panel manufacturer and the City's integrators deliverables and tasks are being executed in compliance with the accepted specifications.
2. Act as the City's agent during factory and on-site functional and performance acceptance testing. Consultant shall document and identify all functional and performance discrepancies and coordinate corrective actions to resolve identified discrepancies prior to City acceptance.
3. On an as-needed basis, Consultant shall provide on-site support for commissioning (start-up) activities, in close coordination with the City's integrator. Consultant shall be present during system commissioning to verify all aspects of the control system and associated process equipment are exercised and to ensure deficiencies are corrected by the Contractor/Integrator as they are found. Commissioning will not be considered complete until the Consultant has determined that all of the system requirements have been met.

A. DELIVERABLES

The Consultant shall provide the following:

1. Control Panel FAT/SAT Protocols
2. Control Panel FAT/SAT Results Report
3. Commissioning/Start-up Report

4. SCADA SOURCE CONTROL

The Consultant shall implement, manage and maintain a source control system and establish procedures to track all changes to the SCADA configurations, PLC programs, firewall configurations, smart field device configurations and related devices. The goal of the Source Control service is to track and store SCADA system configurations and history.

The Consultant shall collect existing programs from field PLC devices to populate the existing source control database. The City has approximately 45 PLC devices located throughout the City. The Consultant shall maintain a master source control database and provide periodic backups to the City. As updates are required to the PLC programs, the Consultant shall provide a copy of the most up to date PLC programs to the City's contract PLC integrators via a documented check-in, check-out process. Consultant shall develop and document rules, standards and procedures for database structure and program check-in, check-out processes.

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5. SCADA CHANGE CONTROL

The Consultant shall implement, manage and maintain a robust change control system and establish procedures to provide governance and structure over proposed SCADA system and site local control programming changes and associated integrator activities. The goal of Change Control services is to prevent ad-hoc SCADA configuration changes, ad-hoc PLC programming changes, properly document new instrumentation additions and ensure proper documentation is kept regarding the nature and reason for the desired system changes. Consultant shall propose a change control platform and methodology. Change requests may be initiated by City, City's contract integrators or Consultant. The City will have final say as to what change requests are approved.

D. CODE COMPLIANCE

All materials and workmanship shall be in strict conformity with federal, state and local codes, requirements, standards of the latest editions, and guidelines including revisions of the following:

- International Society of Automation (ISA)
- California Building Code (CBC)
- American National Standards Institute (ANSI)
- American Society of Testing and Materials (ASTM)
- Department of Transportation (DOT)
- California State Water Resources Control Board
- Department of Drinking Water
- South Coast Air Quality Management District (SCAQMD)
- Environmental Protection Agency (EPA)
- Occupational Safety and Health Administration (OSHA)

E. PROJECT MANAGEMENT AND COORDINATION

When a request for service is issued to the City, the Consultant shall issue an estimate to the City's designated Project Manager. The Consultant shall not proceed with any work without the approval of the City's designated Project Manager in the form of a Notice to Proceed.

Consultants shall invoice the City on a monthly basis for all work performed during the period or provide a one-time invoice at the completion of work issued. Each invoice shall be accompanied by a summary of tasks performed, contract agreement number, results and progress on long-term tasks if any.

F. VALUE ADDED RELATED SERVICES

The Consultant may propose additional related services that the City has not specifically identified in this RFP to accomplish the stated goals of this RFP. Value added related services will be considered by the City and may or may not be incorporated in the agreement. All parts and materials must be supplied new and factory approved.

CITY OF SANTA ANA
RFP NO.: 23-026
**WATER RESOURCES FUNCTIONAL SPECIFICATIONS DEVELOPMENT AND SCADA
PROGRAMMING SERVICES**

G. MARKUP

The following markup percentages shall be added to the Consultant's costs and shall constitute the markup for all overhead and profits (to the sum of the costs and markups, one (1) percent shall be added as compensation for bonding):

1)	Labor	20
2)	Materials	15
3)	Equipment Rental	15
4)	Other Items and Expenditures	15

H. MINIMUM QUALIFICATIONS

The City is searching for a highly experienced professional firm with specific experience in control system, HMI, and SCADA system development, test, integration, and commissioning. At a minimum, proposers shall demonstrate certification, accreditation and/or competence as follows:

1. California Registered Engineer as either:
 - a. Control Systems Engineer, or
 - b. Electrical Engineer, or
2. International Society of Automation, Certified Automation Professional certification required.
3. Provide license/certification holder information (i.e., name, license#, etc.).
4. Project Experience:
 - a. Demonstrated experience with PLC, HMI, RTU and communication processors (e.g., Schneider/ Telemecanique Modicon PLCs, and Magelis HMI, etc.) in a variety of development environments (e.g., Concept v2.6, Advantys, UnityPro and Visilogic, etc.).
 - b. Proven experience with SCADA communication protocols and concepts.
 - c. Demonstrated experience in the area of control systems design, development, integration, acceptance testing and commissioning.
 - d. Minimum of three projects of similar scale and scope in the municipal water production/distribution industry within the past five years.
5. Provide detailed project descriptions for representative projects; include contact information for client/customer personnel (project manager, engineer, etc.) involved with each representative project.
6. Sufficient resources to staff this project. Provide resumes for key personnel/sub-contractors and a resource table summarizing the availability of assigned individuals for the project.
7. All work is to be performed in compliance with all applicable codes, ordinances, laws, standards, due care, and Occupational Safety and Health Administration (OSHA) safety requirements.
8. The Contractor shall have a minimum of five (5) years of experience in providing the services described in ATTACHMENT 1: SCOPE OF SERVICES.
9. The Contractor shall possess state and local permits, licenses and certificates required by law to commence, carry, and complete the work.

CITY OF SANTA ANA
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**WATER RESOURCES FUNCTIONAL SPECIFICATIONS DEVELOPMENT AND SCADA
PROGRAMMING SERVICES**

10. Provide all necessary equipment to competently perform and complete work as specified.

I. SAFETY

Proposer shall be solely and completely responsible for the condition of the project site, including safety of all persons and properties during the performance of the work. In addition, proper safety equipment must be worn at all times. These requirements shall apply continuously until the contract is terminated and shall not be limited to normal working hours.

The Consultant shall assure that each employee or subcontractor under the contractor's supervision is trained in the work practices necessary to safely perform his or her job.

The Consultant's drivers/delivery crews shall be HAZMAT trained and certified in safety measures to prevent accidents endangering personnel and property. Hazardous Materials shall be clearly marked with the proper shipping name and identification number as required by the Department of Transportation. The Consultant shall provide current, applicable and required Material Safety Data Sheets (MSDS) at any time during the contract as requested by the City of Santa Ana.

J. INSURANCE REQUIREMENTS

The successful bidders shall furnish the City with original copies of valid insurance policies herein required upon execution of the contract and shall maintain said policies in full force and effect at all times during the term of this contract. Said insurance policies shall comply with all requirements set forth in these specifications. Consultant(s) shall keep a current certificate of insurance at the City of Santa Ana at all times and shall immediately report any changes to the City.

K. FEE SCHEDULE

The Consultant shall submit a fee schedule and labor rates as described in Section III.B.3 of RFP. The Consultant shall refer to **APPENDIX A and APPENDIX B** for additional information regarding Crooke Station and Cambridge Station respectively. No separately stated freight or deliveries will be considered. Bidders shall include all costs in the unit price bid. The Consultant's delivered product pricing shall be inclusive of all freight/unloading/handling and delivery charged.

The City intends to replace the control panels and related instrumentation and electrical components at the sites described below (work to be performed by a separate Contract):

- 1. Crooke Pump Station consisting of (detailed plansets provided in Appendix A):**
 - a. 3 Booster pumps
 - b. 1 Reservoir
 - c. 2 Groundwater wells

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PROGRAMMING SERVICES

2. Cambridge Pump Station consisting of (detailed plansets provided in Appendix B):

- a. 3 Booster pumps
- b. 1 Reservoir

The fee proposal shall be outlined as follows for Crooke Station and for Cambridge Station:

- 1. Control Panel Drawings
 - a. Fee per Site
- 2. Functional Specifications
 - b. Fee per Site
- 3. Programming and Testing Specifications
 - c. Fee per Site
 - d. Assume 20 hours of witness testing/on-site services per site
- 4. Source Control
 - a. Fee for initial PLC program collection
 - b. Fee for establishing functioning Source Control database, standards and procedures
 - c. Annual budget for processing check-in/check-out requests
 - i. Assume 4 requests per month
- 5. Change Control
 - a. Fee for establishing functioning Change Control forms, standards and procedures
 - b. Annual budget for processing/documenting change control requests
 - i. Assume 4 requests per month
- 6. Firm's standard hourly fee schedules

Furthermore, the Consultant shall submit additional labor, material and rental equipment rates along with fee schedule. Consultant's labor and equipment rate sheet shall list rates for all labor designations, equipment, rentals, and materials. The bid items specified in the fee schedule are for reference purposes only. Labor increases shall be subject to mutually agreeable terms between the City and the Consultant. The City may request related services that will be paid at the vendor's standard labor and equipment rate submitted. Fee proposal shall be outlined as follows:

---End of SCOPE OF WORK Section---

EXHIBIT B

CONSULTANT'S PROPOSAL



**ENTERPRISE
AUTOMATION**
A TETRA TECH COMPANY



Proposal for:

Water Resources Functional Specifications Development and SCADA Programming Services

v.1.0.0

EA PROJECT NUMBER: EA23CSA090

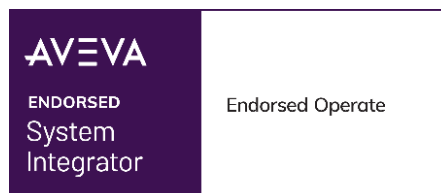
Prepared for: City of Santa Ana
On: 3/9/2023



Prepared by:

Marshall McElroy
Automation Sales Representative

Alex Stipe
Inside Sales Manager



Attention: City of Santa Ana

RE: Water Resources Functional Specifications Development and SCADA Programming Services

Thank you for this opportunity to our proposal for Functional Specifications Development and SCADA Programming Services for the City of Santa Ana (the City). As we understand it, the City is seeking the services of a qualified control systems integrator to develop functional specifications, control panel drawings, programming and testing specifications, and provide SCADA control and change control services for the City's water production facilities on as-needed basis.

Enterprise Automation is the City's most recent Change Manager (CM) and has been delivering a similar scope of services to the City and its integrators and contractors through nearly 20 projects.

During that time, we have acted as an extension of the City's staff to implement protocols, best practices, and standards that have **ensured remote site implementation consistency**, and **significantly enhanced control** over the City's water assets.

We are excited to compete for your business once again and hope to continue providing best-in-class service with a meticulous commitment to fiscal responsibility and efficiency.

Enterprise Automation fully understands the complexity and risk associated with this contract and remains one of the most highly certified, trained, and recognized firms in the region and the world.

We are ideally positioned to meet the City's specific needs, ensuring that the City's water controls infrastructure will continue to adhere to the City's standards and continue operating at peak efficiency.

1. We specialize in automation consulting and the design, implementation, testing, and commissioning of local water and wastewater SCADA systems and their assets.
2. We surpass the City's requested qualifications both in professional licenses and project experience specific to the technologies the City utilizes.
3. We have a holistic understanding of the City's vision for their SCADA assets. We additionally developed the standardized designs being used to upgrade of the City's pump stations.
4. EA designed and implemented the City's highly effective Change and Source control systems.

The following proposal provides a clear description of our standard methodologies and quality initiatives, which we use to deliver consistent, high-quality systems for our customers and would continue to use on City projects.

As Enterprise Automation's Inside Sales Manager, I hereby submit our proposal which includes this cover letter, our vendor application form, required proposal sections, and fee proposal.

This proposal is valid for a 120-day period from the date of submittal, 3/9/2023.

Sincerely,



Alex Stipe
Inside Sales Manager

PROPOSAL CONTACT

Alex Stipe, MBA
Inside Sales Manager

 : 949.378.7087

 : alex.stipe@eaintegrator.com

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1. Agreement Statement

Enterprise Automation complies with the provisions as contained in the standard agreement in the Appendix of this RFP. Enterprise Automation also meets the insurance requirements detailed in this RFP.

2. Firm and Team Experience

2.1 Firm Overview

Enterprise Automation (EA) is a full-service integration and automation consulting firm located in Irvine, California. We serve a variety of process-driven industries, but specialize in the treatment, distribution, and storage of water and wastewater.

"We are Project Execution Specialists"



Our traditional systems integration services are complemented by a suite of consulting services ranging from SCADA and OT network audits, master planning, and budget management.

EA's core focus is the development of modern SCADA platforms that are **innovative yet highly reliable, easy to maintain, and secure**; through comprehensive planning, a high attention to detail, strict adherence to standards and industry best practices, and a disciplined focus on minimizing long-term cost of ownership. We accomplish this through close partnerships with clients, industry peers, and technology manufacturers.

2.2 Tetra Tech

As a direct result of our success and client-focused approach, in October of 2021, Tetra Tech, a **global leading provider of consulting and engineering services**, acquired Enterprise Automation to become a part of their Government Services business group called the Resilient and Sustainable Infrastructure Division (RSI).

Our shared vision of the **Digital Transformation of the water and wastewater industry**, having several shared clients, and the ability to leverage our collective best in-class consulting, design, and systems integration capabilities made EA an ideal fit for Tetra Tech's growing presence.

Since the acquisition, EA still operates as its own brand with independent management, and we maintain our **focus on personal relationships and creating long term value for our clients**.

Tetra Tech brings a strong local technical resource base, backed by a world-class national organization. With over 55 years of experience focusing on water, environment, sustainable infrastructure, and renewable energy, they will provide EA with support as needed.

