

ADDENDUM NO. 2
ISSUED: APRIL 19, 2024

PROJECT: CITY OF CARBON
CID02R – SCADA SYSTEM SMALL PROCUREMENT

QUOTE DUE DATE: MAY 7, 2024

The following changes and/or additions shall be made to the Plans, Specifications, and Contract Documents for the above referenced project. Vendor shall acknowledge receipt of this Addendum by signing below and returning this Addendum with the Quote.

1) GENERAL

- a) The following vendors were in attendance of the pre-quote meeting and are eligible to submit a quote.
 - i) Verfurth Electric/Mission Communications
 - ii) JCH/High-Tide Technologies
 - iii) Eversolve Technologies/RIOT SCADA
 - iv) Hysterion Engineering
- b) For clarification purposes, the SCADA contractor is responsible for furnishing and installing all equipment necessary to obtain the desired functionality shown in the plans and specifications, including but not limited to pressure gauges, transducers, level indicators, conduit, conductors, fittings, and associated incidentals. Instrumentation equipment necessary is provided in the specifications. In the event necessary equipment is not shown on the plans or in the specifications, vendor shall contact the Engineer immediately.
- c) If any piping or valve configurations are necessary, to promote a harmonious work environment the contractor eligible to perform this work is FINCO Services. Any other subcontractors must be approved by the Engineer. SCADA contractor may self-perform work if desired and in accordance with the contract documents, plans and specifications.
 - i) Jeremy Finley/fincoservices22@gmail.com/254.631.7165

2) CONTRACT DOCUMENTS

- a) See the revised quote schedule for this project.

3) SPECIFICATIONS

- a) SECTION 25 02 01 INSTRUMENTATION EQUIPMENT
 - i) For clarification purposes, the ultrasonic level indicator specified is to be used for the pressure tank at pump station 1. SCADA contractor is responsible for adjusting any existing piping, electrical, etc. to install the level indicator (or similar device) to allow control of the hydropneumatic system. The SCADA contractor is responsible for removing the Turner Controls system at both pump stations. The pressure tank at pump station 2 is to be abandoned in place when the new standpipe is brought online.
- b) SECTION 25 04 01 SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA)
 - i) This section has been revised. See the attached revision included with this addendum. The following are clarifications based on questions at the pre-quote meeting.
 - ii) To be considered qualified to submit a proposal or quote, vendors that are not on the pre-qualified list shall follow the instructions in section 1.4 as well as providing all fees required

to operate the system with two users and two sites as described in section 1.2. Additionally, any vendor that is not pre-qualified and wishes to submit a quote shall schedule a demonstration of the system and functionality with the City and the Engineer either prior to the quotation due date or within 10 business days of the quotation submittal. The City is only available Tuesdays and Thursdays.

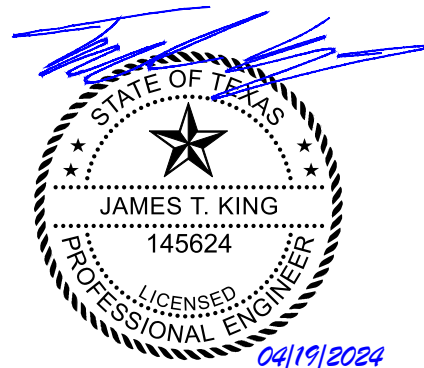
- iii) The quote shall include modifications to the existing fill valve controls at both pump stations to provide HOA controls of the valve and control Auto/off of the chemical feed systems at both pump stations as specified. If the existing fill valves cannot be connected to SCADA, a new fill valve shall be installed at both pump stations and connected to SCADA. See the attached specification.
- iv) The existing REGAL readout for the chlorine scale at pump station 1 is not compatible with SCADA. A new REGAL readout shall be provided and is shown as an alternate item in the attached bid schedule.
- v) The flowmeter at pump station 2 is not required to be connected to SCADA.
- vi) For clarification, the fittings required for level measurement devices on the storage tanks shall be provided by others. The SCADA contractor shall install the pressure gauge and level indicators as required and be responsible for mounting the assembly to the building wall (both pump stations).
- vii) For clarification, the system pressure measurement at pump station 1 shall be used to control the pressure tank operation. The CONTRACTOR shall utilize an existing tap on the pump discharge line and install a new pressure gauge and pressure transducer assembly as shown on the plans.

