

SEWERAGE LIFT STATIONS IMPROVEMENT PROJECT
ADDENDUM #1

Town of Lakeview
525 North 1st Street
Lakeview, OR 97630

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Issue date of Addendum: February 24, 2010

To all Contract Holders of: Sewerage Lift Stations Improvement Project

CHANGE CONTRACT DOCUMENTS

Please modify the contract documents as noted below:

TECHNICAL SPECIFICATIONS - 310: SEWERAGE PUMP STATION

Please replace the specification in your packet with the attached 310: SEWERAGE PUMP STATION - REVISED 2/24/10. The revised specification reflects the following change:

Page 3: Item 4) Pumps & Controls - Submersible Non-Clog Wastewater Pumps
Electrical: 3 Ph 230 Volt

Please note that the pump station at South "M" and 11th Streets is single phase. The Town of Lakeview will provide new, 3 phase 230 volt service from the power company.

You must include this addendum with your bid submittal.

The Bidder is instructed to acknowledge receipt of this Addendum.

Signature

Date

A signed copy of this Addendum must be submitted with the Bid Documents.

310 Sewerage Pump Station – REVISED 2/24/2010

310.1.00 Description

This work consists of furnishing and installing all related equipment, pumps, pipes, valves, electrical panels, and all other required equipment and materials to complete a fully operation and usable pump station facility.

310.2.00 Materials and Construction

1) Wet Well Construction

Is existing as shown on the drawings.

2) Pump, Valves, and related Equipment

Pumps, valves, and related equipment shall be as shown on the drawings and as specified. Contractor shall submit Shop Drawings of all equipment for approval by the Engineer prior to construction.

3) Electrical Control Panels and Alarm Light System

Provide and install all related electrical control panels and alarm light for system operation.

CONTROL PANEL: A Nema 4x steel control panel shall be furnished with each pumping unit to be installed, as shown on the plans.

The electrical controls shall be mounted in a NEMA 4x enclosure fabricated of steel. Enclosure door will be hinged and equipped with closure latching hardware. The enclosure will bear a U.L. Label of an enclosure manufacturer. The control enclosure shall be provided with a removable back panel for mounting the control components.

For the safety and convenience of the operator, "screw-cover" removable panel doors will not be acceptable as an equal to a hinged cover. All components shall be securely mounted in the enclosure, components labeled, and wires numbered to indicate functions and provide a means of tracing.

All components will bear a U.L. Label. All wiring, workmanship, and schematics will comply with standards set forth by the National Electric Code (NEC) and Underwriter's Laboratory (U.L.).

The controls shall bear an Underwriter's Laboratory (U.L.) Label for "ENCLOSED INDUSTRIAL CONTROL PANEL" before being shipped from the manufacturer or other approved recognized testing laboratory to insure a standard of quality for the protection of the operator.

WIRING/CONDUIT: All control or accessory wiring entering, exiting, or to the door controls, shall terminate on a terminal block mounted on the back panel, except for main service breakers or approved disconnect and motor power wires which shall be wired continuously between the motor and the starter overload block. All conduit and connectors inside the station are to be U.L. listed and installed in accordance with N.E.C. standard. Conduit shall be either E.M.T. or liquid tight, flexible non-metallic type. All current carrying wire and conduit shall be properly sized in accordance with N.E.C.

OPERATORS: All push buttons, indicating lights and selector switches shall be of the 22.5 mm industrial heavy duty design and UL listed (NEMA) types 1, 2, 3, 3r, 4, 4x, 12 and 13 when mounted in an enclosure rated for those same applications. Contacts will be rated for maximum 10 amps continuous current at 120 volts AC. All operators will be identified with engraved aluminum legend plates.

MOTOR PROTECTION: Each pump motor shall be protected by a properly sized combination circuit breaker and motor starter.

The circuit breakers will be molded case, air break type, sized in accordance with N.E.C. for the proper amperage and sealed by the manufacturer after calibration to prevent tampering. All circuit breakers shall bear U.L. Listing.

The magnetic motor starter is to be of open across-the-line type bearing the U.L. Label for motor control devices and properly sized by motor horsepower. All auxiliary contacts shall be accessible from the front. Starter contacts shall be accessible from the front. Starter contacts shall be provided with an arc chute to extend the life of the contacts.

All motor starters shall be equipped with under-voltage release and ambient compensated overload protection. The overload relays will be provided with manual reset and overload trip "test" features. Final trip setting shall be made on start-up to actual field operating conditions using a field adjustable auto-calibration dial. Melting alloy heaters that cannot be calibrated to field conditions are not acceptable.

An overload reset button will be mounted through the door to permit resetting of the starter overload without opening the panel door.