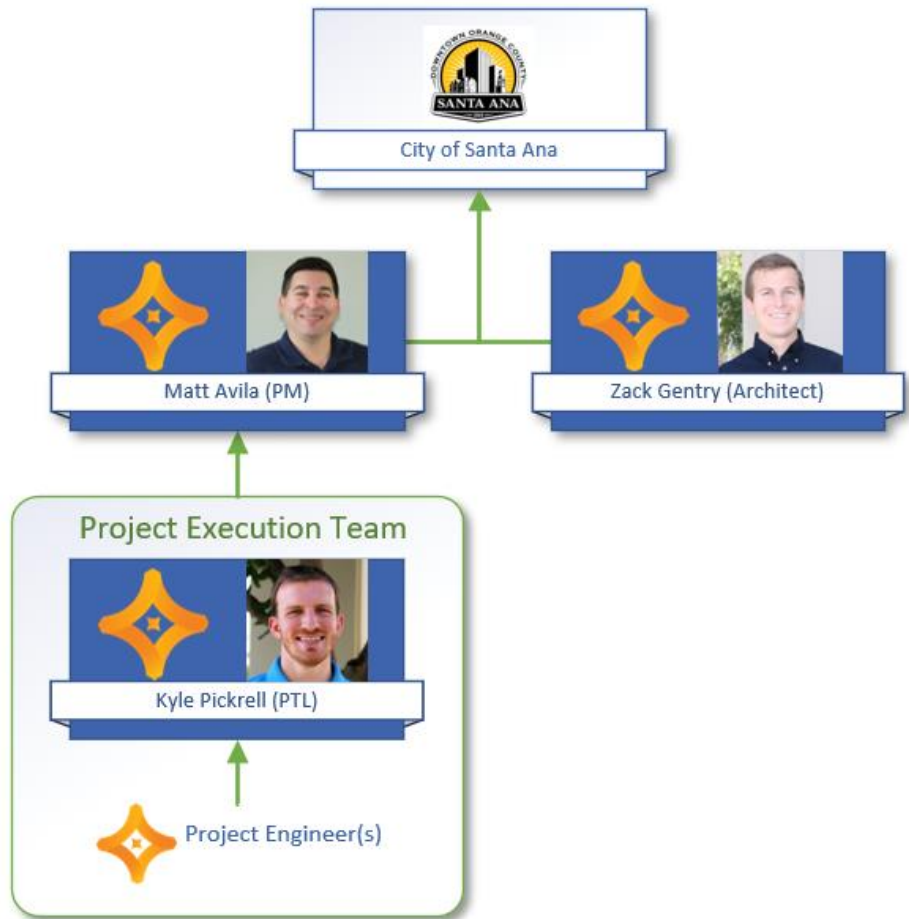


2.3 Project Team

EA's project methodology relies heavily on a structured and intentional staffing model. EA will assign an Account Manager, Project Technical Lead, and a Project Manager to this contract. Additionally, EA will assign additional resources on an as-needed basis depending on the current project or support need.

Below is a table listing the personnel that would be assigned to the City's projects as required and their percentage availability for work associated with this contract. EA will contact the City for approval of any staff augmentations.

The Project Manager will be the City's primary point of contact throughout the life of this contract.



Key Personnel	Role	Percentage Availability
Matt Avila, P.M.P.	Project Manager	25%
Zack Gentry	Automation Architect	80%
Kyle Pickrell, P.E.	Project Technical Lead	90%

Detailed resumes are provided in **Appendix A Resumes**.

2.4 Location

Our headquarters, where all engineering will be performed, is located in Irvine, CA. This is the primary office location for all 42 EA staff members, including 27 full-time degreed engineers cross trained on all of the core technologies that we specialize in.



2.5 Qualifications

Below is a detailed description of how Enterprise Automation meets and exceeds the City's minimum requirements. Copies of certifications can be provided upon request.

2.5.1 California Registered Engineer

Enterprise Automation has the following six California Registered Professional Engineers on staff:

- Alex Coker- Control System Engineering PE, CS 7596
- Bryce Williamson- Control System Engineering PE, CS 7663
- Dave Lewis- Electrical Engineering PE, E 21297
- Kyle Pickrell- Control System Engineering PE, CS 7661
- Luke Stephenson- Control System Engineering PE, CS 7598
- Sara Steinhauser- Control System Engineering PE, CS 7644

2.5.2 International Society of Automation, Certified Automation Professional

Through our parent company, Tetra Tech, Enterprise Automation has the following Certified Automation Professional is available to join our project team as-needed:

- Luis Cardenas Rodriguez



2.5.3 CSIA Certification

Enterprise Automation is certified by the Controls Systems Integrator Association (CSIA), which is considered a more prestigious and highly sought after status for systems integrators.

In order to qualify for CSIA certification, a Systems Integrator must pass an exhaustive multi-day audit that encompasses a broad range of disciplines stretching far beyond the obvious cornerstones of Engineering and Project Management. These topics include: Risk Management, Human Resources, Disaster Recovery Planning, IT infrastructure, Client Service and Support, and dozens of other operational considerations.



2.5.4 Project Technology Experience

2.5.4.1 Schneider Electric PLCs, HMIs, and RTUs

In the City's RFP, Enterprise Automation recognized the need for an integrator with significant experience with PLC, HMI, RTU, and communication processors, specifically with the Schneider Electric brand in a variety of Schneider Electric programming environments.

Enterprise Automation is proud to be **the first Schneider Electric Master Alliance Integration Partner in the USA** and one of only 14 in the world. The Master Alliance Partner status is **their highest level of certification**.

Additionally, we have more Control Expert and EcoStruxure Control System professionals than any firm in the country. These engineers are recognized by Schneider electric as having mastered the complete EcoStruxure offer (Networking, PLC software, and SCADA software) and possess the capabilities and expertise to implement solutions for the most demanding and rigorous requirements.



Our experience with EcoStruxure Control Expert (formerly Unity Pro) has continued to grow over the past twenty years with implementations on a variety of Modicon PLC platforms including Quantum (with scanning of Modicon Advantys Ethernet I/O), Momentum, Premium, M340, and M580.

Some of our municipal Modicon Control Expert projects include:

Client	Application	Hardware
City of Fresno	Water treatment + distribution	Quantum, Momentum, M340
City of Huntington Beach	Water + Wastewater distribution	M340, M580
City of Palm Springs	Cogen plant	M580
City of Santa Ana	Water pump stations	Momentum, M340
Encina Wastewater Authority	Wastewater treatment	M580
Golden State Water Company	Water treatment + distribution	Micro, Momentum, M340
Orange County Sanitation District	Water treatment + distribution	Quantum, M580
Rancho California Water District	Water distribution	M340
South Coast Water District	Water distribution	M340
Sweetwater Authority	Water treatment + distribution	Premium, Momentum, Quantum, M340

2.5.4.2 Dynac SCADA

Although not requested through the City's RFP, EA is formally trained and capable of working on the City's Kapsch Dynac SCADA system.



Several of Enterprise Automation's engineers received formal training from Kapsch staff on the Dynac product and were trained by the City's personnel on the use and configuration of the City's Dynac ES SCADA system. The purpose of the training was to have EA's team understand how to configure the Dynac system and more importantly, to understand how the Dynac data structures and tagging systems worked. This training and deep understanding of the City's SCADA system is invaluable in assisting the City with their control system needs.

3. Understanding Scope of Services

Enterprise Automation understands that the City, through this RFP, is seeking a highly qualified Industrial Automation Systems Integrator to provide the following:

1. Control panel drawings, functional specifications, programming specifications, and testing specifications for the City's water production and control facilities
2. SCADA systems source control and change control services
3. As-needed, the integrator will also act as the City's agent, providing oversight and training for the City's contracted controls programmers, who are responsible for implementing the designs developed

3.1 Standards

A key goal of EA's role as the City's most recent Change Manager was to develop standardized approaches and documentation for site upgrade projects.

EA successfully developed a suite of standardized documentation that has been utilized on several projects with multiple contractors and programmers.

Through those experiences we've been able to significantly reduce the effort required to hand over the City's standards, increase the quality of contractor deliverables, and ensure that sites are implemented consistently.

3.2 Detailed Pump Station Scopes of Work

See Appendix A for detailed scope of work documents for the Cambridge and Crooke pump station projects. Those projects include the following tasks.

3.2.1 Site Specific Deliverables:

The following deliverables will be developed for each site, as needed to support capital upgrades:

1. Control Panel Drawing Package:
 - a. Front and back panel layout drawings
 - b. Power distribution drawing
 - c. Inputs/outputs drawing
 - d. Bill of Materials
 - e. I/O list with tag names
2. Functional Specification
3. SCADA Design Specification
4. OIT Design Specification
5. Network Drawings
6. SCADA FAT Procedures and checklists
7. Panel FAT Procedures and checklists
8. SAT Procedures and checklists

3.2.2 SCADA Source Control

EA has implemented and continues to utilize a source control system internally to track all changes to SCADA configurations, PLC programs, firewall configurations, smart field device configurations, and related devices. With the existing system in place, EA will maintain source control for the City, ensure all backups are up to date, and update/check-in/check-out source control documentation on an as needed basis.

3.2.3 SCADA Change Control

Similar to source control, EA has implemented and continues to utilize a change control system internally to track all desired changes to the system, preventing ad-hoc changes to configurations that do not get documented. With the existing system in place, EA will maintain a change control system for the City, ensure all existing change requests are captured accurately in our system, and update change control documentation on an as needed basis.

3.2.4 Value Added Related Services

There are several tasks that are necessary for the completion and success of each site capital project but were not included in the City's RFP. These tasks have proven critical in maintaining project budgets, schedules, and deliverable quality. We consider them non-optional scope.

3.2.4.1 Specification handovers

Once the final functional specifications and test documents have been developed, EA will hand over them over to the City's contractor and integrator to develop configurations and construct the require control panel(s).

3.2.4.2 Testing contingency

In previous projects with the City, EA has found that the SCADA FAT, panel FAT, and SAT testing procedures typically consume more time than the City has specified in their RFP. Due to this, EA has included additional testing budget to ensure EA has enough time budgeted to support these crucial testing procedures.

3.2.4.3 Training

Following commissioning for each site capital project, EA will plan to train City operations staff on the operation and use of the updated controls system assets. This task has been a crucial part of previous change manager projects to ensure seamless operations for the City's staff and less oversight needed from EA once the site has been commissioned.

3.2.4.4 Post-commissioning as-built updates

Also following commissioning, EA will update the developed specifications to as-built. The intent is to close the project out with documentation accurate to the field to aide with any future modifications and maintenance.

4. Relevant Experience

For several clients EA is currently acting simultaneously as the integrator, consultant, and an extension of staff under either professional or master services agreements. These contracts are nearly identical in both scope and intent to the contract proposed by the City.

We strongly believe that success in these contracts requires developing strong partnerships built on trust that both sides are equally dedicated to accomplish the common goal of a standardized, effective, and reliable SCADA system.

The table below highlights some of our key municipal clients and the scope of services we provide, relevant to this RFP.

Client	Control Panel Drawings	Functional Specifications	Programming and Testing Specs	SCADA Source Control	SCADA Change Control	Code Compliance	PM and Coordination	Standards Development	Virtualized Test Platform	Automation Consulting
Encina Wastewater Authority	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sweetwater Authority	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
City of Santa Ana	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
City of Huntington Beach	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
City of Newport Beach		✓	✓	✓	✓	✓	✓	✓	✓	✓
City of Fresno	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Vallecitos Water District	✓		✓	✓	✓	✓	✓	✓	✓	✓
City of Long Beach	✓	✓	✓	✓	✓	✓	✓		✓	✓
OC Sanitation District			✓	✓	✓	✓	✓	✓	✓	✓
South Coast Water District	✓	✓	✓	✓	✓	✓	✓		✓	✓
Golden State Water Company	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

4.1 Project Profiles

Following are project profiles representative of EA's project experience and capabilities similar to those listed in this RFP.

SCADA Change Manager Services Agreement City of Santa Ana

PROJECT:

Change Manager Services Agreement
215 S. Center St.
Santa Ana, CA 92704

CLIENT CONTACT:

James Burk
Civil Engineer
☎ (714) 647-3315
✉ jburk@santa-ana.org

PROJECT MANAGER:

Matt Avila

PROJECT DETAILS

▶ Key Insights

- Source control
- Change control
- SCADA Standards Development
- Contractor Design Reviews
- Functional Specification Development
- Contractor and Programmer oversight

▶ Key Technologies

- Modicon PLCs
- Modicon HMIs
- Dynac SCADA

▶ Project Metrics

- EA's Services Value- \$2M
- Contract Period- 2018 - 2023



CLIENT BACKGROUND:

The City of Santa Ana is located in the heart of Orange County, California, and is approximately 27 square miles. The City provides potable drinking water for the City's 334,000 residents and businesses. The City's water production system consists of 21 wells, 4 pressure control stations, 7 Metropolitan Water District connections, 7 pumping stations, and 5 reservoirs. The City also operates and maintains 4 sewer lift stations. Control and monitoring of the water system and sewer facilities are coordinated via the City SCADA system using a series of radios which transmit data from remote locations to the centralized City Home SCADA control room.

PROJECT DESCRIPTION

The City normally uses design-bid-build project delivery mechanisms, which yields a variety of contractors implementing their water production facilities but they desired more consistent designs to streamline operations and maintenance. In order to make standardization a priority and instigate a cultural shift, the City decided they needed a qualified automation consultant to prepare standardized functional specifications, HMI graphics standards, control panel drawings, automation program testing protocols, and change control mechanisms as a means to institute oversight for the City's contracted controls programmers.

Through this contract, EA has hosted several process control and standardization workshops with City personnel and immediately used the decisions to develop standardized functional specifications, electrical designs, and test protocols for use at their water sites distribution sites. Concurrently, EA created change control policies, a source control system, and developed documented programming standards for all future City projects to ensure their water facilities were consistent.

In addition to Change Manager Services, EA has assisted the City's SCADA programmer in configuring new screens in the Dynac SCADA system, developing new PLC and OIT programs, deploying configurations onsite and verifying proper operation of the site by leading startup and commissioning activities

As-Needed SCADA Integration Master Services Agreement Sweetwater Authority

PROJECT:

Master Services Agreement
100 Lakewood Ave.
Chula Vista, CA 91910

CLIENT CONTACT:

Justin Brazil
Director of Water Quality
☎ (619) 409-6802
✉ jbrazil@sweetwater.org

PROJECT MANAGER:

Jeff Benson

PROJECT DETAILS

► Key Insights

- Source control
- Change control
- Standards design
- SCADA Evolution
- Master/Annual Planning
- Annual Support Contract
- Full Distribution RTU replacement

► Key Technologies

- AVEVA Plant SCADA
- AVEVA Historian
- AVEVA Ampla
- Modicon PLCs
- Magelis OITs
- MDS Radios
- Cisco Networking Equipment
- MOXA firewalls

► Project Metrics

- EA Services Value: \$11M
- Contract Period: 2005- Present



CLIENT BACKGROUND:

Sweetwater Authority (SWA) provides water treatment and distribution to 200,000 people in a service area that covers 32 square miles near San Diego, California. It is a publicly owned water agency governed by an elected Board of Directors.

PROJECT DESCRIPTION

In 2005 SWA executed an integrator interview process to select an integrator partner. EA was selected as their sole integrator due to demonstrated SCADA and water industry competence. EA's scope covers all SWA water production plants, ground water wells, and distribution controls. EA was engaged early as a core team member of SWA's SCADA master planning committee, which continuously provides strategic direction and planning for SWA's SCADA systems.