Bidder's Acknowledgment

Date

Prepared by:

JACOB | MARTIN
TBPE Firm No. 2448



**CITY OF CARBON
CID 02R – SCADA SYSTEM
QUOTE SCHEDULE**

Show prices in numerals. Round off unit prices to two decimal places only.

These Quote Prices must include all labor, materials, equipment, insurance, overhead, superintendence, transportation, profits & incidentals to cover the finished Work called for in the Contract Documents.

For all Labor, Materials, Equipment and Incidentals to Furnish and Install the Following:

Quote Item	Description	Est. Qty.	Unit	Unit Price	Extended Amount
1	Mobilization, Bonds, and Insurance ¹	1	LS	\$	\$
2	Installation of a cellular, web-based SCADA system with cloud storage at two pump station sites and all associated incidentals as shown on the Plans ¹	1	LS	\$	\$
3	One Year of Cellular Subscription Service, Including all Associated Fees ²	1	LS	\$	\$
TOTAL QUOTE (Items 1-3)					\$

ADDITIVE ALTERNATE 1

Show prices in numerals. Round off unit prices to two decimal places only.

These Quote Prices must include all labor, materials, equipment, insurance, overhead, superintendence, transportation, profits & incidentals to cover the finished Work called for in the Contract Documents.

For all Labor, Materials, Equipment and Incidentals to Furnish and Install the Following:

Quote Item	Description	Est. Qty.	Unit	Unit Price	Extended Amount
A1	Fill valve modifications to provide SCADA compatibility (Both Pump Stations) ¹	2	EA	\$	\$
A2	3" Cla Val 58-01 Fill Valve. This item is provided if the existing fill valves cannot be modified to be compatible with SCADA and if chosen will replace item A1. Contractor shall field verify pipe size prior to ordering. ¹	2	EA	\$	\$
A3	Chlorine Scale REGAL Readout to provide SCADA compatibility at Pump Station 1 ¹	1	EA	\$	\$

Notes:

1. TWDB Green Component
2. To be paid with City funds
3. The City may award any combination of the base and alternate quote items.

SECTION 25 04 01 - SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA)**PART 1 GENERAL****1.1 REFERENCE STANDARDS**

UL 508 - Industrial Control Equipment; Underwriters Laboratories Inc.; Current Edition, Including All Revisions.

1.2 WORK INCLUDED

Supervisory Control And Data Acquisition (SCADA) is a type of industrial control that is used in process applications. In a typical SCADA system, independent programmable logic controllers (PLCs) perform Input/Output (IO) control functions on field devices while being supervised by a Human Machine Interface (HMI) software package, typically running on a personal computer (PC). Process control technicians monitor PLC operations on the PC and send control commands to the PLCs as required. The HMI SCADA software may also trend and archive process data on the PC for later inspection.

The CONTRACTOR shall furnish all labor, materials, components, tools, equipment, transportation, services, design, assembly, programming, software, licensing, start-up services and superintendence necessary for the installation of a complete and operational SCADA system including local station control and monitoring, as specified herein.

This project consists of furnishing and installing a cellular, cloud based SCADA system for functionality described in the Plans and Specifications. The submitted quote shall include a list of all fees associated with operating the system, including but not limited to: annual service fees, site fees, hosting fees, user fees, cellular account fees, etc. These fees, as well as the cost of installation of the system will be used to determine the vendor to award the project to, if any.

1.3 QUALITY ASSURANCE

- A. The CONTRACTOR shall submit, with his quote, all proposed instrumentation equipment, number of employees available for completion of the project, a complete and accurate list of subcontractors and suppliers, and any other information as may be required by the ENGINEER. All work shall be performed in a first class manner by mechanics skilled in their respective trades. The standards of work required throughout shall be such grade as will bring results of the first class only.

