

ADDENDUM NO. 3
September 16, 2026

ROSAMOND COMMUNITY SERVICES DISTRICT

SCADA UPGRADE PROJECT
3179 35th Street West, Rosamond, CA 93560

Project No. 12401-22401

Item No. 1: Technical specification S409400, Part 2, 2.03K, change last sentence to read, "PLC shall be Allen Bradley CompactLogix 5380 family."

Item No. 2: Drawing N-04: Replace "**Scope of Work for Field Distribution**" table with the following "**Scope of Work Summary**"

TABLE 1: Scope of Work Summary

PROJECT SITES	PLC MOD?	Power Supply	CPU	Comm Card	AI	AO Power Supply	AO	Isolated Relay Output	DI	DO	PRESSURE TRANSMITTER, CONTROLLER	New HMI	# OF NEW RADIOS
TANK 1													2
TANK 2											1	0	0
TANK 3	Yes	1	1		1			1	1				
TANK 4	Yes	1	1		1	1			1			1	2
TANK 5											1		0
SIERRA HWY TURNOUT													0
25TH STREET TURNOUT													1
35TH STREET TURNOUT													1
WELL NO. 8	Yes	1	1		1	1	1		1				1
WELL NO. 9	Yes	1	1		1	1			2	1			2
WWTP PLC-1	Yes	1	1		2		1	1	5				
WWTP PLC-2	Yes	1	1					1	2				
WWTP 20A-LCP	Yes	1		1	1	1			3	2			
TOTAL	0	7	6	1	7	4	2	3	15	3	2	1	9

Scope of Work Summary Notes:

- 1 Box highlighted in yellow indicates change from IFB documents
- 2 Contractor shall field verify the number and type of I/O cards prior to ordering
- 3 RCSD maintains two separate SCADA systems: 1) Field Distribution and 2) WWTP
- 4 Scope of work for Tank 2 and Tank 5 have been revised. See Responses to Bidder RFI below.
- 5 Contractor may remove Tesco power supply, battery backup, and relays from Tank 3 PLC cabinet after verifying they are no longer active to make room to mount new PLC module on backboard.
- 6 Contractor to provide HMI screen for Tank 4, not Tank 2
- 7 Integrator shall develop program for Tank 4 to return pump runtime data to SCADA and to allow Operator to access other Field Distribution sites on SCADA from new HMI screen

- 8 Replace label on the Well 8 PLC cabinet door to ICP-8
- 9 20A-LCP is a remote I/O cabinet

Item No. 3: Replace Contract Document Section 004100 - Bid Form. (see attached)

Item No. 4: Replace Technical Specification 400000 - Process Control and Instrumentation System. (see attached)

Item No. 5: Responses to questions from Pre-Bid Job Walk:

1. **PLC Platform:** Section 409400 specifies an Allen-Bradley CompactLogix L33-ER family controller, while the drawings identify a 5069-L306ER CompactLogix 5380 controller. During the job walk, the new PLC shown was a 1769-L30ER CompactLogix 5370 controller. Please confirm the exact PLC processor and I/O platform the contractor must furnish and install at each PLC replacement location.

Response: Contractor shall furnish and install a Rockwell Automation CompactLogix 5380 PLC system, including all associated power supplies, communication interfaces, I/O modules, mounting hardware, and ancillary devices required for proper operation.

2. **SCADA Software:** Please confirm the existing AVEVA SCADA software version, whether it supports communications with the new CompactLogix PLCs, and whether the District will provide the editable SCADA application files required for integration.

Response: Successful bidder will be given access to existing SCADA files. Contractor shall be responsible for verifying compatibility between the proposed CompactLogix 5380 controller and the existing AVEVA SCADA system and shall provide all required software, firmware, driver, and licensing updates necessary to achieve full system integration.

3. **Existing PLC Programs:** Will the District provide the original editable PLC programs, including symbols, comments, descriptions, and documentation?

Response: Available PLC documentation and program files will be provided by the Owner to successful bidder, if available. The Contractor shall not rely on the existence or completeness of editable PLC program files and shall include all effort necessary to investigate, convert, recreate, and commission the PLC program required for the completed system.

4. **Radio Configuration:** Will the district provide the existing radio configurations, IP addresses, frequencies, network settings, and required access credentials?

Response: Configuration files, settings, and credentials will be provided by the District to the successful bidder upon contract award

5. **Final Equipment Quantities:** Please confirm the final site-by-site quantities for PLCs, radios, antennas, coaxial cables, enclosures, pressure transmitters, conduit, and field wiring.

