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May 26, 2023

Mr. Larry Lacy
12 South Franklin St
Farmington, MO 63640

Project Name: Industrial Park
Farmington, MO

Re: Control Panel and Instrumentation

ECC Quote #: 230526FVC01

Dear Mr. Lacy,

Per your request, Electric Controls Company, Inc. is pleased to provide the following scope of work for your consideration.

1 Summary

This site would have a new control panel provided for installation in place of the existing motor control center, and various other equipment, as described below.

Operation

The ACE SCADA unit would provide primary control of the valve and booster pumps.

The GST Fill Valve would be used to fill the GST Fill overnight between HMI adjustable Open and Close time (typically overnight).

Booster pumps would be used to pump up local discharge pressure (no remote tank process control would be programmed). Pumps would be automatically alternated. Only one pump would be demanded at a time (due to hydraulics of system).

If the GST Fill Valve is open, booster pumps can not be demanded. If a booster pump is running, the valve can not be demanded open. Pumps take priority over the valve.

Valve can not open, and in fact must be demanded closed, if system pressure drops below a valve disable setpoint, and stays until system pressure rises above a valve enable setpoint (i.e., do not try to fill the GST if low system pressure exists).

Booster flow would be totalized at the ACE RTU. Each flow signal input to the ACE would have two totalization values displayed and trended in iFIX (previous day, previous month). Totalization would be trended on the SCADA computer.

2 Equipment/Services Provided by Electric Controls Company

- (1) Control Panel
Incoming Power: ~150 A, 480 VAC, 3-Phase, 3 wire, (Panel rated for max 5 KA SCCR)

**Challenged to Excel
Recognized for Achievement**

Panel to Control:

- A) (2) Booster pumps 20 HP, 27 FLA (31 A @ 1.15 Service Factor), 480 VAC, 3-Phase motors via variable frequency drive (VFD provided by others)
- B) (1) GST fill valve via contact closure demand to remote solenoid controlled hydraulic actuated valve (valve by others)

Enclosure:

NEMA 12 floor-mount

- Constructed of mild steel painted ANSI 61 grey
- With painted steel subpanel(s)
- Provided on 12" legs with removable skirt screwed to enclosure
- Approximate dimensions: 72" H x 72" W x 12-18" D

Includes:

- A) Main incoming power distribution block
- B) 480 VAC circuit breakers for the following loads:
 - i. (2) 15-30 amp, 3-phase for (two) building heaters (heaters by others)
 - ii. (1) 3-phase for transformer feed
- C) SPD (Surge Protection Device)
- D) Circuit breaker short circuit protection for each pump with operating toggle mounted through outer door
- E) 100 Amp/12 circuit 208/120 vac 3-phase main lug lighting panel with circuit breakers for the following:
 - i. Main breaker (3-pole, 100 amp)
 - ii. Controls (1-pole, 15 amp breaker/5 amp load)
 - iii. Siren (1-pole, 15 amp breaker/10 amp load)
 - iv. Exhaust fan (1-pole, 15 amp/12 amp load)
 - v. Exhaust fan louver (1-pole, 15 amp/5 amp load)
 - vi. Building lights (1-pole, 15 amp/10 amp load)
 - vii. Building receptacles (2 1-pole, 15 amp/15 amp load each)
- F) Enclosure fan to maintain temperature of VFD's inside panel
- G) 120 vac power filter
- H) ECC installation of VFD's in control panel (equipment provided by Flynn Drilling.
- I) HOA switches, elapsed time meters, pump run/starter fault/valve open/close pilot lights mounted through door
- J) Motorola ACE RTU/PLC (with radio and coaxial surge suppressor) connected to SCADA monitored/controlled points
- K) Coaxial cable, coaxial connectors, antenna (assembly by ECC and installation by others on outside of building)
- L) Operator interface (10" touchscreen) installed in control panel door
- M) Engineering Services: Panel design, SCADA/PLC operation manual, SCADA Unit/SCADA Computer programming, functional testing at ECC, startup, training, for equipment provided by ECC for this site

Designation:

- A) Control Panel

Notes:

- A) Price does not include installation. Control panel provided for installation/wiring on project site by others.
- B) Price does not include antenna mount/mast/support structure/clamps - to be provided and installed by others.
- C) Price does not include concrete housekeeping pad recommended for pad-mount enclosures.
- D) Price does not include pump discharge pressure switch circuitry or pressure switches.
- E) Price does not include flow switch circuitry or flow switches.

- F) Price does not include VFD's. VFD's to be provided by Flynn Drilling to ECC for ECC to install in control panel. Flynn Drilling to provide start-up for the VFD's.
- G) Price does not include CL2 monitoring equipment.

(1) Transformer

Description: 30 KVA, 480:208/120 VAC, 3-Phase
 Enclosure: NEMA 2 (Painted Steel), Floor-mount
 Designation:

A) Transformer

Notes:

A) Does not include primary or secondary short circuit protection

(1) Submersible Level Transmitter

Manufacturer: Keller
 Includes:

- A) Transmitter w/ 40' cable
- B) Junction box w/ subpanel and surge suppressor
- C) Watertight cord connector
- D) Strain relieve device

Designation:

A) Ground Storage Tank Level

Notes:

- A) All equipment provided loose for installation by others.
- B) Junction box provided for installation by others on top of GST.
- C) Price does not include equipment installation – to be provided by others.
- D) Price does not include mounting hardware, conduit, wire.
- E) Price does not include stilling well (~ 4" - 6" diameter PVC pipe w/ 1" holes drilled every 12", set ~6" off bottom of wetwell, if req'd). Should not be needed, as tank should have low turbulence.

