

Krebs Engineering, Inc.
2100 River Haven Drive
Suite 100
Birmingham, AL 35244
205-987-7411

ADDENDUM NO. 3

CONTRACT NO.: 22022
OWNER: GUIN WATER & SEWER BOARD
PROJECT: WATER TREATMENT PLANT IMPROVEMENTS PHASE 2 (1.5 MGD WTP)

BID DATE: June 6, 2023
TO: ALL PROSPECTIVE CONTRACTORS AND SUPPLIERS

The changes, modifications, and/or additions covered by and set forth in this Addendum No. 3 shall become part of and be incorporated in the Contract Documents for the above-referenced project:

CLARIFICATIONS TO THE BID DOCUMENTS:

CL3.1 The bid documents intend to indicate that generally, the SCADA Integrator shall be responsible for providing instruments that connect to the SCADA PLC, and the filter system supplier shall be responsible for providing instruments that connect to the filter control panel.

SPECIFICATIONS TO BE REVISED BY ADDENDUM:

AD3.1 Delete SECTION 44 25 80.15 MOTOR DRIVEN BYPASS PUMP in its entirety and replace it with the attached specification. Changes have been made to the specification footer and Article 2.2, A.

This Addendum No. 3 shall be attached to the front of your set of specifications and made a part of the Contract Documents. Receipt of this Addendum No. 3 shall be acknowledged on Page 4 of the Proposal Form.

Krebs Engineering, Inc.

By 

Jacob Arney, EI
Krebs Engineering, Inc.

THIS IS THE LAST PAGE

Attachments to Addendum No. 3 succeeding this page:

44 25 80.15 – MOTOR DRIVEN BYPASS PUMP – 7 Pages

A total of 9 pages or sheets of drawings (including this page) have been included in Addendum No. 3.

General Contractors are requested to return this page as an acknowledgment that you have received this Addendum by Quest CDN. This will NOT be mailed. A copy of this Addendum may be picked up at the office of the Engineer.

Return to Krebs Engineering:
Jacob Arney, EI
Jacob.arney@krebseng.com

Received By _____

Contractor _____

Date _____

SECTION 44 25 80.15 – MOTOR DRIVEN BYPASS PUMP

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes trailer mounted Motor Driven Bypass Pump:
- B. **The pump will be used during the shutdown of the Raw Water Pump Station and provided to the Owner once the Raw Water Pump Station is back in service. The Contractor shall be responsible for all fuel and maintenance of the pump during this time.**

1.3 GENERAL REQUIREMENTS

- A. Provide pump capable of handling raw unscreened wastewater. Design pumps to allow for removal and reinstallation without the need to enter the wet well and without removal of bolts, nuts or other fasteners.
- B. All castings for pumps and motor frames shall be free of pits, blisters, burrs, or other defects.
- C. Pumps shall be furnished with ¾" NPT drain taps on the volute.
- D. Review of the equipment data by the Engineer shall not relieve the Contractor or the manufacturer of responsibility for all detailed dimensions and correct fitting of all parts, or for the satisfactory operation and service of the equipment as specified.
- E. When mechanical seals are called for, the Contractor shall furnish the following packaged spare parts for each grouping of identical pumps:
 - 1. Two (2) sets of mechanical seals
 - 2. One (1) shaft sleeve
 - 3. One (1) shaft key
- F. Except on close-coupled pumps, pumps shall be connected to motors by flexible couplings of a type suitable for the service conditions.
- G. Final connection shall insure zero leakage between pump and discharge connection flange. Provide a discharge connection/ guide system so that no part of the pump bears directly on the floor of the wet well.
- H. All anti-friction bearings supporting direct driven shafting shall have B-10 life rating of not less than 50,000 hours
- I. All bearings supporting pinion shafting, worm shafting, or other gear shafting shall have

life of not less than 100,000 hours.

- J. All components requiring lubrication, except sealed bearings, shall be provided either with pressure grease connections of Alemite or buttonhead type, or with oil cups or oil reservoirs as required.

1.4 SUBMITTALS

- A. Product Data: Include performance curves, furnished specialties, and accessories for each type and size of pump indicated.
- B. Shop Drawings: Show layout and connections for pumps. Include setting drawings with templates, conduit locations, directions for installing foundation and anchor bolts, and other anchorages.
- C. Maintenance Data: For each type and size of pump specified to include any maintenance manuals specified in Division 1.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Retain shipping flange protective covers and protective coatings during storage.
- B. Protect bearings and couplings against damage.
- C. Comply with pump manufacturer's rigging instructions for handling.
- D. Each pump shall be performance tested at the manufacturer's plant prior to shipment.
 - 1. Testing will include checking the unit at its rated speed, head, capacity, efficiency and brake horsepower, and at such other conditions of head and capacity to properly establish the performance curve.
 - 2. Certified copies of test curves will be submitted to the Engineer for review and approval prior to the shipment of any equipment to the jobsite.
 - 3. The Standard of the Hydraulic Institute shall govern the procedures and calculations for all performance testing.