Through consecutive professional service agreements beginning in 2005, this partnership has created one of the most standardized and robust automation platforms in the industry. Sweetwater Authority is setting the standard for water control system design and management. EA was initially tasked with addressing several specific needs like SCADA alarming and data validation, but quickly progressed to comprehensive controls system design, long-term automation consulting, and development of a standards portfolio for the Authority.

The current standards portfolio includes capital project system I&C design standards and review, control panel design, SCADA equipment and components, networking, IT policy, virtualization, PLC code, HMI graphics, process control methodology, data storage, MES, water quality reporting, and operator training standards. EA maintains all of these resources in the Authority's source control system and supports the Authority in enforcing their standards in new capital improvement projects and interim system changes.

EA currently supports SWA as a sole sourced systems integrator to design and implement various improvement projects and an automation consultant to assist with annual planning, master plan budgeting, and working as an extension of staff and as a primary SCADA resource.

As-Needed SCADA Integration Professional Services Agreement City of Huntington Beach

PROJECT:

Professional Services Agreement
19001 Huntington St.
Huntington Beach, CA 92648

CLIENT CONTACT:

Bryan Arnado
Utilities Technology Coordinator
☎ (714) 536-5206
✉ bryan.arnado@surfcity-hb.org

PROJECT MANAGER:

Jeff Benson

PROJECT DETAILS

► Key Insights

- Source control
- Change control
- Standards design
- SCADA Replacement
- Master/Annual Planning
- Annual Support Contract
- Physical server to virtualized platform conversion and consolidation
- Complete platform software upgrade
- Department of Homeland Security Audit

► Key Technologies

- VTScada
- VMWare ESXi virtualized platform
- Modicon PLCs
- Magelis OITs

► Project Metrics

- EA Services Value: \$4M
- Contract Period: 2013- Present



CLIENT BACKGROUND:

The City of Huntington Beach, California is a full service, predominantly residential city with a population of about 200,000 located in northwestern Orange County. The City owns and operates both the water utility and wastewater collection system serving its 200,000 citizens. Their assets include 27 sewer lift stations, 10 wells, 5 reservoirs, 16 flood stations, and 9 turnouts where imported water from Metropolitan Water District (MWD) is resold to several local cities and agencies.

PROJECT DESCRIPTION

EA was awarded our first PSA with the City in 2013 and has been working closely with them since. During the time of the first PSA award, the City faced the challenge of locating and retaining a local systems integrator with the qualifications, references, resources, and dedication needed to meet the immediate and future needs of a public entity providing water and wastewater utilities to customers in a growing metropolitan area. Specifically, the City needed three forms of support: on-call support for their legacy system, planning and execution of projects, and assistance with planning their replacement SCADA system.

EA's solution started with auditing existing assets, documenting pressing needs, and hardening the legacy system for improved reliability. The first priority and most significant improvement was virtualizing the City's 30 computer platform, stratifying the SCADA networks, and isolating the water and wastewater Wonderware projects. Upon completion, EA conducted preventative maintenance routines on a semi-annual basis, incorporating change requests for City operations as needed.

Concurrently, EA conducted workshops with the City to define their vision, preferred automation standards, and plan upgrade projects accordingly. To better meet the operational needs of the City, EA transitioned the Wonderware SCADA systems to VTScada. Instead of the usual up-front approach of writing and getting approval for a long and involved project specification, the City proposed a more agile methodology for the project. In-person, bi-weekly meetings were scheduled, which gave the City direct involvement in the development and more control over the process by enabling just-in-time decision making.

Today, EA continues to build on and rehabilitate the City's platform and SCADA assets. Projects include the modernization and rehabilitation of City sewer lift stations, PLC replacements at similar City assets, and continuous long-term planning for the City's SCADA assets.

As-Needed SCADA Integration Master Services Agreement Encina Wastewater Authority

PROJECT:

Master Services Agreement
6200 Avenida Encinas
Carlsbad, CA 92011

CLIENT CONTACT:

Scott McClelland
Assistant General Manager
☎ (760) 268-8837
✉ smcclelland@encinajpa.com

PROJECT MANAGER:

Matt Avila

PROJECT DETAILS

► Key Insights

- Source control
- Change control
- Standards design
- SCADA Master Planning
- Complete facility controls overhaul
- 6,300 IO over 7 plant areas
- 50+ PLCs

► Key Technologies

- Modicon PLCs
- Schneider HDCS
- AVEVA Historian
- AVEVA Plant SCADA
- Test Platform
- Source Control
- Change Control

► Project Metrics

- EA Services Value: \$15M
- Contract Period: 2017-2022



CLIENT BACKGROUND:

The Encina Wastewater Authority (EWA) is a public agency located in Carlsbad, California. EWA provides wastewater treatment services to more than 400,000 residents in northwestern San Diego County. EWA's facilities and services are essential for protecting the local ocean environment, preserving public health, and providing recycled water resources for the region. Enterprise Automation has provided sole sourced automation and integration services to EWA since 2017 as part of a five-year professional services agreement.

PROJECT DESCRIPTION

Since the current control system was originally implemented at Encina Water Pollution Control Facility (EWPCF), the system has been maintained and upgraded by EWA staff, low-bid integrators, and miscellaneous contractors. This approach lacked standardization and documentation, leading to network and reliability issues.

In 2017 the Authority developed and released an RFP to find an automation consultant who could overhaul the entire facility and develop a platform built on industry best practices and a pervasive standardization. EA was awarded the five-year Master Services Agreement and immediately set to developing a master plan for the future of the EWPCF.

Through this contract, EA was tasked with:

- Implementing source and change control systems
- Control panel designs
- Network designs
- Functional/operational specifications
- Virtualized design and implementation
- Test platform development
- Programming and configuration
- FAT, startup, and SAT documentation and execution
- Change Management services

EA is currently executing several concurrent projects according to the developed Master Plan to address the nearly 6,300 IO spread across seven plant areas.

5. References

CITY OF SANTA ANA
RFP NO.: 23-026
WATER RESOURCES FUNCTIONAL SPECIFICATIONS DEVELOPMENT AND SCADA
PROGRAMMING SERVICES

APPENDIX

ATTACHMENT 3: PROPOSER'S REFERENCES

List and describe fully the contracts performed by your firm which demonstrate your ability to provide the supplies, equipment or services included in the scope of the proposal specifications. Attach additional pages if required. The City reserves the right to contact each of the references listed for additional information regarding your firm's qualifications.

Reference

Customer Name: Sweetwater Authority Contact Individual: Justin Brazil
Address: 100 Lakewood Ave. Phone Number: (619) 409-6802
Chula Vista, CA 91910 Email: jbrazil@sweetwater.org
Contract Amount: \$11M Year: 2005-2026, 4x 5-year contracts + 1-year ext.

Description of supplies, equipment, or services provided:
24x7 on-call support, bi-annual maintenance, software renewal support, as-needed integration services
SCADA consulting, SCADA master planning, test platform mgmt, ext of staff, annual budgeting/planning

Reference

Customer Name: City of Huntington Beach Contact Individual: Bryan Arnado
Address: 19001 Huntington St. Phone Number: (714) 536-5206
Huntington Beach, CA 92648 Email: bryan.arnado@surfcity-hb.org
Contract Amount: \$4M Year: 2013-2023, 3x 3-year contracts + 1-year ext.

Description of supplies, equipment, or services provided:
Bi-annual maintenance, software support renewals, as-needed integration services, test platform mgmt
Extension of staff, emergency support, annual budgeting and planning, automation consulting, audits

Reference

Customer Name: Encina Wastewater Authority Contact Individual: Scott McClelland
Address: 6200 Avenida Encinas Phone Number: (760) 268-8837
Carlsbad, CA 92011 Email: smcclelland@encinajpa.com
Contract Amount: \$15M Year: 2017-2025, 5-year contract + 2-year ext.

Description of supplies, equipment, or services provided:
24x7 on-call support, bi-annual maintenance, software renewal support, as-needed integration services
SCADA consulting, SCADA master planning, test platform mgmt, ext of staff, annual budgeting/planning

CITY OF SANTA ANA
RFP NO.: 23-026
WATER RESOURCES FUNCTIONAL SPECIFICATIONS DEVELOPMENT AND SCADA
PROGRAMMING SERVICES

Reference

Customer Name: City of Newport Beach

Contact Individual: Brent Millard

Address: 949 West 16th St.

Phone Number: (949) 718-3414

Newport Beach, CA 92660

Email: bmillard@newportbeachca.gov

Contract Amount: \$1M

Year: 2019-2024, 5-year contract

Description of supplies, equipment, or services provided:

10x5 on-call support, bi-annual maintenance, as-needed integration services, SCADA consulting
test platform mgmt, ext of staff, annual budgeting/planning

**THIS FORM MUST BE COMPLETED AND INCLUDED WITH THE PROPOSAL.
PROPOSALS THAT DO NOT CONTAIN THIS FORM WILL BE CONSIDERED NONRESPONSIVE.**

Appendix A – Pump Station Detailed Scopes of Work

Crooke Pump Station



**ENTERPRISE
AUTOMATION**
A TETRA TECH COMPANY

Scope of Work

Crooke Pump Station Func. Spec Dev & Programming v.1.0.0

PROJECT NUMBER: EA23CSA090

Prepared for:

City of Santa Ana

On:

3/9/2023

Prepared by:
Marshall McElroy

Reviewed by:
Zack Gentry
Josh Riley

Address:
210 Goddard
Irvine, CA 92618

Web:
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Phone:
(949) 769-6000

History

Revision	Date	Description of Change	Author	Reviewed
1.0.0	3/9/2023	Original	MM	ZG/JR

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Acronyms and Terms

For the remainder of the document the following acronyms will be used.

Term	Description
CR	SCADA Change Request
EA	Enterprise Automation (Integrator)
FAT	Factory Acceptance Test
HMI	Human Machine Interface
O&M	Operation and maintenance manuals
OIT	Operator Interface Terminal, stand-alone graphical interface typically found on standalone equipment or remote sites
PLC	Programmable Logic Controller
PM	Project Manager
SAT	Site Acceptance Test
SCADA	Supervisory Control and Data Acquisition (refers to the entire automation system)
CSA, the City	City of Santa Ana

1 Proposal Background

Enterprise Automation has been providing SCADA integration services to the City of Santa Ana since 2014 through several projects including East Pump Station, SA-5, San Lorenzo Lift Station, Well 40, Well 38, Garthe Pump Station, Walnut Pump Station, and more.

In March 2018, the City of Santa Ana awarded Enterprise Automation a three-year professional services agreement to provide SCADA and PLC “Change Management” services which was extended an additional two years. In this role, EA is responsible for promoting and implementing standardization and best practices throughout the City’s water distribution SCADA system.

Through the Change Manager Contract, EA has developed several SCADA standards for the City including:

- IC&E Standards
- Device Standards
- Facility Naming and Tagging Standards
- PLC Programming Standards
- OIT Design Standards
- HMI Standards

This standardization has resulted in projects that are more consistent, less expensive to implement, easier to train operators on, and overall more successful. The documentation also facilitates an efficient transfer of knowledge between the City and their consultants.

In pursuit of implementing these standards across all of their sites, the City has asked EA to develop designs for the City’s water distribution assets which include wells, reservoirs/pump stations, PRVs, MWD connection sites, and lift stations.

EA’s role is to ensure that they are consistent, well documented, thorough, and leverage the City’s validated standards. The scope of this project includes providing such design services for the City’s Cambridge Pump Station.

EA’s specific deliverables and tasks for this project are:

1. Perform a review of 100% designs (P&IDs, drawings, MCC design) and provide comments to the design consultant to ensure the IC&E standards are implemented
2. Develop the following design documentation for Crooke Pump Station
 - a. Panel design (ready for fabrication drawing set and design calculations)
 - b. Tag, IO, and equipment lists
 - c. PLC Functional Specification
 - d. SCADA Design Specification
 - e. OIT Design Specification
 - f. Network drawings
3. Hand over design specifications to the City’s integrator
4. Generate SCADA FAT, Panel FAT, and SAT documentation
5. Assist with SCADA FAT, Panel FAT, and Commissioning (SAT)
6. Develop operator training manuals and deliver training sessions
7. Deliver post-commissioning as-built design documents

Note: This is a design-only project. Programming, panel procurement, testing, and deployment will be executed by the City’s other consultants for this project.

2 Project Goals

The goals of this project are:

1. Provide quality control and procedural compliance oversight over the City's control system programming consultant (the integrator) and panel fabricator.
2. Develop designs according to the City's existing SCADA, PLC, OIT, network, IO, and panel standards.
3. Ensure that the control requirements for Crooke Pump Station are thoroughly documented.
4. Help the City achieve their long-term goal to standardize their entire water distribution SCADA system.
5. Reduce budget and operational risk from the implementation and commissioning phases of this project.

3 Project Approach

Our project approach is designed to:

1. Promote consistency and reduce project risk by leveraging existing designs which have been thoroughly tested.
2. Maximize client engagement at all necessary levels (operations, maintenance, and management) to ensure that the project deliverables meet the City's needs.
3. Test everything where practical, prior to site deployment to reduce the probability of rework being necessary in the field.
4. Encourage transparency between EA, the City, and their contractors and consultants.

4 Assumptions

Please see Section 7 for Assumptions and Clarifications. Note: many assumptions and clarifications listed must be considered in the context of the content in this scope, otherwise they may seem unclear or inconsistent.

5 Scope of Work

This section details the scope of work for tasks included in the estimate in Appendix B, which are arranged to represent the expected order of execution.

At the bottom of each section will be a summary of the deliverables to be produced.

- Client deliverables: items EA will produce and submit to the client
- Internal deliverables: items EA will produce for internal use (available by request)

5.1 Project Management

EA will provide a dedicated project manager to be the main point of contact and steward all communication through EA. The PM has primary responsibility for this project's scope, budget, and schedule.

The PM will prepare a project schedule, publish it, and periodically update it as the project unfolds. At the commencement of the project, the PM will submit the schedule to the City in electronic format.

Throughout the life of the project, the PM will perform all commercial, budget, and project tracking related updates. The labor estimate for project management is comprised of the "Initiation" sheet in the cost estimate in Appendix B, plus a fixed percentage of all other engineering hours (as shown in the estimate).

For each workshop or meeting involving key project decisions, EA's PM will draft and release meeting minutes with action items and dates assigned within one week.

Key Project Management Roles and Activities:

1. Primary point of contact, communications coordination
2. Project scheduling
3. Internal project team meeting coordination
4. Project status tracking (daily/weekly)
5. Project status communication with the City
6. Project invoices and tracking report (monthly)
7. Project coordination
8. Procurement oversight

5.1.1 PM communications plan

5.1.1.1 Project status updates

The PM will contact the City's project manager a minimum of once every two weeks, via email, to provide status updates for all ongoing tasks. This standard practice helps to maintain an open line of communication when current project activities do not require direct contact between EA and the City.