Response: See "Scope of Work Summary Table". Contractor to provide all cabling and conduits, as necessary to connect equipment to existing SCADA network.

6. **Contractor License Clarification:** Please confirm whether a California Class A contractor's license is required to bid this project as the prime contractor, or whether a C-10 Electrical Contractor license is also acceptable.

Response: Per Addendum #1 dated 8/27/26, Contractor with C-10 License is also acceptable

7. **Revised PLC-2 Scope of work:** Please confirm whether the new PLC-2B cabinet shown on Drawing N06 is still required. During the job walk, the existing PLC-2B rack and I/O modules appeared not to be connected to an active PLC processor or remote I/O adapter. If this

equipment is inactive, please confirm whether the new cabinet, equipment relocation, and associated conduit and fiber rerouting may be omitted from the project scope.

Response: A new PLC-2B cabinet is no longer required and fiber rerouting may be omitted. Contractor is to field verify the I/O cards mounted on modules against the back panel of PLC-2 cabinet are no longer connected to SCADA. If confirmed that I/O modules are disconnected from a PLC processor and SCADA, Contractor may remove said modules and its wiring to the terminal blocks to free space for the new PLC-2B module and its cards. See 'Scope of work Summary Table'. **New Scope Related to PLC-2:** In 20A-LCP Remote I/O cabinet, replace I/O modules located at the top of the back panel, communication card, and power supply with the latest Allen Bradley compatible product as described in the specification. Confirm the remote I/O is indeed controlled by existing ICP-2B PLC Processor (mounted on left side wall panel of ICP-2 cabinet) prior to demolition work.

8. **Tanks 2 & 5 Controller:** Please provide the specifications and required manufacturer/model for the Ethernet Modbus TCP controller shown for Tank 2 and Tank 5. Please also confirm whether this device is intended to be a CompactLogix PLC, a Modbus TCP gateway, or a remote I/O controller, and identify the required I/O, communications and Modbus client/server functionality.

Response: See Technical Specification S409100 Primary Process Measurement Devices for details. Controller shall be Rosemount 3490A. It is intended to be a Modbus TCP gateway. Required I/O shall be an analog input from the level transmitter. Contractor's integrator shall coordinate with District's SCADA/IT Lead for communication and permission requirements.

9. **SCADA Access:** Will Contractor be given access to SCADA screen during construction?

Response: During construction phase, District personnel will bring laptop with mobile SCADA access to Well 9 Site upon request. Coordinate with District's Lead Operator.

10. **Well 9 Laydown Area:** Will District provide a laydown area within the Well 9 fenced area?

Response: District may allow Contractor to lay down equipment behind the well building, on the south side, while working at Well 9, upon request to District's Lead Operator.

11. **Tank 3 Scope:** Are there additional tasks at Tank 3?

Response: As part of the project, mount the ethernet switch and disconnect Phoenix contactor. Return contactor to District.

12. **Clarification on scope of work at Tank 2 and Tank 5:** Will a phoenix contactor be required for Tank 2 & Tank 5 installations? Will District require a local display on the level controllers?

Response: Contractor is no longer required to provide the photovoltaic (PV) power supply or antenna. District has retained Snap Connect to provide a 24VDC power supply and a network Ethernet port on the tank roof.

Contractor shall provide conduit, wiring, fittings and terminations required to connect the power supply, level transmitter, and controller. Contractor shall also provide all conduit and cabling required between the controller to the ethernet switch.

Local displays are not required for the Tank 2 and Tank 5 Level Indicating Transmitters (LITs). Contractor may furnish and install a remote Ethernet I/O station as an alternative to the specified controller. The remote Ethernet I/O station shall communicate with the Owner's PLC/SCADA system via EtherNet/IP. Dedicated level controllers, local displays, and standalone indication panels are not required. Acceptable manufacturers are Phoenix Contact or Allen-Bradley.

All furnished equipment shall be compatible with the Owner's existing PLC, SCADA, and industrial Ethernet network. Contractor shall be responsible for verifying compatibility and performing all programming, configuration, integration, testing, and commissioning required for

seamless communication between the level monitoring equipment and the Owner's PLC/SCADA system.

Conduit serving the level transmitters shall be securely anchored to the concrete foundation and routed vertically along the tank exterior utilizing existing ladder support or ladder mounting tabs wherever practical. Conduit shall be fastened with corrosion-resistant hardware suitable for outdoor water tank service conditions.

13. Well 9 Radio Replacement: How many radios will be replaced at Well 9

Response: There are three radios currently installed at Well 9. One radio was replaced recently and is not part of this project. The Contractor shall replace the remaining two existing radios.