1.4 QUALIFIED VENDORS

If a vendor requests to become qualified, vendor shall submit references for similar projects, list of equipment proposed, employee list, contracts on hand and a list of previous projects for the last 5 years at the time of the quote submittal. The vendor shall schedule a demonstration of the proposed system and functionality with the City and the ENGINEER prior to the quote due date or within 10 business days of the quotation submittal. Tuesdays and Thursdays are the only days available for demonstrations. Failure to submit all required information in the timeframe indicated may result in denial of qualified request, at the discretion of the ENGINEER. Vendors shown in the list below are not required, but encouraged to provide this information.

- A. **CELLULAR SCADA SYSTEMS - PRE-QUALIFIED VENDORS**
1. Mission Communications; Norcross, GA; 1-877-993-1911
 2. High-Tide Technologies; Nashville, TN; 615-437-9430

PART 2 PRODUCTS**2.1 DETAILED MATERIALS DESCRIPTION**

- A. CELLULAR SCADA HARDWARE

The CONTRACTOR shall provide the necessary hardware, software, communication equipment and appurtenances for a fully functional cellular based system that meets the requirements of this specification section.

PART 3 SCADA SITES

3.1 SITE # 1

Pump Station #2, Longitude [98d49'43.91" W], Latitude [32d16'33.63"N], Elev [1630]

This site contains a pump station with two pumps, ground storage tank, tank fill valve, standpipe, flowmeter, Turner Controls system, chloramine feed system, and associated site appurtenances. The CONTRACTOR shall be responsible to ensure a complete system modification as necessary to remove the Turner Controls system and provide full automation for this pump station. Removal of the Turner Controls system shall be the responsibility of the SCADA CONTRACTOR.

A. FUNCTIONALITY

1. Monitor, record and trend tank level (ground storage tank and standpipe)
2. Pump Status will be displayed for 2 pumps
3. Pump "Run Hours" and "Maintenance Hours" will be recorded for all pumps
4. Site power and communications status will be monitored and displayed
5. "Hand/Off/On (HOA)" Pump controls for 2 pumps based on user-defined setpoints and tank level of PS#2 Standpipe
6. Provide "Low Level Lockout" protection for pumps based on user-defined setpoints and tank level of PS#2 GST
7. "Hand/Off/On (HOA)" Control of Tank Fill Valve based on user-defined setpoints and tank level of PS#2 GST
8. "Auto/Off" Control of Chemical Feed System (CL2 & LAS) based on status of Tank Fill Valve

B. SITE MATERIALS SUMMARY

1. The CONTRACTOR shall determine all communication equipment necessary to complete the cellular SCADA system in addition to the materials listed below.
2. RTU+HMI
3. Antenna
4. Pressure Transducer
 - Quantity: 2
 - Application: Tank Level
 - Range: 0-130FT; 0-30FT
 - Cable Required: 150 FT; 40 FT
5. Enclosure
6. Power Supply

C. SYSTEM INPUTS / OUTPUTS

DIN

1. Site Power Status
2. Pump #1 Status
3. Pump #2 Status

DOUT

4. Pump #1 On/Off
5. Pump #2 On/Off
6. Fill Valve Open/Close
7. Chemical Feed On/Off

AIN

8. Ground Storage Tank Level
9. Standpipe Level

AOUT

RS-232

10. Radio

11. Diagnostic Port
ETHERNET**3.2 SITE # 2**

Pump Station #1, Longitude [98d49'45.73"W], Latitude [32d20'31.18"N], Elev [1526]

This site contains a pump station with two pumps, two ground storage tanks, tank fill valve, air compressor, pressure tank, Turner Controls system, chloramine feed system, and associated site appurtenances. The Turner Controls system shall be replaced with an ultrasonic level indicator on the pressure tank to monitor tank level. The CONTRACTOR shall be responsible to ensure a complete system modification as necessary to remove the Turner Controls system and provide full automation for this pump station. Removal of the Turner Controls system shall be the responsibility of the SCADA CONTRACTOR.