5.2 Project initiation

The “Initiation” sheet in the estimate includes activities associated with starting the project. This includes setting up the project in our accounting, project tracking, and resource planning systems.

5.2.1 Execution planning

Execution planning is a standard engineering activity where the engineers document the systematic process required to generate each deliverable. These plans are continually updated as engineering work is completed such that the team can accurately predict their future budget performance. This is an elementary activity of EA’s preparation and quality control process.

EA engineers (typically the Lead Engineer) will set up the execution plan templates prior to the kickoff meeting. Their templates are based on this scope and estimate.

Once the kickoff meetings are complete and mutual understanding of the scope is confirmed, EA will update and add more detail to the execution plans developed previously.

5.2.2 Internal kickoff

Once a PM is assigned and an engineering team has been established, they will perform an internal team kickoff to review the following:

1. Customer history
2. Relevant parties involved
3. Relevant documentation (specs, designs, etc...)
4. Project scope, budget, schedule, and risk areas

The risk register is an especially valuable tool that is developed during or shortly after the internal kickoff. Engineers use it to track any and all risks (commercial, technical, coordination, etc.) and develop mitigation strategies. The risk register is updated on a regular basis throughout the life of a project and is available for client review at any time.

5.2.3 Project kickoff meeting

Following the internal kickoff meeting EA will prepare for a formal kickoff meeting. We will an agenda at least one week prior to the meeting. EA’s project team, including project engineers and the project manager, will attend the formal kickoff meeting.

Meeting minutes will be published containing action items with assigned responsibilities and due dates.

5.2.4 Team check-in meetings

Internal project team meetings between the EA PM and EA engineering staff are conducted regularly during all projects. These meetings are used to discuss overall project status, budget, schedule, scope, and risk scenarios. The risk register is updated as known risks are averted or mitigated and new risk scenarios are identified.

We consider these formal meetings a critical component to our success as they facilitate team coordination and collaboration in an organized and controlled manner.

Project initiation Deliverables

Client Deliverables	
1.	Kickoff meeting minutes
2.	Project Schedule in Gantt format

Internal Deliverables	
1.	Execution plans
2.	Initial risk register

5.3 Design Review

At the onset of this project, EA will review design documentation that the City's contractor has developed for this project. The exact scope of this task will be determined by the City and EA's project team on an as-needed basis but will likely include a review of the 100% P&IDs, electrical drawings, and MCC design.

Additionally, EA will review the MCC fabricator's ready for construction drawing set for alignment with the design documentation. EA will provide redlined comments to the designer following this review to be incorporated into the final design.

Design Review Deliverables

Client Deliverables	
1.	100% Design review notes
2.	MCC construction drawing review notes

Internal Deliverables	
1.	None

5.4 Control Panel Drawings

EA will be responsible for the development of control panel drawings for Crooke Pump Station. This pump station consists of 3 booster pumps, 1 reservoir, and 2 groundwater wells. The Crooke Pump Station Control Panel Design will conform to existing control panel standards and will include the following at a minimum:

- Front panel layout drawing
- Back panel layout drawing
- Power distribution drawing
- Communication network drawing
- Analog inputs/outputs drawing
- Digital input/output drawing
- Bill of Materials
- I/O list with tag names
- Additional specifications (standard provided by the City)

- DC power components
- Ethernet and networking components
- Telemetry components
- Control panel construction

EA will submit the panel design package to the City for review following completion.

Control Panel Drawings Deliverables

Client Deliverables

- | | |
|----|--|
| 1. | Crooke Pump Station Control Panel Design package |
|----|--|

Internal Deliverables

- | | |
|----|------|
| 1. | None |
|----|------|

5.5 Functional Specifications

For this project, EA will be responsible for developing the design specifications necessary to specify the controls operations for Crooke Pump Station. The specifications will represent how the City desires the site to operate and to be updated to adhere to, not the existing operations scheme. Utilizing EA templates, EA will develop new functional specification documents to detail the design and functionality of Crooke's control systems.

5.5.1 Site investigation

At the beginning of this phase, EA will visit Crooke Pump Station to conduct a site investigation. The site visit will include the review as-built field conditions, review the existing panel, and to review the networking infrastructure. The intent of this site visit is to ensure the existing documentation aligns with the field before making specifications based on that documentation.

5.5.2 Design workshop

Prior to the development of the specification documents, EA will host a design workshop with the City to determine functional requirements for Crooke Pump Station. This includes discussing IO and equipment list changes, PLC Functional Specification requirements, SCADA Design Specification requirements, and OIT Design Specification requirements.

5.5.3 IO list

EA will develop an IO list for Crooke based on findings during the site investigation and changes to the site noted during the design workshop and from the design documentation. EA will submit the IO list to the City for review.

5.5.4 Functional Specification

EA will develop a Functional Specification for Crooke, which will detail PLC program details and how the PLC program is expected to operate. This specification will be based on specifications in which EA has developed for previous City projects and the City's standards. This specification will

also leverage standard template documents that EA has already developed as part of other projects. The Functional Specification will define details such as:

- Narrative overview of the function and operation
- Identification of all physical site components
- Control narrative description for each component
- Process control strategy description
- Identification of IO, setpoints, commands, permissive, etc.
- Alarms
- Totalizers
- PLC standard device code modules to be used in programming

The intent of this document is to provide a high amount of detail and clarity to all groups working on the controls systems at Crooke, especially the integrator responsible for programming. The integrator will use this document to ensure the PLC program is consistent with those at other remediated sites.

EA will submit the Functional Specification to the City for review.

5.5.5 SCADA Design Specification

Similar to the PLC Functional Specification, EA will develop a SCADA Design Specification to detail the SCADA configuration for Crooke. This specification will be based on specifications in which EA has developed for previous City projects and the City's standards and will leverage standard template specification documents from other projects.

The SCADA Design Specification will define:

- SCADA screens and their functions, content, operations, and navigation
- Communication parameters
- Tag and alarm list

This specification will ensure configuration by the integrator is thoroughly planned and consistent with existing Dynac SCADA screens.

EA will submit the SCADA Design Specification to the City for review.

5.5.6 OIT Design Specification

Leveraging the City's OIT design standards and previously developed OIT Design Specification, EA will develop an OIT Design Specification for Crooke.

The specification will define Crooke's OIT screens and popups. The screens will be designed to use the graphic objects which EA has developed for previous site OITs. This specification will ensure configuration by the integrator is thoroughly planned and consistent with those existing OIT screens.

EA will submit the OIT Design Specification to the City for review.

5.5.7 Network drawings

To accompany the design documentation package, EA will develop a basic network diagram for Crooke Pump Station showing all equipment and their network connections.

5.5.8 Design Review Workshop

EA will host a Design Review Workshop to review the developed design specifications. The City will review the submitted specifications and provide comments and feedback during this workshop.

EA will update the specifications to final versions following this workshop.

Functional Specifications Deliverables

Client Deliverables	
1.	Design workshop meeting minutes
2.	Draft and Final IO and equipment lists
3.	Draft and Final Functional Specification
4.	Draft and Final SCADA Design Specification
5.	Draft and Final OIT Design Specification
6.	Draft and Final network drawings
7.	Design Review Workshop meeting minutes

Internal Deliverables	
1.	Site investigation notes

5.6 Programming & Testing Specifications

During the programming and testing phases of this project, EA will be responsible for:

- Developing test documentation for PLC, SCADA, OIT, and panel testing
- Oversee witnessed testing procedures
- Provide onsite startup support for the City's contractor and integrator

The test procedures and checklists EA develops will be intended to guide the SCADA FAT, panel FAT, and SAT. These three comprehensive, witnessed testing sessions will ensure the SCADA configuration, PLC program, OIT program, and fabricated panel are all tested before they are deployed onsite and once more upon startup. EA will submit these test procedures and checklists to the City for review and feedback. Once approved, EA will hand over the three test procedures and checklists to the City's contractor and integrator.

In addition to the development of the test documentation, EA will oversee the SCADA FAT, panel FAT, and SAT onsite. For each test, EA will ensure that all non-conformances are logged and, if necessary, will use as needed support budget to attend re-testing.

EA has included budget for as needed support for both the contractor and integrator during the programming and testing phase.

Programming & Testing Specifications Deliverables

Client Deliverables

- | | |
|----|---|
| 1. | SCADA FAT procedures, checklists, and oversight |
| 2. | Panel FAT procedures, checklists, and oversight |
| 3. | SAT procedures, checklists, and oversight |

Internal Deliverables

- | | |
|----|-----------------------------------|
| 1. | Test documentation handover notes |
|----|-----------------------------------|

5.7 SCADA Source Control

EA has implemented and continues to utilize a source control system internally to track all changes to SCADA configurations, PLC programs, firewall configurations, smart field device configurations, and related devices. With the existing system in place, EA will maintain source control for the City, ensure all backups are up to date, and update/check-in/check-out source control documentation on an as needed basis.

SCADA Source Control Deliverables

Client Deliverables

- | | |
|----|----------------------------------|
| 1. | Host source control for the City |
|----|----------------------------------|

Internal Deliverables

- | | |
|----|------|
| 1. | None |
|----|------|

5.8 SCADA Change Control

Similar to source control, EA has implemented and continues to utilize a change control system internally to track all desired changes to the system, preventing ad-hoc changes to configurations that do not get documented. With the existing system in place, EA will maintain a change control system for the City, ensure all existing change requests are captured accurately in our system, and update change control documentation on an as needed basis.

SCADA Change Control Deliverables

Client Deliverables

- | | |
|----|--------------------------------------|
| 1. | Maintain change control for the City |
|----|--------------------------------------|

Internal Deliverables

- | | |
|----|------|
| 1. | None |
|----|------|

6 Change Manager Tasks

There are several tasks that are necessary for the completion and success of each site capital project but were not included in the City's RFP. These tasks have proven critical in maintaining project budgets, schedules, and deliverable quality. We consider them non-optional scope.

6.1.1 Specification handovers

Once the final functional specification documents have been developed, EA will hand over the specifications and supporting design documentation to the City's integrator. The integrator will use these specifications to complete programming in a standardized matter and will be used to test against following configuration.

6.1.2 Testing contingency

In previous projects with the City, EA has found that the SCADA FAT, panel FAT, and SAT testing procedures typically consume more time than the City has specified in their RFP. Due to this, EA has included additional testing budget to ensure EA has enough time budgeted to support these crucial testing procedures.

6.1.3 Training

Following commissioning, EA will plan to train City operations staff on the operation and use of the updated controls at Crooke. This task has been a crucial part of previous change manager projects to ensure seamless operations for the City's staff and less oversight needed from EA once the site has been commissioned.

EA will develop a training manual to guide the training sessions. Once developed, EA will spend 2 days delivering the training onsite.

6.1.4 Post-commissioning as-built updates

Also following commissioning, EA will update the developed specifications to as-built. The intent is to close the project out with documentation accurate to the field to aide with any future modifications and maintenance.

SCADA Change Control Deliverables

Client Deliverables	
1.	Operator training
2.	Post-commissioning as-built updates
3.	Operator training

Internal Deliverables	
1.	Specification handover notes
2.	Operator training manuals

7 Assumptions & Clarifications

The following assumptions and clarifications were used in preparing this proposal:

1. All developed design documentation will conform to the City's existing standards to ensure a consistent result at Crooke Pump Station to other stations EA has worked on previously.
2. The design contractor will be familiar with the City's IC&E standards and will not require a handover on those standards. A handover to accomplish this will require additional time to complete.
3. EA is only developing a panel design for the one PLC control panel at Crooke Pump Station. Additional panels are currently out of scope and will require additional budget if required by the City.
4. EA will need additional time for the initial site investigation if the overall project is not replacing the MCC and instrumentation. The additional time would be used to investigate what Crooke currently has in more detail.
5. Hardware and hardware procurement is not included in this project.
6. Programming PLC, HMI, and SCADA programs are not included in the scope of work for EA to execute.
7. Crooke is assumed to contain a Modicon or Momentum PLC, VFDs, Limitorque and AUMA motor operated valves, mag meters, and a Magelis HMI or Unitronics display. The RFP additionally mentions Crooke has 2 reservoir wells.
8. EA assumes the Witnessed SCADA FAT will be hosted virtually at EA's office or virtually. Additional travel time and budget will be needed if neither of these conditions are part of the SCADA FAT for this project.
9. SCADA Source Control and Change Control are implemented and maintained by EA currently. Budget included will simply be utilized for specific site updates at the onset of this contract.
10. Unless specifically indicated in this scope of work, design documentation developed through this project will not be stamped by a professional engineer.
11. All submittals will be transmitted in electronic format (no hard copies will be provided)
12. Written approval (email or letter) from the City is required for all submittals within 10 business days of release by EA.
13. Delays due to mechanical, electrical, or IT related issues, production scheduling constraints, or lack of system availability out of EA's control, which result in additional site time, will be charged at EA's standard hourly rates.

8 Schedule

The PM will release an initial schedule upon project initiation.

9 Cost Estimate

The tasks to be performed along with the estimated time to complete the tasks are detailed in Volume II of this RFP response.

Work under this proposal is on a time and expenses basis, and the pricing in Appendix B is an estimate only made in good faith without consideration for delays and unknowns.

Enterprise Automation will continually track task progress against this estimate and will inform the City of any anticipated projected overruns. Any additional hours required to perform the specified tasks will be submitted to the City as a change order request. The decision to continue the work or consider alternative options will therefore remain with the City.

Any additions to the scope of work will also be submitted to the City as a change order request.

Approval of any change order by the City will be required prior to Enterprise Automation commencing or continuing the work task in question.

Billings will occur every month and will include man-hour break downs indicating hours expended, resources utilized, on a per task basis. Enterprise Automation will maintain an open line of communication with the City to discuss status of the work in progress, potential problems with scheduled work, changes in the estimated hours, and to coordinate up and coming tasks.

9.1 Travel

All travel is billed at cost according to the U.S. General Services Administration (GSA) for hotel and per diem rates and the IRS standard mileage rate as of 3/9/2023.

10 Conclusion

I welcome any further discussion that may facilitate the refinement of this scope of work. Please contact me at (949) 769-6000 or alternatively on my cell phone at (714) 878-9422 with any questions.