14. Tank 2 Level Transmitter: Will the same type of pressure (level) transducer be installed at Tank 2 and Tank 5 ?

Response: No. Contractor shall provide a pressure transducer as specified for Tank 5. For Tank 2, Contractor shall furnish and install an IFM PX3227 pressure transmitter. Transmitters shall be mounted on the existing nozzles at the bottom course of each tank and arranged with appropriate nipples, tees, reducers, and offsets as necessary to provide adequate clearance for operation and maintenance of the existing isolation valve. The installation shall not obstruct or restrict the full travel of the valve handle, nor impair access to the valve for maintenance purposes.

The following Addendum were issued, modifying the Project Manual:

- Addendum No. 1, issued on August 26, 2026.
- Addendum No. 2, issued on September 16, 2026.

Attachments:

- 004100 - Bid Form
- 400000 - Process Control and Instrumentation Systems



Patrick Tsang, PE
Engineer

Contractor

Signature

Date

Name/Title

END OF DOCUMENT

**DOCUMENT 00 4100
BID FORM**

TO THE ROSAMOND COMMUNITY SERVICES DISTRICT

THIS BID IS SUBMITTED BY:

(Firm/Company Name)

Project Name: SCADA UPGRADE PROJECT
RCSD Project No.: 12401-22401

1. The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an agreement with the Rosamond Community Services District (hereinafter "Owner") in the form included in the Contract Documents, Document 00 5200 (Agreement), to perform and furnish all Work as specified or indicated in the Contract Documents for the Contract Sum and within the Contract Time indicated in this Bid and in accordance with all other terms and conditions of the Contract Documents.
2. Bidder accepts all of the terms and conditions of the Contract Documents, Document 00 1113 (Notice to Contractors), and Document 00 2113 (Instructions to Bidders), including, without limitation, those dealing with the disposition of Bid Security. This Bid will remain subject to acceptance for 60 Calendar Days after the day of Bid opening, unless there is a bid protest, then 90 Calendar days after the day of bid opening.
3. In submitting this Bid, Bidder represents that Bidder has examined all of the Contract Documents, performed all necessary Pre-Bid investigations, received, reviewed and has included the signed cover sheet for each of the following Addenda in this bid submission:

Addendum Number	Addendum Date	Signature of Bidder

4. The undersigned, as Bidder, declares that: the Bidder is duly licensed under the Contractor's State License Law Business and Professions Code Section 7000 et.seq.; the only persons or parties interested in this proposal as principals are those named herein; this proposal is made without collusion with any other person, firm or corporation; the bidder has examined the location of the proposed work, the attached proposed form of Agreement, Plans, Specifications, and Addenda referred to; the Bidder agrees that if this proposal is accepted by the Owner, Bidder will contract with the Owner by execution of the documents required by Document 00 2113 (Instruction to Bidders); to do all the work and furnish all the materials specified in the contract, in the manner and time therein prescribed, and according to the requirements of the Owner as therein set forth, and that the Bidder will accept in full payment the following amounts:

SCHEDULE OF WORK ITEMS

Bid Schedule

Item No.	Qty	Unit	Description	Unit Price	Total Amount
1	1	LS	Mobilization / Demobilization / Cleanup	\$	\$
2	1	LS	Provide SCADA Integration	\$	\$
3	1	LS	Provide Telemetry for Tank 2	\$	\$
4	1	LS	Provide Telemetry for Tank 5	\$	\$
5	1	LS	Provide PLC Upgrades at Tank 3	\$	\$
6	1	LS	Provide PLC Upgrades at Tank 4	\$	\$
7	1	LS	Provide PLC Upgrades at Well 8	\$	\$
8	1	LS	Provide PLC Upgrades at Well 9	\$	\$
9	1	LS	Provide PLC Upgrades at PLC-1	\$	\$
10	1	LS	Provide PLC Upgrades at PLC-2	\$	\$
11	1	LS	Provide PLC Upgrades at 20A-LCF	\$	\$
12	1	LS	Provide and Integrate HMI at Tank 4	\$	\$
13	9	EA	Furnish and Install Radio Upgrades	\$	\$

Total Bid Schedule Bid Items 1 through 13 \$ _____

Total Bid Price:

