

ADDENDUM NO. 2
SEWER SYSTEM IMPROVEMENTS
CONTRACT 17-01
SEWAGE PUMPING STATION RENOVATIONS
LIVINGSTON, TENNESSEE
WAUFORD PROJECT NO. 2067

Date of Addendum: Friday, October 13, 2017

Bid Opening: Thursday, October 19, 2017, 2:00 P.M. Local Time

1. Detailed Specifications, Section 5. Wet Pit Submersible Pumps and Controls, Paragraph 4. Utilities Provided, Page DS 5-4:

Delete this paragraph.

2. Detailed Specifications, Section 5. Wet Pit Submersible Pumps and Controls, Paragraph 7. Automatic Pump Control System, Page DS 5-9:

Replace this paragraph with the following:

"7. Automatic Pump Control System

a. Scope of the Work

The work described consists of the pump vendor furnishing and installing the control system to automatically start and stop each pump in response to input signals relating to the wetwell level. The control vendor shall supply all instruments and accessories necessary for installation as depicted at the accompanying Plans.

Electrical work associated with equipment described herein, including all connecting signal and power wiring, is depicted in the accompanying Plans and should be reviewed and taken into account by the Vendor of equipment described at this Section.

b. Performance Requirements

(1) Pump Automatic Control System

Hardware components shall be integrated into a system to automatically monitor and control the operation of the pumps and monitor certain other conditions. The control system shall handle all control logic via float switches and relays. The integrated system shall automatically control and monitor the following performance:

- (a) *The wastewater level in the wetwell shall be sensed via mercury float switches which cause the following pump operation protocols are in response to wetwell levels and elevations as indicated on the Plans.***
- (b) *The normal pump operational protocol shall consist of the following when the pump operation selector switches for both pumps are in the “Automatic” position:***
- *Start the pump motor, designated by the control panel relay logic via a duplex pump alternating relay upon receiving a signal from the float switch labeled “Start Pump”. The alternating relay is to be provided with a selector switch for Auto – Pump 1 – Pump 2 so that the operator can select which pump is in the lead position or whether the controls will alternate the pumps after each pumping cycle.***
 - *Stop the operating pump(s) upon receipt of a signal from the float switch labeled “Stop Pump”.***
 - *Designate the remaining pump motor that did not operate during the last pump operating cycle as the “next pump motor to operate”.***

- ***Repeat this normal pump operational protocol until both of the pump operation selector switches are moved from the “Automatic” position.***
- (c) ***In the event that one pump operation selector switches is in the “Off” position, the control system software shall automatically designate the operating pump motor as the “next pump motor to operate” after that pump motor is started.***
- (d) ***Only one pump motor shall operate at any one time when the selected position of two pump control switches is at “Automatic” or at “On”.***
- (e) ***Only one pump motor shall operate concurrently when the selected position of two pump control switches is at “On”.***
- (f) ***No pump motor shall start and operation of all pumps shall be ceased at any time the float switch labeled “Low Water Alarm” is energized, regardless of the position of the three-position pump operation selector switch for any pump.***
- (g) ***No pump motor shall be started automatically when the three-position operation selector switch for that pump is placed in the “Off” position.***
- (h) ***The control panel will integrate pump monitoring relays into the control circuitry to monitor each pump & motor for over temperature conditions of the motor as well as moisture intrusion into the seal cavity. In the event that the motor should trip the overtemp relay the logic shall; remove that pump from service until the condition has cleared. Once it has cleared it will automatically be placed back into service. In the event a pump enters a seal fail condition,***

that pump shall be removed from service until the seal fail condition has cleared.

c. General Equipment Requirements

(1) U. L. Approval

The control panel(s) shall be constructed in compliance with Underwriter's Laboratories 698A Standards.

(2) Wiring

All wiring shall be minimum 600 volt UL type MTW or AWM and have a current-carrying capacity of not less than 125% of the full load current. The conductors shall be in complete conformity with the national electric codes, state, local and NEMA electrical standards. For ease of servicing and maintenance, all wiring shall be color coded. The wire color code shall be clearly shown on the drawings, with each wire's color indicated.

All control wiring shall be contained within plastic/PVC wiring duct with covers. Where dimensional constraints prevent the use of wiring duct, wires shall be trained to panel components in groupings. The wire groupings shall be bundled and tied not less than every 3 inches with nylon self-locking cable ties as manufactured by Panduit or equal.

Every other cable tie shall be fastened to the enclosure door or inner device panel with a cable tie mounting plate with pressure tape. Where wiring crosses hinged areas such as when trained from the inner device panel to the enclosure door, spiral wrap shall be used.

(3) Incoming Service

The incoming service for the control system panel shall be as indicated at the electrical plans.