Submitted by

Josh Riley

Principal

11 Terms & Conditions

Terms and conditions are as per the following contract signed <TBD>:

<TBD>

Appendix A: Deliverables List

Client Deliverables

1. Kickoff meeting minutes
2. Project Schedule in Gantt format
3. 100% Design review notes
4. MCC construction drawing review notes
5. Crooke Pump Station Control Panel Design package
6. Design workshop meeting minutes
7. Draft and Final IO and equipment lists
8. Draft and Final Functional Specification
9. Draft and Final SCADA Design Specification
10. Draft and Final OIT Design Specification
11. Draft and Final network drawings
12. Design Review Workshop meeting minutes
13. SCADA FAT procedures, checklists, and oversight
14. Panel FAT procedures, checklists, and oversight
15. SAT procedures, checklists, and oversight
16. Host source control for the City
17. Maintain change control for the City
18. Operator training
19. Post-commissioning as-built updates
20. Operator training

Internal Deliverables

1. Execution plans
2. Initial risk register
3. Site investigation notes
4. Test documentation handover notes
5. Specification handover notes
6. Operator training manuals

Cambridge Pump Station



**ENTERPRISE
AUTOMATION**
A TETRA TECH COMPANY

Scope of Work

Cambridge Pump Station Func. Spec Dev & Programming v.1.0.0

PROJECT NUMBER: EA23CSA090

Prepared for:

City of Santa Ana

On:

3/9/2023

Prepared by:
Marshall McElroy

Reviewed by:
Zack Gentry
Josh Riley

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History

Revision	Date	Description of Change	Author	Reviewed
1.0.0	3/9/2023	Original	MM	ZG/JR

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Acronyms and Terms

For the remainder of the document the following acronyms will be used.

Term	Description
CR	SCADA Change Request
EA	Enterprise Automation (Integrator)
FAT	Factory Acceptance Test
HMI	Human Machine Interface
O&M	Operation and maintenance manuals
OIT	Operator Interface Terminal, stand-alone graphical interface typically found on standalone equipment or remote sites
PLC	Programmable Logic Controller
PM	Project Manager
SAT	Site Acceptance Test
SCADA	Supervisory Control and Data Acquisition (refers to the entire automation system)
CSA, the City	City of Santa Ana

1 Proposal Background

Enterprise Automation has been providing SCADA integration services to the City of Santa Ana since 2014 through several projects including East Pump Station, SA-5, San Lorenzo Lift Station, Well 40, Well 38, Garthe Pump Station, Walnut Pump Station, and more.

In March 2018, the City of Santa Ana awarded Enterprise Automation a three-year professional services agreement to provide SCADA and PLC “Change Management” services which was extended an additional two years. In this role, EA is responsible for promoting and implementing standardization and best practices throughout the City’s water distribution SCADA system.

Through the Change Manager Contract, EA has developed several SCADA standards for the City including:

- IC&E Standards
- Device Standards
- Facility Naming and Tagging Standards
- PLC Programming Standards
- OIT Design Standards
- HMI Standards

This standardization has resulted in projects that are more consistent, less expensive to implement, easier to train operators on, and overall more successful. The documentation also facilitates an efficient transfer of knowledge between the City and their consultants.

In pursuit of implementing these standards across all of their sites, the City has asked EA to develop designs for the City’s water distribution assets which include wells, reservoirs/pump stations, PRVs, MWD connection sites, and lift stations.

EA’s role is to ensure that they are consistent, well documented, thorough, and leverage the City’s validated standards. The scope of this project includes providing such design services for the City’s Cambridge Pump Station.

EA’s specific deliverables and tasks for this project are:

1. Perform a review of 100% designs (P&IDs, drawings, MCC design) and provide comments to the design consultant to ensure the IC&E standards are implemented
2. Develop the following design documentation for Cambridge Pump Station
 - a. Panel design (ready for fabrication drawing set and design calculations)
 - b. Tag, IO, and equipment lists
 - c. PLC Functional Specification
 - d. SCADA Design Specification
 - e. OIT Design Specification
 - f. Network drawings
3. Hand over design specifications to the City’s integrator
4. Generate SCADA FAT, Panel FAT, and SAT documentation
5. Assist with SCADA FAT, Panel FAT, and Commissioning (SAT)
6. Develop operator training manuals and deliver training sessions
7. Deliver post-commissioning as-built design documents

Note: This is a design-only project. Programming, panel procurement, testing, and deployment will be executed by the City’s other consultants for this project.

2 Project Goals

The goals of this project are:

1. Provide quality control and procedural compliance oversight over the City's control system programming consultant (the integrator) and panel fabricator.
2. Develop designs according to the City's existing SCADA, PLC, OIT, network, IO, and panel standards.
3. Ensure that the control requirements for Cambridge Pump Station are thoroughly documented.
4. Help the City achieve their long-term goal to standardize their entire water distribution SCADA system.
5. Reduce budget and operational risk from the implementation and commissioning phases of this project.

3 Project Approach

Our project approach is designed to:

1. Promote consistency and reduce project risk by leveraging existing designs which have been thoroughly tested.
2. Maximize client engagement at all necessary levels (operations, maintenance, and management) to ensure that the project deliverables meet the City's needs.
3. Test everything where practical, prior to site deployment to reduce the probability of rework being necessary in the field.
4. Encourage transparency between EA, the City, and their contractors and consultants.

4 Assumptions

Please see Section 7 for Assumptions and Clarifications. Note: many assumptions and clarifications listed must be considered in the context of the content in this scope, otherwise they may seem unclear or inconsistent.

5 Scope of Work

This section details the scope of work for tasks included in the estimate in Appendix B, which are arranged to represent the expected order of execution.

At the bottom of each section will be a summary of the deliverables to be produced.

- Client deliverables: items EA will produce and submit to the client
- Internal deliverables: items EA will produce for internal use (available by request)

5.1 Project Management

EA will provide a dedicated project manager to be the main point of contact and steward all communication through EA. The PM has primary responsibility for this project's scope, budget, and schedule.

The PM will prepare a project schedule, publish it, and periodically update it as the project unfolds. At the commencement of the project, the PM will submit the schedule to the City in electronic format.

Throughout the life of the project, the PM will perform all commercial, budget, and project tracking related updates. The labor estimate for project management is comprised of the "Initiation" sheet in the cost estimate in Appendix B, plus a fixed percentage of all other engineering hours (as shown in the estimate).

For each workshop or meeting involving key project decisions, EA's PM will draft and release meeting minutes with action items and dates assigned within one week.

Key Project Management Roles and Activities:

1. Primary point of contact, communications coordination
2. Project scheduling
3. Internal project team meeting coordination
4. Project status tracking (daily/weekly)
5. Project status communication with the City
6. Project invoices and tracking report (monthly)
7. Project coordination
8. Procurement oversight

5.1.1 PM communications plan

5.1.1.1 Project status updates

The PM will contact the City's project manager a minimum of once every two weeks, via email, to provide status updates for all ongoing tasks. This standard practice helps to maintain an open line of communication when current project activities do not require direct contact between EA and the City.

5.2 Project initiation

The “Initiation” sheet in the estimate includes activities associated with starting the project. This includes setting up the project in our accounting, project tracking, and resource planning systems.

5.2.1 Execution planning

Execution planning is a standard engineering activity where the engineers document the systematic process required to generate each deliverable. These plans are continually updated as engineering work is completed such that the team can accurately predict their future budget performance. This is an elementary activity of EA’s preparation and quality control process.

EA engineers (typically the Lead Engineer) will set up the execution plan templates prior to the kickoff meeting. Their templates are based on this scope and estimate.

Once the kickoff meetings are complete and mutual understanding of the scope is confirmed, EA will update and add more detail to the execution plans developed previously.

5.2.2 Internal kickoff

Once a PM is assigned and an engineering team has been established, they will perform an internal team kickoff to review the following:

1. Customer history
2. Relevant parties involved
3. Relevant documentation (specs, designs, etc...)
4. Project scope, budget, schedule, and risk areas

The risk register is an especially valuable tool that is developed during or shortly after the internal kickoff. Engineers use it to track any and all risks (commercial, technical, coordination, etc.) and develop mitigation strategies. The risk register is updated on a regular basis throughout the life of a project and is available for client review at any time.

5.2.3 Project kickoff meeting

Following the internal kickoff meeting EA will prepare for a formal kickoff meeting. We will an agenda at least one week prior to the meeting. EA’s project team, including project engineers and the project manager, will attend the formal kickoff meeting.

Meeting minutes will be published containing action items with assigned responsibilities and due dates.

5.2.4 Team check-in meetings

Internal project team meetings between the EA PM and EA engineering staff are conducted regularly during all projects. These meetings are used to discuss overall project status, budget, schedule, scope, and risk scenarios. The risk register is updated as known risks are averted or mitigated and new risk scenarios are identified.

We consider these formal meetings a critical component to our success as they facilitate team coordination and collaboration in an organized and controlled manner.

Project initiation Deliverables

Client Deliverables	
1.	Kickoff meeting minutes
2.	Project Schedule in Gantt format

Internal Deliverables	
1.	Execution plans
2.	Initial risk register

5.3 Design Review

At the onset of this project, EA will review design documentation that the City's contractor has developed for this project. The exact scope of this task will be determined by the City and EA's project team on an as-needed basis but will likely include a review of the 100% P&IDs, electrical drawings, and MCC design.

Additionally, EA will review the MCC fabricator's ready for construction drawing set for alignment with the design documentation. EA will provide redlined comments to the designer following this review to be incorporated into the final design.

Design Review Deliverables

Client Deliverables	
1.	100% Design review notes
2.	MCC construction drawing review notes

Internal Deliverables	
1.	None

5.4 Control Panel Drawings

EA will be responsible for the development of control panel drawings for Cambridge Pump Station. This pump station consists of 3 booster pumps, and 1 reservoir. The Cambridge Pump Station Control Panel Design will conform to existing control panel standards and will include the following at a minimum:

- Front panel layout drawing
- Back panel layout drawing
- Power distribution drawing
- Communication network drawing
- Analog inputs/outputs drawing
- Digital input/output drawing
- Bill of Materials
- I/O list with tag names
- Additional specifications (standard provided by the City)

- DC power components
- Ethernet and networking components
- Telemetry components
- Control panel construction

EA will submit the panel design package to the City for review following completion.

Control Panel Drawings Deliverables

Client Deliverables

- | | |
|----|---|
| 1. | Cambridge Pump Station Control Panel Design package |
|----|---|

Internal Deliverables

- | | |
|----|------|
| 1. | None |
|----|------|

5.5 Functional Specifications

For this project, EA will be responsible for developing the design specifications necessary to specify the controls operations for Cambridge Pump Station. The specifications will represent how the City desires the site to operate and to be updated to adhere to, not the existing operations scheme. Utilizing EA templates, EA will develop new functional specification documents to detail the design and functionality of Cambridge's control systems.

5.5.1 Site investigation

At the beginning of this phase, EA will visit Cambridge Pump Station to conduct a site investigation. The site visit will include the review as-built field conditions, review the existing panel, and to review the networking infrastructure. The intent of this site visit is to ensure the existing documentation aligns with the field before making specifications based on that documentation.

5.5.2 Design workshop

Prior to the development of the specification documents, EA will host a design workshop with the City to determine functional requirements for Cambridge Pump Station. This includes discussing IO and equipment list changes, PLC Functional Specification requirements, SCADA Design Specification requirements, and OIT Design Specification requirements.

5.5.3 IO list

EA will develop an IO list for Cambridge based on findings during the site investigation and changes to the site noted during the design workshop and from the design documentation. EA will submit the IO list to the City for review.

5.5.4 Functional Specification

EA will develop a Functional Specification for Cambridge, which will detail PLC program details and how the PLC program is expected to operate. This specification will be based on specifications in which EA has developed for previous City projects and the City's standards. This

specification will also leverage standard template documents that EA has already developed as part of other projects. The Functional Specification will define details such as:

- Narrative overview of the function and operation
- Identification of all physical site components
- Control narrative description for each component
- Process control strategy description
- Identification of IO, setpoints, commands, permissive, etc.
- Alarms
- Totalizers
- PLC standard device code modules to be used in programming

The intent of this document is to provide a high amount of detail and clarity to all groups working on the controls systems at Cambridge, especially the integrator responsible for programming. The integrator will use this document to ensure the PLC program is consistent with those at other remediated sites.

EA will submit the Functional Specification to the City for review.

5.5.5 SCADA Design Specification

Similar to the PLC Functional Specification, EA will develop a SCADA Design Specification to detail the SCADA configuration for Cambridge. This specification will be based on specifications in which EA has developed for previous City projects and the City's standards and will leverage standard template specification documents from other projects.

The SCADA Design Specification will define:

- SCADA screens and their functions, content, operations, and navigation
- Communication parameters
- Tag and alarm list

This specification will ensure configuration by the integrator is thoroughly planned and consistent with existing Dynac SCADA screens.

EA will submit the SCADA Design Specification to the City for review.

5.5.6 OIT Design Specification

Leveraging the City's OIT design standards and previously developed OIT Design Specification, EA will develop an OIT Design Specification for Cambridge.

The specification will define Cambridge's OIT screens and popups. The screens will be designed to use the graphic objects which EA has developed for previous site OITs. This specification will ensure configuration by the integrator is thoroughly planned and consistent with those existing OIT screens.

EA will submit the OIT Design Specification to the City for review.

5.5.7 Network drawings

To accompany the design documentation package, EA will develop a basic network diagram for Cambridge Pump Station showing all equipment and their network connections.

5.5.8 Design Review Workshop

EA will host a Design Review Workshop to review the developed design specifications. The City will review the submitted specifications and provide comments and feedback during this workshop.

EA will update the specifications to final versions following this workshop.

Functional Specifications Deliverables

Client Deliverables	
1.	Design workshop meeting minutes
2.	Draft and Final IO and equipment lists
3.	Draft and Final Functional Specification
4.	Draft and Final SCADA Design Specification
5.	Draft and Final OIT Design Specification
6.	Draft and Final network drawings
7.	Design Review Workshop meeting minutes

Internal Deliverables	
1.	Site investigation notes

5.6 Programming & Testing Specifications

During the programming and testing phases of this project, EA will be responsible for:

- Developing test documentation for PLC, SCADA, OIT, and panel testing
- Oversee witnessed testing procedures
- Provide onsite startup support for the City's contractor and integrator

The test procedures and checklists EA develops will be intended to guide the SCADA FAT, panel FAT, and SAT. These three comprehensive, witnessed testing sessions will ensure the SCADA configuration, PLC program, OIT program, and fabricated panel are all tested before they are deployed onsite and once more upon startup. EA will submit these test procedures and checklists to the City for review and feedback. Once approved, EA will hand over the three test procedures and checklists to the City's contractor and integrator.

In addition to the development of the test documentation, EA will oversee the SCADA FAT, panel FAT, and SAT onsite. For each test, EA will ensure that all non-conformances are logged and, if necessary, will use as needed support budget to attend re-testing.