_____ (\$ _____)
(Words)

5. Subcontractors for work included in all Bid items are listed on Document 00 4430 (Subcontractors List) submitted herewith.
6. The undersigned Bidder understands that Owner reserves the right to reject this Bid.
7. If the documents required by Document 00 2113 (Instructions to Bidders) are mailed or delivered to the undersigned Bidder within the time described in Paragraph 2 of this Document 00 4100, or at any other time thereafter before it is withdrawn, the undersigned Bidder will execute and deliver the documents required by Document 00 2113 (Instructions to Bidders) within the times specified therein.
8. The undersigned Bidder herewith encloses cash, a cashier's check, or certified check of or on a responsible bank in the United States, or a corporate surety bond furnished by a surety authorized to do a surety business in the State of California, in form specified in Document 00 2113 (Instructions to Bidders), in the amount of ten percent (10%) of the Total Bid Price and made payable to the Rosamond Community Services District.
9. The undersigned Bidder agrees to commence Work under the Contract Documents on the date established in Document 00 7200 (General Conditions) and to complete all Work within the time specified in Document 00 5200 (Agreement).

10. The undersigned Bidder agrees that, in accordance with Document 00 7200 (General Conditions), liquidated damages for failure to complete all Work in the Contract within the time specified in Document 00 5200 (Agreement) shall be as set forth in Document 00 5200.
11. The names of all persons interested in the foregoing Bid as principals are:

IMPORTANT NOTICE: If Bidder or other interested person is a corporation, give the legal name of corporation, state where incorporated, and names of president and secretary thereof; if a partnership, give name of the firm and names of all individual co-partners composing the firm; if Bidder or other interested person is an individual, give first and last names in full.

NAME OF BIDDER: _____,

licensed in accordance with an act for the registration of Contractors, and with license number:

_____ Expiration: _____.

(Place of Incorporation, if Applicable) (Principal)

(Principal)

(Principal)

I certify (or declare) under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

(Signature of Bidder)

NOTE: If Bidder is a corporation, set forth the legal name of the corporation together with the signature of the officer or officers authorized to sign contracts on behalf of the corporation. If Bidder is a partnership, set forth the name of the firm together with the signature of the partner or partners authorized to sign contracts on behalf of the partnership.

Business Address: _____

Contractor's Representative(s): _____
(Name/Title)

(Name/Title)

(Name/Title)

Officers Authorized to Sign Contracts

(Name/Title)

(Name/Title)

(Name/Title)

Telephone Number(s):

(Area Code) (Number)

(Area Code) (Number)

Fax Number(s):

(Area Code) (Number)

(Area Code) (Number)

Date of Bid:

END OF DOCUMENT

SECTION 40 00 00

PROCESS CONTROL AND INSTRUMENTATION SYSTEM (PCIS)

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. This section of the specifications includes materials, testing, and installation of process control and instrumentation system as specified herein and indicated on the drawings.
- B. These specifications shall not be interpreted as permission or direction to violate any governing code or ordinance. Equipment, materials, and workmanship shall comply with the latest revisions of the following codes and standards:
 - 1. Instrumentation: ISA - The International Society of Automation.
 - 2. Wiring: National Electrical Code (NEC), ISA S5.3 and S5.4.
 - 3. Control Panels: NEMA Standards Publication 250-2003.
 - 4. Control Logic: NFPA 79.
 - 5. Piping: ANSI B31.3 (instrumentation piping).

1.02 RELATED WORK SPECIFIED ELSEWHERE:

- A. Section 40 50 80: Instrument Control Panel
- B. Section 40 91 00: Primary Process Measurement Devices
- C. Section 40 94 00: Process Control Hardware and Software
- D. Section 40 95 00: Process Control Hardware Interfaces

1.03 SCOPE OF WORK:

- A. The work involves furnishing all hardware and software, programming, installation, labor, material, equipment, and engineering in strict compliance with the contract documents for the Rosamond Community Services District (RCSD or Owner), including support to the RCSD for interfacing with existing SCADA system.

1.04 SUBMITTALS:

- A. PCIS Integrator Qualification Evidence:
 - 1. Submit PCIS Integrator Qualification Evidence per Section 40 00 00 Part 1 Paragraph 1.05 B below.