1.6 WARRANTY

- A. Warranty Period: One year from date of Substantial Completion.
 - 1. Warranty shall be for unlimited usage of the equipment for the specified rated capacity over the term of the warranty.

PART 2 - PRODUCTS

2.1 PUMP MANUFACTURERS

- A. Motor Driven Backup Pumps
 - 1. Global
 - 2. Godwyn

3. Pre-approved Equivalent

2.2 MOTOR DRIVEN PUMP

A. Operating Conditions

1. MAXIMUM OPERATING SPEED: 2200 RPM
2. MAXIMUM SOLIDS HANDLING SIZE: 3 INCH
3. IMPELLER DIAMETER: 8.5 INCH
4. SUCTION SIZE: 4 INCH
5. DISCHARGE SIZE: 4 INCH
6. MAXIMUM STATIC SUCTION LIFT: 28 FEET
7. MAXIMUM FLOW AT RUNOUT AT 2200 RPM: 1,250 GPM
8. MAXIMUM HEAD AT SHUTOFF AT 2200 RPM: 116 FEET
9. DUTY POINT: 25 FEET @ 694 GPM

B. General:

1. The pump shall be a high efficiency, non-clog, impeller type with replaceable stainless steel wear rings on both impeller and suction cover. The separate suction cover shall be removable without disturbing the pump casing such that wear rings, impeller, and mechanical seal may be serviced with the casing mounted on the skid.
2. The pump shall be fitted with a fully automatic, compressor driven venturi, air ejector priming system. The air ejector shall operate on the discharge side of the compressor, eliminating the possibility of water being drawn into the air source. The venturi will be protected from contamination by a screen in the venturi hat. A check valve shall be provided between the venturi and the venturi hat to maintain prime after engine shutdown and to allow isolation of the priming system from the pump suction as required.
3. The priming system shall not use a vacuum pump or diaphragm pump, nor require the use of a foot-valve, moving parts or float gear in any part of the pump suction line. A demonstration of the pump's ability to repeatedly cycle from pump/snore/re-priming/pump shall be required.
4. The pump shall not require pre-filling with water to achieve prime.
5. The pump shall be supplied with a non-return check valve on the discharge flange of the pump.
6. The flap shall be Nitrile Rubber and field replaceable. A ball type check valve is not acceptable.
7. The pump shall be equipped with an environmental reclamation box that separates the air and any liquid ejected from the venturi priming system, recycles the liquid back to the pump suction and ejects the air.

C. Casing:

1. The pump casing shall be cast iron and constructed so that the suction flow path is in axial alignment with the impeller eye. There shall be no turns, chambers or valves between the suction line and the impeller. The casing shall be fitted with hand-hole cleanout fitted with a fully contoured and gasketed cast iron, hand-hole cover.

D. Impeller:

1. The pump impeller shall be of the open or closed, two-vane, non-clog type of cast iron construction and capable of passing a 3 inch solid. The wear ring shall be a radial clearance type, made from cast iron, gasketed, and attached to the impeller with stainless steel cap screws.

E. Suction Cover:

1. The pump casing shall have a separate and removable suction cover for easy access to the pump interior. Suction cover shall be cast iron.

F. Shaft and Bearings:

1. Pump shaft and bearings shall be supported by a rigid cast iron bearing housing. The shaft shall be of adequate size to provide an L3/D4 ratio of no more than 7.8. Shaft and bearing shall be designed to withstand all imposed all loads such as to provide a minimum L10 Bearing Life of 100,000 hours. Shaft shall be grade 431 stainless steel. Bearings shall be grease lubricated anti-friction with back to back angular contact thrust bearings and a deep groove single row ball radial bearing. Both bearing covers shall be protected from ingress of contaminants by lip seals.

G. Seals:

1. Seals shall be cartridge style mechanical self-adjusting, non-clogging spring, with tungsten or silicon carbide beveled stationary face and silicon carbide rotary face. All metal parts shall be stainless steel and elastomers shall be nitrile rubber or fluorelastomer. The mechanical seal shall be lubricated by a glycol bath from a reservoir mounted on the pump. The reservoir shall be provided with a vented refill port and two bulls-eye sight glasses. Other than glycol level, no maintenance or adjustment shall be required between services.
2. The barrier fluid must be contained against the mechanical seal by means of a secondary mechanical seal, or lip seal which has a secondary lip and a protective v-ring seal to minimize contamination. The seals ride upon a shaft sleeve that is easily replaceable during seal servicing without removing the pump shaft, and which is hardened against wear and treated for corrosion resistance by a ferritic nitrocarburization process. Expected service life of the shaft sleeve exceeds that of traditional stainless steels.
3. There is an air gap between the barrier fluid seals and inboard bearing seal, which both provides an easy visual indicator of any seal leakage, and in combination with the v-ring seal protects the bearings from contamination during a catastrophic seal failure.

H. Suction and Discharge Flanges:

1. Shall be cast iron in accordance with ANSI (B16.1) Class 125.

I. Pump Gaskets:

1. The gland gasket shall be compressed fiber.

J. Pump O-rings:

1. The casing to stuffing box cover and casing to suction cover shall be sealed by O-Rings not, gaskets. These and all o-rings shall be nitrile.