LEVEL SENSORS: The transmitter system consists of a Submersible Pressure Sensing element cased in a 316L SST housing. The electronics are capable of withstanding lightning strikes and meet RCTA/DO 160D for lightning direct effects and surge protection for FAA and MIL-STD test and NASA standard electrical surge requirements. The Steel Cage Transducer is supplied with 40 ft. of standard polyurethane shielded and vented cable, or Tefzel cable. The unique cable venting system allows for atmospheric pressure differential compensation while keeping the elements out, using a Gortex filter encapsulated tip. The design shall give full protection and allow sensing to sewage levels no matter how much debris/mud/sand or rags build up. The Submersible Pressure Sensing unit shall be listed by Underwriters Laboratories of North America.

LEVEL CONTROLLER: Selectable pump alternation when used with two pumps to minimize pump wear. With alternation "on" a seal failure or over temperature condition will force the non-failed pump to lead status and stop alternation.

When used with a submersible pump including a moisture sensor the Controller has alarm light indication of seal failure.

When used with a pump including a thermostat the Controller has alarm light indication of pump over temperature and removes the pump from service. The Pump can be brought back into service automatically or by manual reset when the pump has cooled down.

The Controller shall have an Integral 24 VDC power supply for level transmitter and displays pump run time from a front panel button. It shall have a "Test System" function that simulates the process input to insure the pumps are operating or to test programming. User selectable security lock-out of programming and/or set points. Process input retransmission as a current (4 to 20 mA) or voltage (2 to 10 VDC) analog signal.

Alarms can be programmed for output indication of pump seal failure or over temperature. Selectable time delay, for pump two, to prevent both pumps from starting at the same time. If power is lost, upon regaining power a time delay of up to 60 seconds can be selected to prevent too large of a current draw.

BACKUP FLOAT SYSTEM: (Mercury Level Sensors) The automatic pump cycling as described above will be backed up with mercury level sensors in the wet well, to sense the wet well level and control the pump cycles. Electrical interlocks are to maintain pump operation between these levels. Each mercury level sensor is field adjustable from above. A two float system will be used unless otherwise specified. It shall include a high level float and a low level float. If the high level float tips, an alarm will sound and both pumps will turn on. If the low level float drops, an alarm will sound and both pumps will shut off.

SEQUENCING: On a rising wet well level, the controls will start selected LEAD pump, and a continuing rise shall in turn start the SECOND pump. The pumps shall operate individually or in parallel as required, pumping down to the selected stop levels in the reverse order of the starting sequence. An elapsed time meter will be provided for each pump to allow the operator to balance pump use and wear. After each cycle the lead pump will alternate automatically to balance pump calls and even pump wear.

Contractor shall install all related equipment for rebuilding the station.

4) Pumps & Controls - Submersible Non-Clog Wastewater Pumps

Pumps shall be non-clog wastewater pumps selected in accordance with the following design criteria:

Number of Pumps: 2

Primary Design Flow: Varies – See Drawings

Primary Design Head: Varies – See Drawings

Minimum Sphere Size: 3 Inches

Minimum Efficiency: 75.00%

Electrical: 3 Ph 230 Volt

Minimum Service Factor of 1.20

Pumps:

Pumps shall be ABS high efficiency pumps or approval equal. Submit Shop Drawings for approval and pump sizing.

Electric Motor: All motors shall be premium efficiency motors.

A. The stator, rotor and bearings shall be mounted in a sealed submersible type housing. The stator windings shall have Class F insulation, (155°C. or 311°F.), and a dielectric oil filled motor, NEMA B design (3 phase).

Because air-filled motors do not dissipate heat as efficiently as oil-filled motors, air-filled designs shall not be acceptable.

B. The pump and motor shall be specifically designed so that they may be operated partially dry or completely submerged in the liquid being pumped. The pump shall not require cooling water jackets. Dependence upon, or use of, water jackets for supplemental cooling shall not be acceptable.

C. Stators shall be securely held in place with a removable end ring and threaded fasteners so they may be easily removed in the field without the use of heat or a press. Stators held by a heat shrink fit shall not be acceptable. Stators must be capable of being repaired or rewound by local motor service station. Units which require service only by the factory shall not be acceptable. No special tools shall be required for pump and motor disassembly.

D. Pump shall be equipped with heat sensors. The heat sensors (two on three phase) shall be a low resistance, bi-metal disc that is temperature sensitive. It and shall be mounted directly in the stator and sized to open at 120°C or 130°C, and automatically reset at 30-35°C differential. The sensor shall be connected in series with the motor starter coil so that the starter is tripped if a heat sensor opens. The motor starter shall be equipped with overload heaters (2-leg on single phase; 3-leg on three phase) so all normal overloads are protected by external heater block.

Mechanical Seals:

A. The pump shall have two mechanical seals, mounted in tandem, with an oil chamber between the seals. John Crane Type 21, BF1C1, seals shall be used with the rotating seal faces being carbon and the stationary seal faces to be ceramic. The lower seal shall be replaceable without disassembly of the seal chamber and without the use of special tools. Pump-out vanes shall be present on the backside of the impeller to keep contaminants out of the seal area. Units which require the use of tungsten-carbide seals or foreign manufactured seals shall not be acceptable. Seals shall be locally available.