2. Qualification Evidence shall be submitted prior to commencement of the work.
- B. Detailed System Drawings and Data:
1. The submittal shall consist of six sets of detailed drawings and data prepared and organized by the Contractor. All drawings, schematics, layouts, and diagrams shall be done on 11" x 17" sheets utilizing AutoCAD.
 2. Drawings shall contain only relevant simplified details using symbol approach. Photographic images of components depicting irrelevant details (screws, holes, logos, etc.) are not allowed.
 3. Drawings prints shall not contain details and texts smaller than 3/64".
- C. Two sets of submittals will be returned to the Contractor.
- D. Submit these drawings and data as a complete package at the same time.
- E. Submittals shall be in three-ring hardcover binders and arranged for convenient use including tab sheets, all indexed, and cross referenced with a separate index for each item.
- F. Provide manufacturers cut sheets and manuals for all hardware to be provided.
- G. Provide an Instrument Index.
- H. Provide ISA type instrumentation data sheets for each component, together with a technical product brochure or bulletin. The data sheets, as a minimum, shall show:
1. Instrument tag designation.
 2. Component name.
 3. Manufacturer's model number.
 4. Calibrated range.
 5. Instrument location.
 6. Input and output characteristics.
 7. Scale range and units (if any) and multiplier (if any).
 8. Requirements for electric supply.
- I. Group the data sheets together in the submittal by type. Provide individual data sheets for each instrument with one brochure or bulletin to cover all identical uses of that component.

- J. The detailed construction drawing submittal shall include, as a minimum, the following types of drawings and diagrams required for the construction of this project:
1. Legend, Symbols, and Index.
 2. System Block Diagrams.
 3. Power Distribution Diagrams.
 4. Instrument Control Panel Layouts/Construction Drawings/Details. The drawings shall include the following:
 - a. Dimensions.
 - b. Location of all components.
 - c. Identification of all components.
 - d. Bill of Materials.
 - e. Conduit entry area.
 5. PLC Rack Elevation Drawing for each PLC.
 6. Internal Panel Wiring Diagrams.
 7. Digital I/O Module Wiring Diagrams.
 8. Analog I/O Module Wiring Diagrams.
 9. Detailed NFPA 79-style Ladder Diagrams (for discrete wiring) to meet the following minimum requirements:
 - a. Each subassembly shall be shown as a rectangle in the diagram with all external terminals identified. Terminals unknown at the time of the submittal shall be left blank, to be filled later. Single contacts internal to the subassemblies shall be shown in the rectangle connected to their terminal points.
 - b. Where the internal wiring diagrams of subassemblies are furnished on separate sheets, they shall be shown as a rectangle in the schematic diagram with all external points identified and cross-referenced to the separate sheets of the control circuit. Coils and contacts internal to the subassemblies shall be shown in the rectangle connected to their terminal points.
 - c. Show unique rung numbers on left side of each rung. A cross-referencing system shall be used in conjunction with each relay coil so that associated contacts may be readily located on the diagram. The contacts shall be

referenced to coils as well, so that associated coils may be readily located on the diagram. Where a relay contact appears on a sheet separate from the one on which the coil is shown, the purpose of the contact shall be described on the same sheet. Spare contacts shall be shown.

10. Detailed Loop Interconnection Wiring Diagrams (per ISA S5.3 and S5.4) for the entire system showing all control equipment, instrumentation, electrical equipment, components, wiring, routing, boxes (pull, junction, and terminal junction), terminations, wire tags, and wire colors. The diagrams shall show the detailed interconnection of all electrical equipment, instrumentation, panels, enclosures, components and the like provided under this contract.
 11. Arrangement and construction drawings for consoles, control panels, and for other special panels for field installation. These drawings shall include dimensions, location of all components, identification of all components, bill of materials, detailed schematics of all internal wiring, preparation and finish data, nameplates, and the like. These drawings also shall include enough other details to define the style and overall appearance of the assembly; include a finish sample for all panel surfaces.
 12. Installation, mounting, and anchoring details for all field instruments and panel mounted components.
 13. An instrument list including all instruments provided under this project.
 14. An I/O List for each PLC in the project.
- K. Detailed System Software Submittal: The submittal shall consist of six sets of the software system descriptions and diagrams. Two sets of submittals will be returned to the contractor. The software submittal can be made as a separate package to be inserted in the original submittal. The following items must be submitted at least eight weeks prior to the factory witness test orientation:
1. Detailed PLC software logic diagram printouts for each PLC. Logic diagrams shall be fully annotated such that an individual unfamiliar with the diagram format can fully understand the process control logic presented.
 2. An updated I/O List for each PLC in the project.
 3. Narrative control descriptions for each analog and discrete control loop. Loop descriptions shall describe how each control loop will operate, the PLC control logic, control and monitoring capabilities and in general a job specific description of each control loop in the system.
 4. Sample color printouts of each SCADA system screen, sample printouts of each Operator Interface display, report, and log for the supervisory control system (SCS) software.