K. Engine:

1. The diesel engine shall be a water-cooled Tier 4, V1505 rated at 24.8hp (continuous) at 2,300 RPM. Governor shall be mechanical type. Exhaust system shall include muffler and silencer of suitable size and noise reduction. The engine shall have a 12 volt electrical system and shall be complete with 180 amp hour rated battery and belt driven charging system. A continuous duty engine curve shall be supplied to the owner/engineer.
2. Provide a 120VAC-powered battery charger and 1.5kW-120V-1Phase block heater.

L. Control:

1. Engine control shall display oil pressure, engine temperature, speed, battery voltage and engine hours on a large, back-lit, graphical VFD display. The "Auto/Manual" switch shall allow simple operation and the four-button keypad shall provide control of engine starting and program settings. A dual float connector input shall be located on the bottom of the enclosure for automatic on/off controls via floats. The control shall allow engine speed to be adjustable between maximum and minimum design operating speeds. Safety shut down switches for low oil pressure and high water temperature shall be included. Controller shall allow for automatic exercising of the unit at regularly scheduled periods. The controller shall allow for automatic operation of the pump based on digital input devices such as pressure transducers, level transducers, flow meters, and/or float switches. The controller must be able to reactively maintain consistent pressure levels with a predetermined threshold. The unit shall provide alert features based on engine data and log past usage data from the engine such as engine RPM, load, coolant temperature, oil pressure, etc. Engine control shall be capable of adding GPS or a remote monitoring system. The remote monitoring system shall be able to store up to 6 weeks of engine data and alerts. The controller shall have the ability to supply remote engine operation features and viewable near-real time data via a website that is both viewable via PC and mobile browsers. This feature shall allow for remote starting, stopping, and engine speed control. The controller shall also include the following Form A or C dry contacts for SCADA system monitoring:
 - a. Pump On/Off status
 - b. High Wetwell Level Alarm (as determined by high level/start float switch)
 - c. Pump Minor (Warning) Alarm
 - d. Pump Major (Shutdown) Alarm
2. Two (2) Rotofloat Type S float switches shall be provided by the pump supplier (for mounting in the wetwell by the contractor) as dedicated float switches for on/off control of the backup pump system. The "ON" float switch shall be set at an elevation as directed by the civil engineer above the normal operating level(s) of the wetwell.

M. Mounting:

1. The pump and engine shall be connected through a SAE style mount, and

mounted on a structural steel skid fitted with a minimum 50 gallon capacity fuel tank. The chassis shall be fitted with lifting bale and fork pockets.

N. Trailer/Anchoring:

1. The pump shall be furnished on the manufacturer's trailer and be anchored to the trailer per the manufacturer's standard requirements.
2. The trailer shall be adequately sized for the required load range ratings such that it can be towed on the road at 50 mph. The trailer shall be wired with lights and receptacle for towing vehicle for over the road usage, and equipped with fenders, front and rear support stands, lifting bale, safety chains, side and rear reflectors per applicable DOT standards.

O. Painting:

1. The enclosure, pump, engine, and skid shall be shop primed and finish painted at the place of the manufacturer. Materials and thickness for priming and painting shall be in accordance with manufacturer's standards.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of pumps and equipment.

3.2 INSTALLATION AND OPERATION

- A. Comply with manufacturer's detailed written instructions for installing pump equipment.
- B. Installation and operation shall be in accordance with instructions and recommendations provided by the manufacturer.
- C. Install pumps and arrange to provide access for maintenance, including removal of motors, impellers, couplings, and accessories.
- D. Support piping so weight of piping is not supported by pumps.
- E. Check installation, alignment, and provide supervision of initial startup and operation.
- F. Verify that all units are in condition suitable for installation; are properly fitted, assembled and installed; are accurately leveled and aligned; and are ready for satisfactory operation.
- G. Set and check pump controls for automatic start, stop, and alarm operation as required for system application.
- H. Final Checks before Starting: Perform the following preventive maintenance operations:
 1. Lubricate bearings.

2. Disconnect couplings and check motors for proper direction of rotation.
3. Verify that each pump is free to rotate by hand. Do not operate pump if it is bound or drags, until cause of trouble is determined and corrected.
4. Verify that pump controls are correct for required application.

3.3 CLEANING AND PROTECTING

- A. Restore marred, abraded surfaces to their original condition or replace with new.
- B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure equipment is without damage or deterioration at the time of Substantial Completion.

3.4 START-UP ASSISTANCE AND TRAINING

- A. Startup Services: Engage a factory-authorized service representative to perform startup services and to train Owner's maintenance personnel as specified below:
 1. Factory authorized service representatives of each pump and/or pump manufacturer shall perform all necessary on-site assistance for installation supervision.
 2. Once the pumps have been installed correctly and are operating as intended, the service representatives shall perform eight (8) hours of on-site start-up assistance and operator training for each type of pump.
 3. Train Owner's maintenance personnel on procedures and schedules related to troubleshooting, servicing, and preventive maintenance.
 4. Schedule training with Owner with at least seven days' advance notice.

END OF SECTION 44 25 80.15