A. FUNCTIONALITY

1. Monitor, record and trend tank level (2 tanks)
2. Monitor, record and trend system pressure
3. Pump Status will be displayed for 2 pumps
4. Pump "Run Hours" and "Maintenance Hours" will be recorded for all pumps
5. Site power and communications status will be monitored and displayed
6. "Hand/Off/On (HOA)" Pump controls for 2 pumps based on user-defined setpoints and tank level of PS#1 Pressure Tank
7. Provide "Low Level Lockout" protection for pumps based on user-defined setpoints and tank level of both PS#1 Ground Storage Tanks
8. "Hand/Off/On (HOA)" Control of Tank Fill Valve based on user-defined setpoints and tank level of both PS#1 ground storage tanks
9. "Hand/Off/On (HOA)" Control of Pressure Tank Air Compressor based on user-defined setpoints and air pressure/tank level.
10. "Auto/Off" Control of Chemical Feed System (CL2 & LAS) based on status of Tank Fill Valve

B. SITE MATERIALS SUMMARY

1. The CONTRACTOR shall determine all communication equipment necessary to complete the cellular SCADA system in addition to the materials listed below.
2. RTU+HMI
3. Antenna
4. Pressure Transducer
 - Quantity: 2
 - Application: Tank Level
 - Range: 0-30 FT
 - Cable Required: 40 FT; 40 FT
5. Pressure Transducer
 - Quantity: 1
 - Application: System Pressure
 - Range: 0-150 psi
6. Ultrasonic Level Indicator
 - Quantity: 1
 - Application: Pressure Tank Level
7. Enclosure
8. Power Supply

C. SYSTEM INPUTS / OUTPUTS

DIN

1. Site Power Status
2. Pump #1 Status
3. Pump #2 Status

DOUT

4. Pump #1 On/Off
5. Pump #2 On/Off

- 6. Air Compressor On/Off
 - 7. Chemical Feed On/Off
 - 8. Fill Valve Open/Close
- AIN
- 9. Ground Storage Tank #1 Level
 - 10. Ground Storage Tank #2 Level
 - 11. Pressure Tank Level
- AOUT
- RS-232
- 12. Radio
 - 13. Diagnostic Port
- ETHERNET

3.3 REPORT SUMMARY

- A. Daily Reports
 - 1. Alarms
 - 2. Tank Levels at PS #1 and PS#2
 - 3. Pump Status for all pumps
- B. Monthly Reports
 - 1. Tank Levels at PS#1 and PS#2
 - 2. Pump Hours
 - 3. Alarm Report

3.4 DATA TREND SUMMARY

- A. Tank Levels at PS#1, PS#2
- B. Pump Run Hours at PS#1 and PS#2
- C. System Pressure at PS#1

-- END OF SECTION --

SECTION 33 02 06 - SOLENOID CONTROL VALVES

PART 1 GENERAL

1.1 REFERENCE STANDARDS

- AWWA C105/A21.5 - Polyethylene Encasement for Ductile-Iron Pipe Systems; 2010.
- AWWA C500 - Metal-Seated Gate Valves for Water Supply Service; 2009.
- AWWA C550 - Protective Interior Coatings for Valves and Hydrants; 2013.
- NSF 61 - Drinking Water System Components - Health Effects; 2014 (Errata 2015).

1.2 WORK INCLUDED

The CONTRACTOR shall furnish and install solenoid control valves, and appurtenances completely as specified herein.

1.3 SUBMITTALS

- A. Shop Drawings and Product Data:
 - 1. Comply with the general requirements of Section 01 04 01, SUBMITTALS, and the supplemental requirements below.
 - 2. Submit one drawing or illustration showing unit construction for each type and size valve used.
 - 3. Submit the following information for each valve:
 - a. Description including type of valve, type of operator and accessories included.
 - b. Size and end connections.
 - c. Maximum non-shock working pressure for which valve is designed.
 - d. Materials of construction and coatings for valves, operators and accessories.
 - e. K or Cv value.
 - f. Manufacturer's make and model.
 - 4. Submit the following information for geared operators:
 - a. Type of gearing.
 - b. Type of lubrication.
 - c. Size of handwheel, lever or crank.
 - d. Input torque required to develop required output torque.
 - e. Orientation and dimensions of operator.
 - f. Manufacturer's make and model.
 - 5. If catalog bulletins are used to communicate above information, mark out inapplicable information.
 - 6. Location of nearest stocking distributor.
- B. Affidavits:
 - 1. Submit affidavits of compliance with the reference standards.
- C. Operation and Maintenance Data:
 - 1. Comply with the requirements of Section 01 04 01, SUBMITTALS.
- D. Special Equipment Warranty as in the Special Conditions.
- E. Installation reports as specified in Section 01 04 01, SUBMITTALS.
- F. Valve manufacturer shall provide certification from an independent testing laboratory that its valve can operate through 1000 cycles at unbalanced closing pressure (working pressure) and flow to open discharge without causing damage to any of the epoxy coating on the body or rubber coating on the gate.