- L. Complete detailed bills of material: Detailed bill of material for all components shall be provided including complete manufacturers name and model number, quantity to be provided, and cross references to data sheet sections.
- M. Operation, Maintenance, and Repair Manuals (OMM):
 - 1. The organization of the initial submittal required above shall be compatible to eventual inclusion as one volume of the operation, maintenance, and repair manuals.
 - 2. Operation manuals shall be prepared and submitted to the Resident Project Representative (RPR) for preliminary review in six copies. When the Engineer is satisfied that these are complete and properly prepared, six final sets shall be delivered to the RPR.
 - 3. The complete OMM shall contain the following:
 - a. All the information included in the preliminary equipment submittal, the detailed installation submittal, and the additional information required herein, all bound in hard-cover binders and arranged for convenient use including tab sheets, all indexed and cross referenced with a separate index for each item.
 - b. All final "as-built" drawings with the AutoCAD electronic files.
 - c. Electronic files for all PLC Operator Interfaces, and SCADA programming.
 - d. Calibration and maintenance instructions.
 - e. Trouble-shooting instructions.
 - f. Instructions for ordering replacement parts..

1.05 QUALIFICATIONS AND RESPONSIBILITY OF CONTRACTOR:

- A. The Contractor shall furnish and install all proposed hardware as shown on the drawings and as specified herein. The PLC system installation and wiring connections to peripheral equipment and instruments shall be the responsibility of the system supplier using qualified personnel possessing the necessary equipment and having experience in making similar installations. Evidence of such qualification, as well as notification of the system supplier assuming unit responsibility, shall be furnished to the Owner in writing for approval prior to commencement of the work.
- B. Qualification Evidence: The qualification evidence shall include the following:
 - 1. Verification that the system supplier shall have had a minimum of five years' experience with the installation and programming of industrial control systems similar in type to those to be installed in this project.

2. A list of completed similar installations including name, address, and telephone number of the owner, name of project, and date of completion.
3. The name and qualifications of supervisory personnel to be directly responsible for the programming and installation of the control system.

C. Under this section, the Contractor shall furnish the following:

1. Instrumentation equipment (Section 40 50 80).
2. PLC, HMI, and UPS (Section 40 94 00).
3. Control cabinets (Section 40 95 00).
4. Spare parts per Sections 40 91 00, 40 94 00, and 40 95 00.
5. Special tools and test equipment required by the supplier.
6. Installation, integration and testing.
7. Documentation, including operation and maintenance manuals, as-built drawings, software deliverables, and electronic files required by the Contract Documents.
8. Operator training.
9. Warranty (one year).
10. Shipping and receiving.

D. PLC PROGRAMMING, SCADA INTEGRATION, AND BACKUP REQUIREMENTS:

1. General Requirements
 - a. Contractor shall act as the Process Control and Instrumentation System (PCIS) Integrator and shall be responsible for furnishing, configuring, programming, testing, commissioning, and placing into successful operation all hardware, software, communications, and network components required for a complete and fully functional control system.
 - b. All furnished equipment, including PLCs, remote Ethernet I/O stations, instrumentation, and network devices, shall be fully compatible with the Owner's existing PLC, SCADA, and industrial Ethernet network.
 - c. Remote Ethernet I/O stations shall communicate with the Owner's PLC and SCADA system via EtherNet/IP.
 - d. Contractor shall verify compatibility of all proposed equipment and shall be responsible for all configuration, programming, testing, and commissioning necessary to achieve seamless integration with the Owner's existing control system.

2. PLC Programming and SCADA Integration
 - a. PLC upgrade services shall include conversion of the existing PLC program to a CompactLogix-compatible PLC program, including migration of all existing control logic, alarm functions, setpoints, interlocks, sequences, communications, and operational functions required for proper system operation.
 - b. SCADA integration shall include updating the existing SCADA application to incorporate new PLC tag names, controller data structures, communications paths, alarm points, trends, calculations, historical data points, reports, graphics, and displays affected by the PLC upgrade and instrumentation modifications.
 - c. SCADA integration shall also include updating alarm databases, historical trending, reports, operator displays, network communications, and all associated configurations affected by the PLC upgrade.
 - d. Contractor shall verify proper operation of all communications between field devices, remote Ethernet I/O stations, PLCs, and the SCADA system.
3. Backup and Software Deliverables
 - a. Prior to performing any modifications to the PLC, SCADA system, HMI application, communications network, or associated databases, Contractor shall create and verify complete backups of the existing system.
 - b. Backups shall include, at a minimum:
 - (1) PLC programs.
 - (2) SCADA applications.
 - (3) HMI applications.
 - (4) Graphics, alarms, trends.
 - (5) Communications configurations.
 - (6) Network configurations.
 - (7) Device configuration files.
 - c. Electronic copies of all backups shall be provided to the Owner prior to implementation of any system modifications.
 - d. Upon completion of the Work, Contractor shall provide complete electronic copies of all final software and configuration files reflecting the as-built condition of the system.
 - e. Deliverables shall include, at a minimum:
 - (1) Final CompactLogix PLC program.
 - (2) PLC tag database.