EA has included budget for as needed support for both the contractor and integrator during the programming and testing phase.

Programming & Testing Specifications Deliverables

Client Deliverables

- | | |
|----|---|
| 1. | SCADA FAT procedures, checklists, and oversight |
| 2. | Panel FAT procedures, checklists, and oversight |
| 3. | SAT procedures, checklists, and oversight |

Internal Deliverables

- | | |
|----|-----------------------------------|
| 1. | Test documentation handover notes |
|----|-----------------------------------|

5.7 SCADA Source Control

EA has implemented and continues to utilize a source control system internally to track all changes to SCADA configurations, PLC programs, firewall configurations, smart field device configurations, and related devices. With the existing system in place, EA will maintain source control for the City, ensure all backups are up to date, and update/check-in/check-out source control documentation on an as needed basis.

SCADA Source Control Deliverables

Client Deliverables

- | | |
|----|----------------------------------|
| 1. | Host source control for the City |
|----|----------------------------------|

Internal Deliverables

- | | |
|----|------|
| 1. | None |
|----|------|

5.8 SCADA Change Control

Similar to source control, EA has implemented and continues to utilize a change control system internally to track all desired changes to the system, preventing ad-hoc changes to configurations that do not get documented. With the existing system in place, EA will maintain a change control system for the City, ensure all existing change requests are captured accurately in our system, and update change control documentation on an as needed basis.

SCADA Change Control Deliverables

Client Deliverables

- | | |
|----|--------------------------------------|
| 1. | Maintain change control for the City |
|----|--------------------------------------|

Internal Deliverables

- | | |
|----|------|
| 1. | None |
|----|------|

6 Change Manager Tasks

There are several tasks that are necessary for the completion and success of each site capital project but were not included in the City's RFP. These tasks have proven critical in maintaining project budgets, schedules, and deliverable quality. We consider them non-optional scope.

6.1.1 Specification handovers

Once the final functional specification documents have been developed, EA will hand over the specifications and supporting design documentation to the City's integrator. The integrator will use these specifications to complete programming in a standardized matter and will be used to test against following configuration.

6.1.2 Testing contingency

In previous projects with the City, EA has found that the SCADA FAT, panel FAT, and SAT testing procedures typically consume more time than the City has specified in their RFP. Due to this, EA has included additional testing budget to ensure EA has enough time budgeted to support these crucial testing procedures.

6.1.3 Training

Following commissioning, EA will plan to train City operations staff on the operation and use of the updated controls at Cambridge. This task has been a crucial part of previous change manager projects to ensure seamless operations for the City's staff and less oversight needed from EA once the site has been commissioned.

EA will develop a training manual to guide the training sessions. Once developed, EA will spend 2 days delivering the training onsite.

6.1.4 Post-commissioning as-built updates

Also following commissioning, EA will update the developed specifications to as-built. The intent is to close the project out with documentation accurate to the field to aide with any future modifications and maintenance.

SCADA Change Control Deliverables

Client Deliverables	
1.	Operator training
2.	Post-commissioning as-built updates
3.	Operator training

Internal Deliverables	
1.	Specification handover notes
2.	Operator training manuals

7 Assumptions & Clarifications

The following assumptions and clarifications were used in preparing this proposal:

1. All developed design documentation will conform to the City's existing standards to ensure a consistent result at Cambridge Pump Station to other stations EA has worked on previously.
2. The design contractor will be familiar with the City's IC&E standards and will not require a handover on those standards. A handover to accomplish this will require additional time to complete.
3. EA is only developing a panel design for the one PLC control panel at Cambridge Pump Station. Additional panels are currently out of scope and will require additional budget if required by the City.
4. EA will need additional time for the initial site investigation if the overall project is not replacing the MCC and instrumentation. The additional time would be used to investigate what Cambridge currently has in more detail.
5. Hardware and hardware procurement is not included in this project.
6. Programming PLC, HMI, and SCADA programs are not included in the scope of work for EA to execute.
7. Cambridge is assumed to contain a Modicon or Momentum PLC, VFDs, Limitorque and AUMA motor operated valves, mag meters, and a Magelis HMI or Unitronics display. The RFP additionally mentions Cambridge has 2 reservoir wells.
8. EA assumes the Witnessed SCADA FAT will be hosted virtually at EA's office or virtually. Additional travel time and budget will be needed if neither of these conditions are part of the SCADA FAT for this project.
9. SCADA Source Control and Change Control are implemented and maintained by EA currently. Budget included will simply be utilized for specific site updates at the onset of this contract.
10. Unless specifically indicated in this scope of work, design documentation developed through this project will not be stamped by a professional engineer.
11. All submittals will be transmitted in electronic format (no hard copies will be provided)
12. Written approval (email or letter) from the City is required for all submittals within 10 business days of release by EA.
13. Delays due to mechanical, electrical, or IT related issues, production scheduling constraints, or lack of system availability out of EA's control, which result in additional site time, will be charged at EA's standard hourly rates.

8 Schedule

The PM will release an initial schedule upon project initiation.

9 Cost Estimate

The tasks to be performed along with the estimated time to complete the tasks are detailed in Volume II of this RFP response.

Work under this proposal is on a time and expenses basis, and the pricing in Appendix B is an estimate only made in good faith without consideration for delays and unknowns.

Enterprise Automation will continually track task progress against this estimate and will inform the City of any anticipated projected overruns. Any additional hours required to perform the specified tasks will be submitted to the City as a change order request. The decision to continue the work or consider alternative options will therefore remain with the City.

Any additions to the scope of work will also be submitted to the City as a change order request.

Approval of any change order by the City will be required prior to Enterprise Automation commencing or continuing the work task in question.

Billings will occur every month and will include man-hour break downs indicating hours expended, resources utilized, on a per task basis. Enterprise Automation will maintain an open line of communication with the City to discuss status of the work in progress, potential problems with scheduled work, changes in the estimated hours, and to coordinate up and coming tasks.

9.1 Travel

All travel is billed at cost according to the U.S. General Services Administration (GSA) for hotel and per diem rates and the IRS standard mileage rate as of 3/9/2023.

10 Conclusion

I welcome any further discussion that may facilitate the refinement of this scope of work. Please contact me at (949) 769-6000 or alternatively on my cell phone at (714) 878-9422 with any questions.

Submitted by

Josh Riley
Principal

11 Terms & Conditions

Terms and conditions are as per the following contract signed <TBD>:

<TBD>

Appendix A: Deliverables List

Client Deliverables

1. Kickoff meeting minutes
2. Project Schedule in Gantt format
3. 100% Design review notes
4. MCC construction drawing review notes
5. Cambridge Pump Station Control Panel Design package
6. Design workshop meeting minutes
7. Draft and Final IO and equipment lists
8. Draft and Final Functional Specification
9. Draft and Final SCADA Design Specification
10. Draft and Final OIT Design Specification
11. Draft and Final network drawings
12. Design Review Workshop meeting minutes
13. SCADA FAT procedures, checklists, and oversight
14. Panel FAT procedures, checklists, and oversight
15. SAT procedures, checklists, and oversight
16. Host source control for the City
17. Maintain change control for the City
18. Operator training
19. Post-commissioning as-built updates
20. Operator training

Internal Deliverables

1. Execution plans
2. Initial risk register
3. Site investigation notes
4. Test documentation handover notes
5. Specification handover notes
6. Operator training manuals

Appendix B - Resumes

Appendix C – Certification Documents

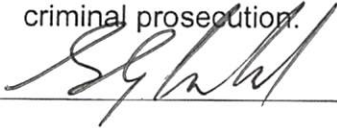
CITY OF SANTA ANA
RFP NO.: 23-026
WATER RESOURCES FUNCTIONAL SPECIFICATIONS DEVELOPMENT AND
SCADA PROGRAMMING SERVICES

NON-COLLUSION AFFIDAVIT

(Title 23 United States Code Section 112 and Public Contract Code Section 7106)

In conformance with Title 23 United States Code Section 112 and Public Contract Code 7106 the BIDDER declares that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the BIDDER has not directly or indirectly induced or solicited any other BIDDER to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any BIDDER or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the BIDDER has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the BIDDER or any other BIDDER, or to fix any overhead, profit, or cost element of the bid price, or of that of any other BIDDER, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the BIDDER has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

Note: The above Non-collusion Affidavit is part of the Proposal. BIDDERS are cautioned that making a false certification may subject the certifier to criminal prosecution.

Signed  SCOTT RICKFORD

State of California
County of Orange

Subscribed and sworn to (or affirmed) before me on this 6th day of March, 2023, by _____, proved to me on the basis of satisfactory evidence to be the person(s) who appeared before me

Notary Public Signature

Notary Public Seal

****SEE ATTACHED NOTARIAL DOCUMENT**

California Jurat

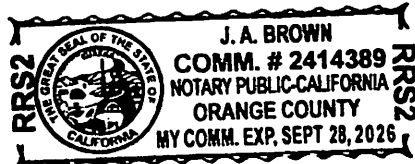
A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California

County of Orange

Subscribed and sworn to (or affirmed) before me on this 7th
day of March, 2023, by Scott Pickford

proved to me on the basis of satisfactory evidence to be the
person(s) who appeared before me.



(Seal)

Signature

OPTIONAL

Though this section is optional, completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document

Title or Type of Document: _____ Document Date: _____

Number of Pages: _____ Signer(s) Other Than Named Above: _____

CITY OF SANTA ANA
RFP NO.: 23-026
**WATER RESOURCES FUNCTIONAL SPECIFICATIONS DEVELOPMENT AND
SCADA PROGRAMMING SERVICES**

NON-LOBBYING CERTIFICATION

The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in conformance with its instructions.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such subrecipients shall certify and disclose accordingly.

Signed: _____

 SCOTT PICKFORD

Title: _____

Principal

Firm: _____

Partners in Control Inc., LLC (dba. Enterprise Automation)

Date: _____

03/06/2023

CITY OF SANTA ANA
RFP NO.: 23-026
WATER RESOURCES FUNCTIONAL SPECIFICATIONS DEVELOPMENT AND
SCADA PROGRAMMING SERVICES

NON-DISCRIMINATION CERTIFICATION

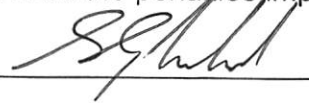
The undersigned consultant or corporate officer, during the performance of this contract, certifies as follows:

1. The Consultant shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Consultant shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Consultant agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
2. The Consultant shall, in all solicitations or advertisements for employees placed by or on behalf of the Consultant, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.
3. The Consultant shall send to each labor union or representative of workers with which he/she has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the Consultant's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
4. The Consultant shall comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
5. The Consultant shall furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his/her books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation, to ascertain compliance with such rules, regulations, and orders.
6. In the event of the Consultant's non-compliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, the contract may be canceled, terminated, or suspended in whole or in part and the Consultant may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulations, or order of the Secretary of Labor, or as otherwise provided by law.

CITY OF SANTA ANA
RFP NO.: 23-026
**WATER RESOURCES FUNCTIONAL SPECIFICATIONS DEVELOPMENT AND
SCADA PROGRAMMING SERVICES**

7. The Consultant shall include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontract or purchase order as the administering agency may direct as means of enforcing such provisions, including sanctions for noncompliance; provided, however, that in the event the Consultant becomes involved in, or is threatened with, litigation with a subconsultant or vendor as a result of such direction by the administering agency, the Consultant may request that the United States enter into such litigation to protect the interests of the United States.
8. Pursuant to California Labor Code Section 1735, as added by Chapter 643 Stats. 1939, and as amended, no discrimination shall be made in the employment of persons upon public works because of race, religious creed, color, national origin, ancestry, physical handicaps, mental condition, marital status, or sex of such persons, except as provided in Section 1420, and any consultant of public works violating this Section is subject to all the penalties imposed for a violation of the Chapter.

Signed: _____

 SCOTT PICKFORD

Title: _____

Principal

Firm: _____

Partners in Control Inc., LLC (dba. Enterprise Automation)

Date: _____

03/06/2023

EXHIBIT C

COMPENSATION

Consultant's Fee Proposal including hourly rates, if applicable



**ENTERPRISE
AUTOMATION**
A TETRA TECH COMPANY



Cost Proposal for:

Water Resources Functional Specifications Development and SCADA Programming Services

v.1.0.0

EA PROJECT NUMBER: EA23CSA090

Prepared for: City of Santa Ana
On: 3/9/2023

Prepared by:

Marshall McElroy
Automation Sales Representative

Alex Stipe
Inside Sales Manager

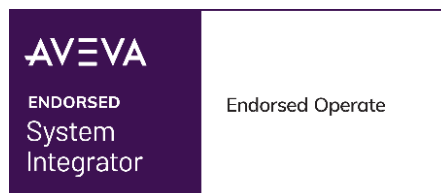


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1. Fee Proposal Form

CITY OF SANTA ANA
RFP NO.: 23-026
WATER RESOURCES FUNCTIONAL SPECIFICATIONS DEVELOPMENT AND SCADA
PROGRAMMING SERVICES

APPENDIX
ATTACHMENT 2: FEE PROPOSAL

Certification - I certify that I have read, understand and agree to the terms and conditions of this Request for Proposal. I have examined the **ATTACHMENT 1: SCOPE OF WORK**. I am familiar with all the existing conditions and limitation that may impact work requests. I understand and agree that I am responsible for reporting any errors, omissions or discrepancies to the City for clarification prior to the submission of my proposal.

Proposer shall submit hourly rates schedule, which shall include but not limited to, direct and indirect costs for labor, for staff per job classification, material, equipment rates, overhead, incidental supplies, travel, mileage, and fuel. Any special materials will be purchased by the contractor only after discussed and authorized by the City projects manager or designee in writing.

Prior to commencement of services, Contractor shall provide separate quotes, upon request by the City, which shall be approved by the City's Public Works Water Resources Division.