1.4 DELIVERY, STORAGE AND HANDLING

Comply with the requirements of the Section 33 01 01, GENERAL REQUIREMENTS FOR PIPING SYSTEMS, and manufacturer's recommendations.

PART 2 PRODUCTS

2.1 FUNCTION

- A. SIZES 1/2" - 6"
The solenoid control valve is a self-contained unit consisting of a diaphragm-operated, packless main valve, and a packless three-way solenoid pilot valve.

B. SIZES 4" - 24"

The solenoid control valve is a self-contained unit consisting of a diaphragm-operated packless main valve, a diaphragm-operated high capacity auxiliary valve and a packless three-way solenoid pilot valve.

- C. The valve shall either open wide or close drip tight. The three-way solenoid pilot alternately applies pressure to or exhausts pressure from the diaphragm chamber of the main valve which in turn causes the main valve to open or close.
- D. "Tying" of equipment into packages for the purpose of thwarting competition shall be considered to be in non-compliance with these specifications. Manufacturers shall price items under different subsections or sections separately.

2.2 MAIN VALVE

- A. The valve shall be hydraulically operated, single diaphragm-actuated, globe or angle pattern. The valve shall consist of three major components: the body with seat installed, the cover with bearing installed, and the diaphragm assembly. The diaphragm assembly shall be the only moving part and shall form a sealed chamber in the upper portion of the valve, separating operating pressure from line pressure. Packing glands and/or stuffing boxes are not permitted and there shall be no pistons operating the main valve or pilot controls.

2.3 MAIN VALVE BODY

- A. No separate chambers shall be allowed between the main valve cover and body. Valve body and cover shall be of cast material. Ductile Iron is standard and other materials shall be available. No fabrication or welding shall be used in the manufacturing process.
- B. The valve shall contain a resilient, synthetic rubber disc, with a rectangular cross-section contained on three and one-half sides by a disc retainer and forming a tight seal against a single removable seat insert. No O-ring type discs (circular, square, or quad type) shall be permitted as the seating surface. The disc guide shall be of the contoured type to permit smooth transition of flow and shall hold the disc firmly in place. The disc retainer shall be of a sturdy one-piece design capable of withstanding opening and closing shocks. It must have straight edge sides and a radius at the top edge to prevent excessive diaphragm wear as the diaphragm flexes across this surface. No hourglass-shaped disc retainers shall be permitted and no V-type or slotted type disc guides shall be used.
- C. The diaphragm assembly containing a non-magnetic 303 stainless steel stem of sufficient diameter to withstand high hydraulic pressures shall be fully guided at both ends by a bearing in the valve cover and an integral bearing in the valve seat. The seat shall be a solid, one-piece design and shall have a minimum of a five-degree taper on the seating surface for a positive, drip-tight shut off. No center guides shall be permitted. The stem shall be drilled and tapped in the cover end to receive and affix such accessories as may be deemed necessary. The diaphragm assembly shall be the only moving part and shall form a sealed chamber in the upper portion of the valve, separating operating pressure from line pressure.
- D. The flexible, non-wicking, FDA approved diaphragm shall consist of nylon fabric bonded with synthetic rubber compatible with the operating fluid. The center hole for the main valve stem must be sealed by the vulcanized process or a rubber grommet sealing the center stem hole from the operating pressure. The diaphragm must withstand a Mullins Burst Test of a minimum of 600 psi per layer of nylon fabric and shall be cycle tested 100,000 times to insure longevity. The diaphragm shall not be used as the seating surface. The diaphragm shall be fully supported in the valve body and cover by machined surfaces which support no less than one-half of the total surface area of the diaphragm in either the fully opened or fully closed position.
- E. The main valve seat and the stem bearing in the valve cover shall be removable. The cover bearing and seat in 6" and smaller size valves shall be threaded into the cover and body. The valve seat in 8" and larger size valves shall be retained by flat head machine screws for ease of maintenance. The lower bearing of the valve stem shall be contained concentrically within the