(4) **Nameplates**

All major components and sub-assemblies shall be identified as to function with laminated, engraved nameplates.

d. **System Specifications**

(1) **General**

The control panel shall monitor wet well level and provide automatic operation of the pumps. The control panel shall indicate float switch operation, annunciate station alarms and indicate station status as herein specified.

(2) **Sewage Pumping Station Controller**

(a) **Power Supply**

The Controller Unit shall utilize 120 volt, 1 phase, 60 hertz power supply in the control panel.

(b) **Enclosure**

The described equipment shall be housed in a U.L. listed NEMA 4X stainless steel enclosure properly sized to accommodate all control elements. The enclosure shall include the following features:

- i. All of the seams shall be continuously welded and ground smooth with no holes or knockouts*
- ii. Door and body stiffeners shall be provided for extra rigidity*
- iii. Heavy gauge continuous hinge*
- iv. Oil resistant gasket and adhesive*
- v. Removable and reversible print pocket*
- vi. Inner panel shall be painted white enamel*
- vii. Padlocked three point latch assembly*

- viii. ***Aluminum inner door for mounting of pilot lights, devices and elapsed time meters. The inner door is to include cutouts to operate the included circuit breakers.***
- ix. ***Main door shall be provided a wind stop device to secure the door in the open position.***

The enclosure unit shall be provided with ventilation as required for displacement of heat generated during normal operation of the specified equipment.

(c) **Circuit Breakers**

- ***Individual pump breakers***
- ***Control transformer breaker***
- ***GFI breaker***
- ***Heater breaker***
- ***Two (2) Spare 15 amp breaker for future use***

(d) **Power Components**

Control panel to include a lighting arrestor, Square D model SDSA or equal. Control panel to also include an adjustable phase and voltage monitor to protect the motors from voltage fluctuations, phase reversal, or phase loss.

(e) **Motor Starters**

Motor starters shall be NEMA rated reduced voltage type.

(f) **Selector Switches and Pilot Lights**

The control panel shall include two Hand-Off-Automatic selector switches labeled "Pump No. 1" and "Pump No. 2". In automatic mode, the pumps shall operate in accordance with

the automatic control system. In hand mode, the pumps shall operate until a human operator switches them off.

The control panel shall include an alternator selector switch, 3 position to be labeled Pump 1 – Auto – Pump 2 to allow the operator to designate a lead pump or call for the alternator to switch lead pumps after each completed pump cycle.

Included pilot lights to be: individual pump run lights, individual pump seal fail lights, individual pump overtemp lights, high level light, low level light.

Switches and lights shall be as manufactured by Allen-Bradley, Square D, Siemens or equal. Switches and lights shall all be heavy duty NEMA 4X and push to test type lights.

(g) Running Time Meter

A running time meter measuring hours and tenths of hours of operation up to 99,999.9 hours shall be furnished for each pump. This shall be a 120 volt AC device operating from the control voltage by an auxiliary contact of the running signal.

(h) Mechanical Tilt Float Switch

The wetwell setpoints shall be detected by float switches to be mounted with stainless steel hardware at the location shown on the Plans. The float switches shall be normally open with a rating of 13 amps. The float switches shall be Warrick Model M-BLU 40, Conery or approved equal. A total of five (5) float switches shall be provided for the following functions: low level alarm/redundant off; all pumps off, lead pump start, lag pump start, high water alarm.

(i) **Condensation Protection**

A 100 watt condensation protective heater with a high temp cutout thermostwitch shall be supplied in the control panel. The heater shall maintain internal panel temperature higher than outside ambient air temperature to prevent condensation on electronic components.

(j) **Duplex Receptacle**

The control panel shall include an externally mounted duplex convenience receptacle, GFI with dedicated breaker.

(k) **Externally Mounted Alarm Light**

The control panel shall be equipped with a red alarm light mounted to the top of the control panel.

(l) **Dry Contacts**

Panel to include the following dry contacts for future telemetry monitoring:

- ***P1 running***
- ***P2 running***
- ***P1 common fail (overtemp, overload, seal fail)***
- ***P2 common fail (overtemp, overload, seal fail)***
- ***High water***
- ***Low water***

(m) **Enclosure Light**

Control panel to be provided with an enclosure light. Light to be LED and provided with a door switch and on/off switch.

3. Plans, Sheets 2, 4, 6, 8, 10, 12, and 14:

Revise the note pertaining to pipe coating as follows:

NOTE:
ALL DUCTILE IRON PIPE IN THE WETWELL
AND VALVE BOX SHALL BE SPECIALLY
LINED INSIDE AND EXTERIOR COATED
AS SPECIFIED

4. Plans, Sheets 3, 5, 7, 9, 11 and 13:

Modify in accordance with the following note:

“The Wetwell level transducer has been removed at the Taylor Street, Hillcrest, Buena Vista, High School, Hidden Valley, County Plant and Industrial Park Sewage Pumping Stations. All junction boxes, conduit and conductors associated with the removed level transducers should be deleted from this project.”

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