FEE SCHEDULE

The undersigned declares that he/she has carefully examined the request for proposal, that he/she has examined the Proposed Scope of Services, and hereby proposes to furnish all material and do all the work required to complete the said work in accordance with said Proposed Scope of Services, for the unit price(s) set forth in the following schedule:

Note: **This contract is subject to prevailing wages.**

TO: CITY COUNCIL OF THE CITY OF SANTA ANA

FROM: Enterprise Automation

<u>Item #</u>	<u>Bid Item</u>	<u>Unit</u>	<u>Quantity</u>	<u>Amount</u>
Crooke Station and Cambridge Station (Please refer to Appendix A and Appendix B)				
Crooke Station (Located at 730 E Memory Ln, Santa Ana CA 92706) – Appendix A				
1.	Control Panel Drawings	EA	1	\$ <u>17,968</u>
2.	Functional Specification	EA	1	\$ <u>42,768</u>
3.	Programming and Testing Specifications	EA	1	\$ <u>41,872</u>
4.	Source Control	EA	1	\$ <u>976</u>
5.	Change Control	EA	1	\$ <u>976</u>

CITY OF SANTA ANA
RFP NO.: 23-026
**WATER RESOURCES FUNCTIONAL SPECIFICATIONS DEVELOPMENT AND SCADA
PROGRAMMING SERVICES**

Cambridge Station (Located at 2736 N Cambridge St, Santa Ana CA 92701) – Appendix B				
6.	Control Panel Drawings	EA	1	\$ 17,968
7.	Functional Specification	EA	1	\$ 39,772
8.	Programming and Testing Specifications	EA	1	\$ 41,872
9.	Source Control	EA	1	\$ 976
10.	Change Control	EA	1	\$ 976
Total				\$ 206,124

Contractor shall submit rate schedule, additional labor, material and rental equipment rates along with fee schedule. Contractor's labor and equipment rate sheet shall list rates for all labor designations, equipment and materials.


BIDDER INFORMATION:

Legal Company Name: Partners in Control dba Enterprise Automation, A Tetra Tech Company

Complete address: 210 Goddard Irvine, CA 92618

Phone Number: (949) 378-7087

Email Address: alex.stipe@eaintegrator.com

Authorized Signature: 

Name: Alex Stipe

Title: Inside Sales Manager

2. Detailed Pump Station Cost Estimates

Below is Enterprise Automation's detailed cost estimate for Crooke and Cambridge Pump Stations. The intent of including these in our cost proposal is to give the City full transparency on where EA has associated budget for tasks. Additionally, this detailed cost estimate includes tabs and budget for services that will be necessary to the success and completion of this project. These additional tabs were not included in Attachment 2's Fee Proposal tables.

2.1 Crooke Pump Station

Client: City of Santa Ana
Project: Crooke Pump Station Func. Spec Dev & Programming



Number: EA23CSA090 Date: 3/9/2023 Revision: 1.0.0 Author: MM Reviewed By: ZG/JR

Summary

#	Engineering Labor	In Office				Out of Office				Totals	
		Proj. Eng.	Lead Eng.	PM	Principal	Proj. Eng.	Lead Eng.	PM	Principal	Hours	Price
	Control Panel Drawings	56	12	8	0	0	0	0	0	76	\$17,968
	Functional Specifications	118	27	19	0	8	8	0	0	180	\$42,768
	Programming & Testing Specs	65	41	18	0	24	24	0	0	172	\$41,872
	SCADA Source Control	2	2	0	0	0	0	0	0	4	\$976
	SCADA Change Control	2	2	0	0	0	0	0	0	4	\$976
	Engineering Labor Totals	243	84	45	0	32	32	0	0	436	\$104,560

Additional Required Scope & Expenses

#	Engineering Labor	In Office				Out of Office				Totals	
		Proj. Eng.	Lead Eng.	PM	Principal	Proj. Eng.	Lead Eng.	PM	Principal	Hours	Price
	Initiation	8	8	4	0	0	0	0	0	20	\$4,944
	Design Review	54	16	8	0	0	0	0	0	78	\$18,552
	Change Manager Tasks	46	28	11	0	0	20	0	0	105	\$25,828
	Engineering Labor Totals	108	52	23	0	0	20	0	0	203	\$49,324

Expenses (excl. taxes)										Price
EXP Travel										\$211
Total Expenses										\$211

Grand Total										\$154,095
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**ENTERPRISE
AUTOMATION**
A TETRA TECH COMPANY

Number: EA23CSA090 Date: 3/9/2023 Revision: 1.0.0 Author: MM Reviewed By: ZG/JR

Control Panel Drawings

Engineering Labor		In Office				Out of Office				Totals	
WBS	Description	Proj. Eng.	Lead Eng.	PM	Principal	Proj. Eng.	Lead Eng.	PM	Principal	Hours	Price
110	Panel design									68	\$15,888
	Crooke Pump Station panel design	40	10								
	front panel layout										
	back panel layout										
	power distribution drawing										
	communications network drawing										
	AI/AO drawing										
	DI/DO drawing										
	compile bill of materials										
	I/O list with tag names										
	internal review										
associated specifications											
DC Power Components											
Ethernet and Networking components											
Telemetry Components											
Control Panel Construction											
Panel drafting support		8									
<u>Submittal</u>		8	2								
prepare and submit to client											
post submittal changes											
990	Project management									8	\$2,080
	Coordination, project management, overhead, meetings			8							

Hours	56	12	8	0	0	0	0	0	76
Price	\$12,768	\$3,120	\$2,080	\$0	\$0	\$0	\$0	\$0	\$17,968

Client: City of Santa Ana
Project: Crooke Pump Station Func. Spec Dev & Programming



Number: EA23CSA090 Date: 3/9/2023 Revision: 1.0.0 Author: MM Reviewed By: ZG/JR

Functional Specifications

Engineering Labor		In Office				Out of Office				Totals	
WBS	Description	Proj. Eng.	Lead Eng.	PM	Principal	Proj. Eng.	Lead Eng.	PM	Principal	Hours	Price
101	Site investigation Preparation Site investigation review field conditions review panels or new panel locations investigate networking infrastructure	1	1			8	8			18	\$4,392
150	Design Workshop Workshop preparation including handouts and agenda Workshop discuss IO list discuss functional specification requirements discuss SCADA design requirements discuss OIT design requirements design review Notes compilation	1 4 1	 4 							10	\$2,408
160	IO list Develop IO list submit to the client for review	20	6							26	\$6,120
170	Functional Specification Develop Functional Specification programming language and module structure define tagging conventions scaling and device feature requirements totalizers equipment definitions instrumentation definitions detailed process control define set points standard PLC Modbus address reservation plan PLC design submittal prepare and submit post submittal changes	40 2	6							48	\$11,136

Client: City of Santa Ana
Project: Crooke Pump Station Func. Spec Dev & Programming



Number: EA23CSA090 Date: 3/9/2023 Revision: 1.0.0 Author: MM Reviewed By: ZG/JR

Functional Specifications

Engineering Labor		In Office				Out of Office				Totals	
WBS	Description	Proj. Eng.	Lead Eng.	PM	Principal	Proj. Eng.	Lead Eng.	PM	Principal	Hours	Price
180	SCADA Design Specification Develop SCADA design devices graphical representation commands set points permissives screen list page navigation reusable objects tagging conventions user security pop-ups alarms trending / historization SCADA design submittal prepare and submit post submittal changes	20	2							22	\$5,080
185	OIT Design Specification Develop OIT display specification desired OIT screen layouts and content components graphical representation commands/setpoints screen list page navigation tagging conventions user security alarms trending OIT design submittal prepare and submit post submittal changes	14	2							16	\$3,712

Client: City of Santa Ana
Project: Crooke Pump Station Func. Spec Dev & Programming



Number: EA23CSA090 Date: 3/9/2023 Revision: 1.0.0 Author: MM Reviewed By: ZG/JR

Functional Specifications

Engineering Labor		In Office				Out of Office				Totals	
WBS	Description	Proj. Eng.	Lead Eng.	PM	Principal	Proj. Eng.	Lead Eng.	PM	Principal	Hours	Price
130	Network design Develop basic network diagram submit to the City for review	6	2							8	\$1,888
150	Design Review Workshop Workshop preparation including handouts and agenda Workshop review Functional Specification draft review SCADA Design Specification draft review OIT Design Specification draft review draft network drawings Notes compilation post submittal updates	1 3	3							13	\$3,092
990	Project management Coordination, project management, overhead, meetings	1 4	1	19						19	\$4,940
Hours		118	27	19	0	8	8	0	0	180	
Price		\$26,904	\$7,020	\$4,940	\$0	\$1,824	\$2,080	\$0	\$0	\$42,768	

Client: City of Santa Ana
Project: Crooke Pump Station Func. Spec Dev & Programming



Number: EA23CSA090 Date: 3/9/2023 Revision: 1.0.0 Author: MM Reviewed By: ZG/JR

Programming & Testing Specs

Engineering Labor		In Office				Out of Office				Totals	
WBS	Description	Proj. Eng.	Lead Eng.	PM	Principal	Proj. Eng.	Lead Eng.	PM	Principal	Hours	Price
710	PLC and SCADA test documentation Develop test procedures and checklists FAT SAT Submit to City for review revise as needed									44	\$10,352
		16	4								
		16	4								
		2	2								
715	Panel test documentation Develop panel FAT procedures and checklists									2	\$488
		1	1								
725	Witnessed SCADA FAT SCADA FAT documentation handover Oversee SCADA FAT									20	\$4,880
		2	2								
		8	8								
795	Witnessed Panel FAT Panel FAT documentation handover Oversee Panel FAT									16	\$3,904
		2	2								
						6	6				
820	Onsite Support SAT documentation handover Oversee SAT As needed contractor support As needed integrator support									72	\$17,568
		2	2								
		8	8			6	6				
		8	8			12	12				
990	Project management Coordination, project management, overhead, meetings									18	\$4,680
				18							

Hours	65	41	18	0	24	24	0	0	172
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Price	\$14,820	\$10,660	\$4,680	\$0	\$5,472	\$6,240	\$0	\$0	\$41,872
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Client: City of Santa Ana
Project: Crooke Pump Station Func. Spec Dev & Programming



Number: EA23CSA090 Date: 3/9/2023 Revision: 1.0.0 Author: MM Reviewed By: ZG/JR

SCADA Source Control

Engineering Labor		In Office				Out of Office				Totals	
WBS	Description	Proj. Eng.	Lead Eng.	PM	Principal	Proj. Eng.	Lead Eng.	PM	Principal	Hours	Price
140	Source Control Update source control programs Update existing source control documentation	2	2							4	\$976
990	Project management Coordination, project management, overhead, meetings			0						0	\$0
Hours		2	2	0	0	0	0	0	0	4	
Price		\$456	\$520	\$0	\$0	\$0	\$0	\$0	\$0		\$976

Client: City of Santa Ana
Project: Crooke Pump Station Func. Spec Dev & Programming



Number: EA23CSA090 Date: 3/9/2023 Revision: 1.0.0 Author: MM Reviewed By: ZG/JR

SCADA Change Control

Engineering Labor		In Office				Out of Office				Totals	
WBS	Description	Proj. Eng.	Lead Eng.	PM	Principal	Proj. Eng.	Lead Eng.	PM	Principal	Hours	Price
140	Change Control Update change control documentation Update existing change requests	2	2							4	\$976
990	Project management Coordination, project management, overhead, meetings			0						0	\$0
Hours		2	2	0	0	0	0	0	0	4	
Price		\$456	\$520	\$0	\$0	\$0	\$0	\$0	\$0		\$976

Client: City of Santa Ana
Project: Crooke Pump Station Func. Spec Dev & Programming



Number: EA23CSA090 Date: 3/9/2023 Revision: 1.0.0 Author: MM Reviewed By: ZG/JR

Initiation

Engineering Labor		In Office				Out of Office				Totals	
WBS	Description	Proj. Eng.	Lead Eng.	PM	Principal	Proj. Eng.	Lead Eng.	PM	Principal	Hours	Price
010	Project initiation Project setup accounting setup develop project schedule, resource loading			2						7	\$1,788
050	Execution planning develop initial detailed project task execution plans		2								
030	Internal kickoff meeting review project scope review design documentation purpose, schedule, team roles, expectations risk matrix and due dates	1	1	1							
040	Project kickoff Prepare materials for kickoff (agenda, coordination) Project kickoff meeting with customer review scope, roles, expectations review schedule site inspection Notes compilation	1 1 1	1	1						5	\$1,204
995	EA Internal team check-in meetings Team check-in meetings review project progress, ETCs, schedule, risks, etc.	4	4							8	\$1,952

Hours	8	8	4	0	0	0	0	0	0	20
Price	\$1,824	\$2,080	\$1,040	\$0	\$0	\$0	\$0	\$0	\$0	\$4,944

Client: City of Santa Ana
Project: Crooke Pump Station Func. Spec Dev & Programming



Number: EA23CSA090 Date: 3/9/2023 Revision: 1.0.0 Author: MM Reviewed By: ZG/JR

Design Review

Engineering Labor		In Office				Out of Office				Totals	
WBS	Description	Proj. Eng.	Lead Eng.	PM	Principal	Proj. Eng.	Lead Eng.	PM	Principal	Hours	Price
140	100% Design Submittal Design review review 90% design submittal review 100% design submittal	30 16	6 8							60	\$14,128
145	MCC submittal review MCC construction submittal review review MCC construction drawing set	8	2							10	\$2,344
990	Project management Coordination, project management, overhead, meetings			8						8	\$2,080
Hours		54	16	8	0	0	0	0	0	78	
Price		\$12,312	\$4,160	\$2,080	\$0	\$0	\$0	\$0	\$0		\$18,552

Client: City of Santa Ana
Project: Crooke Pump Station Func. Spec Dev & Programming



Number: EA23CSA090 Date: 3/9/2023 Revision: 1.0.0 Author: MM Reviewed By: ZG/JR

Change Manager Tasks

Engineering Labor		In Office				Out of Office				Totals	
WBS	Description	Proj. Eng.	Lead Eng.	PM	Principal	Proj. Eng.	Lead Eng.	PM	Principal	Hours	Price
910	Specification handovers Hand over specifications to integrator Functional Specification SCADA Design Specification OIT Design Specification network drawings misc. documentation Notes compilation	8	2							10	\$2,344
910	Testing Contingency Additional budget to support witnessed testing procedures SCADA FAT Panel FAT SAT	8 6 6	8 6 6							40	\$9,760
870	Training Operator SCADA training preparation prepare training manuals Operator SCADA training operator training (2 days)	8	4				20			32	\$8,064
910	Post-commissioning as-built updates Update documents following commissioning to as-built Functional Specification SCADA Design Specification OIT Design Specification network drawings Notes compilation	10	2							12	\$2,800
990	Project management Coordination, project management, overhead, meetings			11						11	\$2,860

Hours	46	28	11	0	0	20	0	0	105
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Price	\$10,488	\$7,280	\$2,860	\$0	\$0	\$5,200	\$0	\$0	\$25,828
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Client: City of Santa Ana
Project: Crooke Pump Station Func. Spec Dev & Programming



Number: EA23CSA090 Date: 3/9/2023 Revision: 1.0.0 Author: MM Reviewed By: ZG/JR

Travel

No.	Description	Rate Details	Qty.	Unit Cost	Ext. Cost	Price
1.	Site investigation mileage to site	round trip, 40 mi., \$0.655/mi.	2	\$26	\$52	\$53
1.	Witnessed Panel FAT mileage to site/panel shop	round trip, 40 mi., \$0.655/mi.	2	\$26	\$52	\$53
1.	As Needed onsite support mileage to site	round trip, 40 mi., \$0.655/mi.	4	\$26	\$105	\$105