B. The pump shall be equipped with a 300 series stainless steel shaft sleeve under the lower seal for added protection to reduce costly shaft work in the event of seal failure. The sleeve

shall be keyed to the shaft and "O" ringed to prevent leakage under the sleeve. Units which do not include a stainless steel shaft sleeve shall not be considered equal nor acceptable.

- C. The pump shall be equipped with a seal leak detection probe and warning system. This shall be designed to alert maintenance personnel of lower seal failure without having to take the unit out of service for inspection or requiring access for checking seal chamber oil level and consistency.
- D. There shall be an electric probe or seal failure sensor installed in the seal chamber between the two tandem mechanical seals. If the lower seal fails, contaminants which enter the seal chamber shall be detected by the sensor and send a signal to operate the specified warning device.
- E. Units equipped with opposed mechanical seals shall not be acceptable.

Power/Control Cords:

- A. Electrical Power cord shall be water resistant 600V, 60°C minimum, and applied dependent on amp draw for size.
- B. The pump shall be triple protected with a compression fitting and two epoxy potted areas at the power cord entry to the pump. A separation between the junction box areas of the pump and the motor by a stator lead sealing gland or terminal board shall not be acceptable.
- C. The power cable entry into the cord cap assembly shall first be made with a compression fitting. Each individual lead shall be stripped down to bare wire at staggered intervals, and each strand shall be individually separated. This area of the cord cap shall then be filled with an epoxy compound potting which will prevent water contamination to gain entry even in the event of wicking or capillary attraction.
- D. The power cord leads shall then be connected to the motor leads with extra heavy connectors having brass inserts with a screwed wire to wire connection, rather than a terminal board that allows for possible leaks.
- E. The connection box wiring shall be separated from the motor housing wiring by stripping each lead down to bare wire, at staggered intervals, and separating each strand. This area shall be filled with an epoxy compound potting. Fiberglass terminal boards which are subject to heat fatigue and cracking, and which may lead to possible leaks shall not be acceptable.
- F. The cord cap assembly where bolted to the connection box assembly and the connection box assembly where bolted to the motor housing shall each be sealed with a Buna N Rubber O-ring on a beveled edge to assure proper sealing.

Cable Entry System:

The power and control conductor shall be single strand sealed with epoxy potting compound and then clamped in place with a rubber seal bushing to seal outer jacket against leakage and to provide for strain pull. A third sealing area shall be provided by a terminal board to separate the cable entry chamber from the motor chamber. Cords shall be able to withstand a pull of 300 pounds to meet F.M. requirements.

5) Lift-Out Rail Assembly (If Applicable)

DISCHARGE BASE ELBOW: A discharge base elbow designed to mount directly on the sump floor shall be supplied for each pump. It shall have a standard 125 lb. flange faced and drilled on the outlet side with a machined mating inlet connection. The design shall be such that the pump to discharge connection is made without the need for any nuts, bolts or gaskets. The base elbow shall also anchor and align the two 2" guide rails.

SEALING FLANGE WITH RAIL GUIDE: A sealing flange/rail guide bracket shall be mounted on each pump discharge. It shall have a machined mating flange that matches the base elbow discharge connection. Sealing of this discharge connection shall be accomplished by a

simple linear downward motion of the pump culminating with the entire weight of the pumping unit supported entirely by the base elbow.

UPPER GUIDE BRACKET: The upper guide bracket shall align and support the two guide rails at the top of the sump. It shall bolt directly to the hatch frame and incorporate an expandable rubber grommet for secure rail installation.

GUIDE RAILS: The dual rail guide design keeps the pump in proper alignment with the stationary discharge piping. These rails shall be 2" stainless steel pipe which bolt directly to the base elbow and to the access frame at the top of the wet well by an upper guide rail bracket.

LIFTING CHAIN: The submersible pump station shall be provided with a Stainless Steel Chain Grabber Lifting System. Each pump shall be equipped with a 2 ft. section of 5/16" 300 series stainless steel and a 3/8" nylon guide rope. A Chain Grabber link shall be included for use with the pump hoisting system. The Chain Grabber link shall be made of alloy steel and sized to fit the lifting chain. The lifting chain and the Chain Grabber shall be rated for a minimum working load limit of 500 lbs.

7) Pump Manufacturer Inspection

Pump manufacturer shall provide qualified personnel to observe field conditions, quality of workmanship, and start-up of equipment. Test, adjust and balance equipment as required, and make any appropriate recommendations.

8) Operations and Maintenance Manual

Submit two (2) bound copies of the Operations and Maintenance Manuals for the Pump Station Equipment.

310.3.00 Warranty

The pump unit or any part thereof shall be warranted against defects in material or workmanship within one year from date of installation and shall be replaced at no charge with a new or remanufactured part, F.O.B. factory or authorized warranty service station. The warranty shall not assume responsibility for removal or reinstallation, nor shall it assume responsibility of incidental damages resulting from the failure of the pump to perform. The warranty shall not apply to damage resulting from accident, alteration, design, misuse or abuse.

310.4.00 Measurement and Payment

Payment for each sewerage lift station will be at a lump sum price as listed in the bid schedule.