seat and shall be exposed to the flow on all sides to avoid deposits. To insure proper alignment of the valve stem, the valve body and cover shall be machined with a locating lip. No "pinned" covers to the valve body shall be permitted. Cover bearing, disc retainer, and seat shall be made of the same material. All necessary repairs and/or modifications other than replacement of the main valve body shall be possible without removing the valve from the pipeline. Packing glands and/or stuffing boxes shall not be permitted and components including cast material shall be of North American manufacture.

- F. The valve manufacturer shall be able to supply a complete line of equipment from 1/2" through 24" sizes and a complete selection of complementary equipment. The valve manufacturer shall also provide a computerized cavitation chart which shows flow rate, differential pressure, percentage of valve opening, Cv factor, system velocity, and if there will be cavitation damage.

Valve Size:	Per Plans
Main Valve Body and Cover:	Ductile
Main Valve Trim:	Bronze
End Detail:	150 lbs. Flanged
Pressure Rating:	200 PSI
Temperature Range:	0 - 100 deg. F.
Rubber Material:	Synthetic
Coating:	Epoxy

2.4 PILOT CONTROL SYSTEM

- A. The pilot control shall be a three-way solenoid valve controlled by an external electrical power source. The pilot system shall include strainers, shut-off cocks and manual operator. Opening and closing speed control needle valves shall be utilized so as to prevent surging of the system on start-up and shut-down. Solenoid shall have a NEMA IV enclosure.

Pressure Rating:	200 PSI
Trim:	Bronze
Rubber Material:	Synthetic
Tubing and Fittings:	Copper
Solenoid Voltage:	120 Volts
Enclosure Type:	NEMA 4

2.5 MANUFACTURER

- A. Valve shall be ClaVal Co. Model No 58-01 or approved equal.

PART 3 EXECUTION

3.1 INSTALLATION

- A. The CONTRACTOR shall install the valves in accordance with the following requirements:
1. Installation shall be in accordance with the Plans, approved shop drawings and the manufacturers instructions.
 2. Install valves and valve operators to provide for ease of access and operation.
 3. Install buried valve by carefully lowering into position in such a manner to prevent damage to any part of the valves. The valve shall be placed in proper position and shall be securely held until all connections have been made. All buried pipe and appurtenances shall be wrapped in polyethylene encasement in accordance with AWWA C105/A21.5.
 4. All buried valves 8 inches and larger shall rest on a concrete pad. Pad shall extend for the full width of the trench and from back-to-back of hub (or flange). Care shall be taken to not interfere with the jointing.
- B. The Equipment Manufacturer shall furnish all accessories and hardware necessary for installation.

3.2 FIELD QUALITY CONTROL

- A. The Equipment Manufacturer shall perform the following services:
1. Inspect the completed installation and note deficiencies.
 2. Assist the CONTRACTOR during start-up, adjusting, and site testing of completed installation as required. A direct factory representative shall be made available for start-

up service, inspection and necessary adjustments.

3. Instruct OWNER personnel in the operations and maintenance of the equipment.
- B. TESTING: Field startup testing will be in accordance with Sections 01 07 01, PLANT TESTING AND STARTUP, and 33 02 01, FIELD TESTING OF PIPING SYSTEMS. All valves shall be tested by manufacturer in accordance with AWWA C500.
- C. Valve shall not hang and shall seat and unseat to/from fully closed position. Verify valve tag is installed and correct. Verify valve position indicator correctly reflects valve positions and limit switches (if used) are set correctly.

3.3 WARRANTY

The valve manufacturer shall warrant the valve to be free of defects in material and workmanship for a period of three years from date of shipment, provided the valve is installed and used in accordance with all applicable instructions. Electrical components shall have a one-year warranty.

-- END OF SECTION --