- (3) SCADA application.
- (4) HMI application.
- (5) Alarm database.
- (6) Trend configurations
- (7) Remote Ethernet I/O configurations
- (8) Network configuration files.
- (9) Source code and editable project files.

- f. All files shall be provided in their native editable formats and shall not be password protected or otherwise restricted.
- g. The Owner shall receive unrestricted, perpetual rights to use, modify, maintain, reproduce, and back up all PLC programs, SCADA applications, HMI applications, databases, graphics, source code, configuration files, and editable project files developed, modified, or furnished under this Contract.
- h. Contractor shall demonstrate successful system operation and communications following implementation and shall verify the integrity of all final backup files prior to Final Acceptance.

E. All calibration and final checkout of the process control and instrumentation system shall be witnessed by the Owner and/or Engineer to determine if the system complies with the contract documents.

F. The Contractor shall be responsible for coordinating and interfacing with equipment supplied under these contract documents, which are an integral part of the system. Interfacing shall be incorporated in the detailed systems drawings and data section of the contract documents.

G. The system supplier shall be experienced in the design, programming, and service of this type of equipment. In the event of a dispute as to the acceptability of the system supplier, the Engineer shall make the final determination.

1.06 GUARANTEE:

- A. The Contractor shall repair or replace defective components, rectify malfunctions, correct faulty workmanship, all at no additional cost to the Owner during the warranty period.
- B. To fulfill this obligation, the Contractor shall utilize qualified technical service personnel. Services shall be performed within five calendar days after notification by the RPR and/or Engineer.

1.07 MEASUREMENT AND PAYMENT:

- A. Payment for the work in this section shall be included as part of the lump-sum bid amount stated in the Proposal.

PART 2 - PRODUCTS

2.01 DESIGNATIONS OF COMPONENTS:

- A. In these specifications and on the plans, all systems, and other elements are represented schematically and are designated by numbers, as derived from criteria in ISA standards. The nomenclature and numbers designated herein and on the plans shall be employed exclusively throughout shop drawings, data sheets, and the like. Any other symbols, designations, and nomenclature unique to a manufacturer's standard methods shall not replace those prescribed above, as used herein, and on the plans.

2.02 INSTRUMENT TAGGING:

- A. Attach a stainless-steel tag to the instrument at the factory. Permanently mark the stainless-steel tag with the instrument tag number and the instrument calibration range. The manufacturer's standard metal nameplate as a minimum shall denote model number, serial number, operating electrical voltage and amperage (when applicable), and date of manufacture.

2.03 INSTRUMENT SYSTEM POWER:

- A. Power provided for the instrument system at the facility shall be 120-volt a-c, single phase, 60 Hz.
- B. Where d-c power supplies are not furnished integral with any one instrument system loop, provide separate solid-state power supplies.

2.04 MATCHING STYLE, APPEARANCE, AND TYPE:

- A. All display instruments of each type shall represent the same outward appearance, having the same physical size and shape and the same size and style of numbers and pointers

PART 3 - EXECUTION

3.01 UNIFORMITY OF COMPONENTS:

- A. Components, which perform the same or similar functions, shall, to the greatest degree possible, be of the same or similar type, the same manufacture, the same grade of construction, the same size, and the same appearance.

3.02 MOUNTING OF EQUIPMENT AND ACCESSORIES:

- A. Mount equipment in accordance with the installation detail drawings as prepared by the Contractor and reviewed by the Engineer. Mount equipment so that they are rigidly supported, level and plumb, and in such a manner as to provide accessibility; protection from damage; isolation from heat, shock, and vibration; and freedom from interference with other equipment, piping, and electrical work. Do not install consoles, cabinets, and panels until heavy construction work adjacent to computer and telemetry equipment has been completed to the extent that there shall be no damage to the equipment.
- B. Locate devices, including accessories, where they shall be accessible from grade, except as shown otherwise.
- C. Mount local equipment in cabinets or existing panels as specified. Mount associated I/O terminals on a common panel or rack; mounting panels and rack shall be baked enamel.
- D. Coordinate the installation of the electrical service to components related to the system to assure a compatible and functionally correct system. All accessories shall be coordinated and installation supervised by the Contractor.
- E. Test the completed system after installation to assure that all components are operating with the specified range and all interlocks are functioning properly.
- F. Tubing Valves and Fittings: All instrument tubing manifolds shall be Type 316 stainless steel, unless otherwise specified elsewhere in these specifications. Tubing runs to transmitters shall be installed with a positive slope in one direction. Fittings and valves shall be Type 316 stainless steel. Block/bleed valves shall be as manufactured by Hex Valve Series HB59, or equal.