Price	\$211
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2.2 Cambridge Pump Station

Client: City of Santa Ana
Project: Cambridge Pump Station Func. Spec Dev & Programming



Number: EA23CSA090 Date: 3/9/2023 Revision: 1.0.0 Author: MM Reviewed By: ZG/JR

Summary

#	Engineering Labor	In Office				Out of Office				Totals	
		Proj. Eng.	Lead Eng.	PM	Principal	Proj. Eng.	Lead Eng.	PM	Principal	Hours	Price
	Control Panel Drawings	56	12	8	0	0	0	0	0	76	\$17,968
	Functional Specifications	106	27	18	0	8	8	0	0	167	\$39,772
	Programming & Testing Specs	65	41	18	0	24	24	0	0	172	\$41,872
	SCADA Source Control	2	2	0	0	0	0	0	0	4	\$976
	SCADA Change Control	2	2	0	0	0	0	0	0	4	\$976
	Engineering Labor Totals	231	84	44	0	32	32	0	0	423	\$101,564

Additional Required Scope & Expenses

#	Engineering Labor	In Office				Out of Office				Totals	
		Proj. Eng.	Lead Eng.	PM	Principal	Proj. Eng.	Lead Eng.	PM	Principal	Hours	Price
	Initiation	8	8	4	0	0	0	0	0	20	\$4,944
	Design Review	54	16	8	0	0	0	0	0	78	\$18,552
	Change Manager Tasks	46	28	11	0	0	20	0	0	105	\$25,828
	Engineering Labor Totals	108	52	23	0	0	20	0	0	203	\$49,324

Expenses (excl. taxes)										Price
EXP Travel										\$211
Total Expenses										\$211

Grand Total										\$151,099
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**ENTERPRISE
AUTOMATION**
A TETRA TECH COMPANY

Number: EA23CSA090 Date: 3/9/2023 Revision: 1.0.0 Author: MM Reviewed By: ZG/JR

Control Panel Drawings

Engineering Labor		In Office				Out of Office				Totals	
WBS	Description	Proj. Eng.	Lead Eng.	PM	Principal	Proj. Eng.	Lead Eng.	PM	Principal	Hours	Price
110	Panel design									68	\$15,888
	Cambridge Pump Station panel design	40	10								
	front panel layout										
	back panel layout										
	power distribution drawing										
	communications network drawing										
	AI/AO drawing										
	DI/DO drawing										
	compile bill of materials										
	I/O list with tag names										
	internal review										
associated specifications											
DC Power Components											
Ethernet and Networking components											
Telemetry Components											
Control Panel Construction											
Panel drafting support		8									
<u>Submittal</u>		8	2								
	prepare and submit to client										
	post submittal changes										
990	Project management									8	\$2,080
	Coordination, project management, overhead, meetings			8							

Hours	56	12	8	0	0	0	0	0	76
Price	\$12,768	\$3,120	\$2,080	\$0	\$0	\$0	\$0	\$0	\$17,968

Client: City of Santa Ana
Project: Cambridge Pump Station Func. Spec Dev & Programming



Number: EA23CSA090 Date: 3/9/2023 Revision: 1.0.0 Author: MM Reviewed By: ZG/JR

Functional Specifications

Engineering Labor		In Office				Out of Office				Totals	
WBS	Description	Proj. Eng.	Lead Eng.	PM	Principal	Proj. Eng.	Lead Eng.	PM	Principal	Hours	Price
101	Site investigation Preparation Site investigation review field conditions review panels or new panel locations investigate networking infrastructure	1	1			8	8			18	\$4,392
150	Design Workshop Workshop preparation including handouts and agenda Workshop discuss IO list discuss functional specification requirements discuss SCADA design requirements discuss OIT design requirements design review Notes compilation	1 4 1	 4 							10	\$2,408
160	IO list Develop IO list submit to the client for review	20	6							26	\$6,120
170	Functional Specification Develop Functional Specification programming language and module structure define tagging conventions scaling and device feature requirements totalizers equipment definitions instrumentation definitions detailed process control define set points standard PLC Modbus address reservation plan PLC design submittal prepare and submit post submittal changes	32 2	6							40	\$9,312

Client: City of Santa Ana
Project: Cambridge Pump Station Func. Spec Dev & Programming



Number: EA23CSA090 Date: 3/9/2023 Revision: 1.0.0 Author: MM Reviewed By: ZG/JR

Functional Specifications

Engineering Labor		In Office				Out of Office				Totals	
WBS	Description	Proj. Eng.	Lead Eng.	PM	Principal	Proj. Eng.	Lead Eng.	PM	Principal	Hours	Price
180	SCADA Design Specification Develop SCADA design devices graphical representation commands set points permissives screen list page navigation reusable objects tagging conventions user security pop-ups alarms trending / historization SCADA design submittal prepare and submit post submittal changes	18	2							20	\$4,624
185	OIT Design Specification Develop OIT display specification desired OIT screen layouts and content components graphical representation commands/setpoints screen list page navigation tagging conventions user security alarms trending OIT design submittal prepare and submit post submittal changes	12	2							14	\$3,256

Client: City of Santa Ana
Project: Cambridge Pump Station Func. Spec Dev & Programming



Number: EA23CSA090 Date: 3/9/2023 Revision: 1.0.0 Author: MM Reviewed By: ZG/JR

Functional Specifications

Engineering Labor		In Office				Out of Office				Totals	
WBS	Description	Proj. Eng.	Lead Eng.	PM	Principal	Proj. Eng.	Lead Eng.	PM	Principal	Hours	Price
130	Network design Develop basic network diagram submit to the City for review	6	2							8	\$1,888
150	Design Review Workshop Workshop preparation including handouts and agenda Workshop review Functional Specification draft review SCADA Design Specification draft review OIT Design Specification draft review draft network drawings Notes compilation post submittal updates	1 3	3							13	\$3,092
990	Project management Coordination, project management, overhead, meetings	1 4	1	18						18	\$4,680

Hours	106	27	18	0	8	8	0	0	167
Price	\$24,168	\$7,020	\$4,680	\$0	\$1,824	\$2,080	\$0	\$0	\$39,772

Client: City of Santa Ana
Project: Cambridge Pump Station Func. Spec Dev & Programming



Number: EA23CSA090 Date: 3/9/2023 Revision: 1.0.0 Author: MM Reviewed By: ZG/JR

Programming & Testing Specs

Engineering Labor		In Office				Out of Office				Totals	
WBS	Description	Proj. Eng.	Lead Eng.	PM	Principal	Proj. Eng.	Lead Eng.	PM	Principal	Hours	Price
710	PLC and SCADA test documentation Develop test procedures and checklists FAT SAT Submit to City for review revise as needed									44	\$10,352
		16	4								
		16	4								
		2	2								
715	Panel test documentation Develop panel FAT procedures and checklists	1	1							2	\$488
725	Witnessed SCADA FAT SCADA FAT documentation handover Oversee SCADA FAT	2	2							20	\$4,880
		8	8								
795	Witnessed Panel FAT Panel FAT documentation handover Oversee Panel FAT	2	2			6	6			16	\$3,904
820	Onsite Support SAT documentation handover Oversee SAT As needed contractor support As needed integrator support	2	2			6	6			72	\$17,568
		8	8			12	12				
		8	8								
990	Project management Coordination, project management, overhead, meetings			18						18	\$4,680

Hours	65	41	18	0	24	24	0	0	172
Price	\$14,820	\$10,660	\$4,680	\$0	\$5,472	\$6,240	\$0	\$0	\$41,872

Client: City of Santa Ana
Project: Cambridge Pump Station Func. Spec Dev & Programming



Number: EA23CSA090 Date: 3/9/2023 Revision: 1.0.0 Author: MM Reviewed By: ZG/JR

SCADA Source Control

Engineering Labor		In Office				Out of Office				Totals	
WBS	Description	Proj. Eng.	Lead Eng.	PM	Principal	Proj. Eng.	Lead Eng.	PM	Principal	Hours	Price
140	Source Control Update source control programs Update existing source control documentation	2	2							4	\$976
990	Project management Coordination, project management, overhead, meetings			0						0	\$0
Hours		2	2	0	0	0	0	0	0	4	
Price		\$456	\$520	\$0	\$0	\$0	\$0	\$0	\$0		\$976

Client: City of Santa Ana
Project: Cambridge Pump Station Func. Spec Dev & Programming



Number: EA23CSA090 Date: 3/9/2023 Revision: 1.0.0 Author: MM Reviewed By: ZG/JR

SCADA Change Control

Engineering Labor		In Office				Out of Office				Totals	
WBS	Description	Proj. Eng.	Lead Eng.	PM	Principal	Proj. Eng.	Lead Eng.	PM	Principal	Hours	Price
140	Change Control Update change control documentation Update existing change requests	2	2							4	\$976
990	Project management Coordination, project management, overhead, meetings			0						0	\$0
Hours		2	2	0	0	0	0	0	0	4	
Price		\$456	\$520	\$0	\$0	\$0	\$0	\$0	\$0		\$976

Client: City of Santa Ana
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Number: EA23CSA090 Date: 3/9/2023 Revision: 1.0.0 Author: MM Reviewed By: ZG/JR

Initiation

Engineering Labor		In Office				Out of Office				Totals	
WBS	Description	Proj. Eng.	Lead Eng.	PM	Principal	Proj. Eng.	Lead Eng.	PM	Principal	Hours	Price
010	Project initiation Project setup accounting setup develop project schedule, resource loading			2						7	\$1,788
050	Execution planning develop initial detailed project task execution plans		2								
030	Internal kickoff meeting review project scope review design documentation purpose, schedule, team roles, expectations risk matrix and due dates	1	1	1							
040	Project kickoff Prepare materials for kickoff (agenda, coordination) Project kickoff meeting with customer review scope, roles, expectations review schedule site inspection Notes compilation	1 1 1	1	1						5	\$1,204
995	EA Internal team check-in meetings Team check-in meetings review project progress, ETCs, schedule, risks, etc.	4	4							8	\$1,952

Hours	8	8	4	0	0	0	0	0	0	20
Price	\$1,824	\$2,080	\$1,040	\$0	\$0	\$0	\$0	\$0	\$0	\$4,944

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Number: EA23CSA090 Date: 3/9/2023 Revision: 1.0.0 Author: MM Reviewed By: ZG/JR

Design Review

Engineering Labor		In Office				Out of Office				Totals	
WBS	Description	Proj. Eng.	Lead Eng.	PM	Principal	Proj. Eng.	Lead Eng.	PM	Principal	Hours	Price
140	100% Design Submittal Design review review 90% design submittal review 100% design submittal	30 16	6 8							60	\$14,128
145	MCC submittal review MCC construction submittal review review MCC construction drawing set	8	2							10	\$2,344
990	Project management Coordination, project management, overhead, meetings			8						8	\$2,080
Hours		54	16	8	0	0	0	0	0	78	
Price		\$12,312	\$4,160	\$2,080	\$0	\$0	\$0	\$0	\$0		\$18,552

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Number: EA23CSA090 Date: 3/9/2023 Revision: 1.0.0 Author: MM Reviewed By: ZG/JR

Change Manager Tasks

Engineering Labor		In Office				Out of Office				Totals	
WBS	Description	Proj. Eng.	Lead Eng.	PM	Principal	Proj. Eng.	Lead Eng.	PM	Principal	Hours	Price
910	Specification handovers Hand over specifications to integrator Functional Specification SCADA Design Specification OIT Design Specification network drawings misc. documentation Notes compilation	8	2							10	\$2,344
910	Testing Contingency Additional budget to support witnessed testing procedures SCADA FAT Panel FAT SAT	8 6 6	8 6 6							40	\$9,760
870	Training Operator SCADA training preparation prepare training manuals Operator SCADA training operator training (2 days)	8	4				20			32	\$8,064
910	Post-commissioning as-built updates Update documents following commissioning to as-built Functional Specification SCADA Design Specification OIT Design Specification network drawings Notes compilation	10	2							12	\$2,800
990	Project management Coordination, project management, overhead, meetings			11						11	\$2,860

Hours	46	28	11	0	0	20	0	0	105
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Price	\$10,488	\$7,280	\$2,860	\$0	\$0	\$5,200	\$0	\$0	\$25,828
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Number: EA23CSA090 Date: 3/9/2023 Revision: 1.0.0 Author: MM Reviewed By: ZG/JR

Travel

No.	Description	Rate Details	Qty.	Unit Cost	Ext. Cost	Price
1.	Site investigation mileage to site	round trip, 40 mi., \$0.655/mi.	2	\$26	\$52	\$53
1.	Witnessed Panel FAT mileage to site/panel shop	round trip, 40 mi., \$0.655/mi.	2	\$26	\$52	\$53
1.	As Needed onsite support mileage to site	round trip, 40 mi., \$0.655/mi.	4	\$26	\$105	\$105

Price	\$211
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3. Rates Sheet

FY23 Engineering Rates

Engineering Rates

Rate Classification¹	Standard Rate
Admin	\$100 / hr.
Engineering Intern	\$100 / hr.
I&C Technician 1*	\$135 / hr.
I&C Technician 2*	\$175 / hr.
Electrical Engineer 2*	\$175 / hr.
Electrical Engineer 3*	\$210 / hr.
CAD*	\$150 / hr.
Automation Project Engineer 1	\$205 / hr.
Automation Project Engineer 2	\$250 / hr.
Project Technical Lead	\$260 / hr.
Project Manager 1	\$210 / hr.
Project Manager 2	\$260 / hr.
Architect	\$275 / hr.
Principal	\$325 / hr.

*Through Tetra Tech

¹ Rate classifications charged are based on a project role/responsibility basis, not title, and could be adjusted during a project's duration if meaningful staff changes occur with prior notification.

Service Calls

Service calls covered by an Enterprise Automation service contract are prioritized while all other service requests are dependent on existing schedules and the availability of engineering staff.

Overtime

Item	Description
Time and a half	Outside of normal business hours (8am-5pm), or time in excess of 10 hours per day (unless otherwise arranged)
Double time	Saturday, Sunday, and holidays (unless otherwise arranged)

General

Item	Description
Travel time	Charged at engineering rates
Vehicle mileage	As per the published IRS mileage rate (if applicable)
Travel expenses	At cost (if applicable)
Meals and incidentals	GSA established per diem rate (if applicable)
Payment terms	Net 30 days

Rates effective 11/1/2022 through 10/31/2023