(1) Pressure Transmitter

Manufacturer: Siemens
 Includes:

- A) Transmitter with block/bleed valve.
- B) Engineering services for configuration and startup of transmitter

Designation:

A) System Pressure

Notes:

- A) Price does not include equipment installation or pipe tap/corp stop/process connection. All equipment is provided for installation by others, unless otherwise indicated in this section.
- B) Price does not include custom mounting bracket/hardware/seal, if required.
- C) Price does not include conduit/shielded cable for 4 – 20 ma signal between transmitter and display/control device.

(1) Magnetic Flow Meter/Transmitter

Manufacturer: Siemens

Includes:

- A) Flow tube (sized per Designation below)
- B) Flow transmitter (with 4-20 ma output) provided for installation by others on flow tube
- C) Lot engineering services for programming and startup of flow meter

Designation:

- A) Booster Pump Flow (4")

Notes:

- A) Flow tube/meter is for use only in full-pipe applications, not partial-fill pipe applications
- B) All equipment is provided for installation by others, unless otherwise indicated in this section. **Flow equipment/flow tube MUST be kept dry until the termination is sealed/potted to prevent water from entering the termination box. Water damage is not covered under warranty, and will be billed separately to repair/replace.**
- C) Price does not include spool piece, if required.
- D) Flow transmitter requires wiring for 24 VDC power and for 4 – 20 ma signal to control panel. Price does not include power wiring and twisted/shielded cable for 4 – 20 ma signal between transmitter and display/control device.

(2) Intrusion Switch

Designation:

- A) Building double doors

Notes:

- A) All equipment provided loose for installation by others.

3 Equipment/Services Provided by City/Others

- 1) Remove all electrical equipment in the building, including:
 - a. MCC
 - b. Transformer
 - c. Lighting panel
 - d. Healy Ruff panel
 - e. SCADA panel
 - f. Lighting and switches
 - g. Receptacles
 - h. Building heaters
- 2) Provide and install new 200 amp 480 vac/3-phase stainless steel incoming disconnect on exterior of building, with conduit/wire into new building control panel.
- 3) Install new control panel on existing concrete pad (pad is ~86" L x 20" W), with conduit/wire to all connected devices.
- 4) Install transformer (provided by ECC), with conduit and wire to control panel.
- 5) Provide and install new GST fill valve. Valve to be solenoid controlled, and have a limit switch indicating full closed. Provide conduit and wire to control panel.
- 6) Provide, install, and wire new LED lights in building.
- 7) If desired, provide thermostat for existing exhaust fan. Confirm existing exhaust fan functions, and replace if necessary. Replace existing fan louvers, and likely provide/install louver that runs when fan does.
- 8) Provide and install new switches, receptacles with conduit/wire.

- 9) Provide and install new building heaters (3-phase, approx. 17 amps each - City to provide information on heaters), with conduit/wire.
- 10) Install antenna/coax cable (provided by ECC).
- 11) Rearrange/re-pipe to accommodate pumps and flow meter.
- 12) Install flow meter/transmitter (provided by ECC) and provide conduit/wire to control panel.
- 13) Install submersible transducer (provided by ECC) in GST. Install stainless steel j-box (provided by ECC) at top of GST/inside lid. Provide and install new 3/4" PVC conduit to meet existing PVPC on side of GST. Provide and install new twisted/shielded wire to control panel.
- 14) Install system pressure transmitter (provided by ECC) on discharge piping of booster pumps, to measure system pressure, with conduit and twisted/shielded wire to control panel.
- 15) Install intrusion switches (provided by ECC) and provide conduit/wire to control panel.

4 Schedule:

1. Submittals could be provided within 4 - 6 weeks after receipt of purchase order by ECC.
2. Estimated equipment delivery 8 - 10 weeks after receipt of approved submittal by ECC. These terms subject to change based on market volatility and delivery of parts by ECC suppliers.
3. Please contact estimator BEFORE or AT TIME OF QUOTE if other arrangements are required.

5 Terms/Notes/Exclusions:

1. System Warranty
 - A. System warranty against defects in material and workmanship is the earlier of 18 months after the date of shipment or 1 year after the date of installation.
 - B. Warranty excludes surge/transient damage.
 - C. Warranty includes parts only for ECC-provided equipment included in this scope of work, as all on-site work on this scope of work is to be performed on a Time & Material basis.
 - D. ECC is not liable for loss, damage, or expense directly or indirectly from the use of its products or services, or from any other cause.
2. Price does not include any applicable taxes or fees. Tax exempt certificate must accompany purchase order, or sales tax will be charged.
3. Price valid for 60 days.
4. ECC is a registered WBE. We cannot offer any MBE participation.
5. Price does not include premium wages/overtime. All on-site work to be performed between the hours of 7 am and 3:30 pm, Monday through Friday, exclusive of holidays, unless otherwise noted.
6. Payment Terms
 - A. Net 30 days with 1 1/2% per month add.
 - B. 100% of each invoice is due within 30 days of invoice date.
 - C. Retainage of any invoiced amount is unacceptable unless specifically agreed to in writing by ECC at the time of order, and shall in no case exceed a period of 90 days.
 - D. If payments are not timely received by ECC, and this account is turned over to an attorney for collections, Customer agrees to pay all reasonable costs and attorney fees incurred in collection of the past due amounts.
 - E. Payment as the project progresses is expected.
 - F. Back charges are not accepted by ECC unless prior written authorization is obtained from ECC.
7. Prices quoted are for ECC to be a supplier, not a subcontractor or general contractor. Additional fees may be charged if ECC is required to be a subcontractor or general contractor.
8. Additional fees may be charged if ECC is required to provide additional bonding/insurance beyond ECC standard for this project.
9. Freight
 - A. Price includes standard freight to jobsite. Freight is pre-paid, FOB Factory.