3.03 CALIBRATION:

- A. Each instrument requiring factory calibration shall be furnished with calibration data. The calibration data shall be factory certified.
- B. Calibrate systems after installation in conformance with the component manufacturer's instructions. This shall provide that those components having adjustable features are set carefully for the specific conditions and applications of this installation and that the components and/or systems are within the specified limits of accuracy. Defective elements, which cannot achieve proper calibration or accuracy, either individually or within a system, shall be replaced. Accomplish this calibration work by a technical field representative of the single instrument supplier. He shall certify in writing to the RPR that all calibrations have been made and that all systems are ready to operate.

3.04 FACTORY TESTING:

- A. The fully configured SCADA system shall be successfully submitted to a factory acceptance test before shipment to the jobsite. Instrument Control Panel(s) shall be fully assembled and wired.
- B. Factory testing shall take place at the PCIS Integrator's facility.
- C. Contractor shall add cost for two RCSD staff members to participate in factory test.
- D. The factory test will be for a minimum of one (1) day. Allow additional time for setup, breakdown and pre-testing.
- E. Prior to factory system testing, submit a written detailed test procedure for review by the Owner. Notify the Owner in writing four weeks in advance of the scheduled testing.
- F. Factory witness tests shall demonstrate that the system will perform each operation required for all specified conditions, including both normal and emergency operations and conditions. Provide a certification and log of all tests to the Owner for review and comment.
- G. Check panel wiring against approved submittal drawings. Record any changes made during testing of the equipment on the record drawings.
- H. The system shall be exercised through operational tests, under factory-simulated conditions to demonstrate that the system is fully configured to perform all control, logic, monitoring, reporting, logging, archiving and communications functions as specified and that the system is ready for field installation. All test equipment required to simulate actual field conditions shall be provided by the control system integrator.
- I. The factory witness test shall take as long as necessary to demonstrate to the Owner and the Engineer that the system performs each operation.
- J. A return visit to the Contractor's facility for re-testing will be at the total expense of the Contractor.

3.05 FIELD TESTING:

- A. Exercise systems through field tests in the presence of the Owner in order to demonstrate achievement of the specified performance. Field tests shall be performed for the following systems:
 - 1. SCADA System.
 - 2. PLC System.

- B. Coordinate field tests dependent upon completion of work specified elsewhere. Schedule tests among all parties involved so that the tests may proceed without delays or disruption by uncompleted work.

3.06 **5-DAY ACCEPTANCE TEST:**

- A. When systems are assessed to have been successfully carried through a complete field operational test and the Owner concurs in this assessment, a date to start the system acceptance test involving the Owner's operating personnel will be agreed upon.
- B. The PICS system supplier shall recheck the systems at this time to verify proper operation, and make final adjustments. The PICS system testing shall consist of five (5) consecutive days of continuous testing by the PICS supplier utilizing the Owner's day shift working hours. The PCIS supplier shall be on call ready to respond to the site within two hours after day shift working hours and on weekends. The RPR and/or Engineer will determine the severity of the problem to the best of his ability and contact the Contractor for disposition. This arrangement will in no way relieve the system supplier of responding within 2 hours and resolving the problem in a mutually agreed upon time frame not greater than 48 hours.
- C. The acceptance tests shall have a success factor of 95% system uptime. If the system should fail below the 95% factor, the PCIS supplier shall correct the system problems. System start-up shall start over again from day one. This will continue until the system functions for thirty-five consecutive days with a 95% uptime success factor.

3.07 **OPERATOR TRAINING:**

- A. Provide the Owner's operating personnel and/or the RPR with seven (7) days of formal instruction in the functions and operations of each system provided under this contract. The training shall cover overall system theory, hardware architecture, the operating system, programming instruction in the applicable languages, utility, programs, system generation, and diagnostics. The programming instruction shall include program development, coding, sample programs, and debugging at every programming level. Actual programming exercises and hands-on experience shall be emphasized. Emphasis shall also be placed on safety features and features, which may require readjustment, resetting or checking, and recalibration by them from time to time.

END OF SECTION