

DATE: June 20, 2014

BID #: WS 57-14

ADDENDUM NO. 1

TO THE CONTRACT DOCUMENTS:

Packaged Pump Station (Equipment Only Bid)

East County Repump Project
Okaloosa County Water and Sewer System
Okaloosa County, Florida

To All Document Holders:

The following changes, additions, and or deletions are hereby made a part of the Bidding Documents for the **East County Repump – Packaged Pump Station (Equipment Only Bid)** Project, Bid # WS 57-14 as fully and completely as if the same were fully set forth therein:

CONTRACT DOCUMENTS

GENERAL

00300 – Proposal

1) Bid Sheet

REPLACE -Section Page 12 & 13 of Section 0300 “BID SHEET” with the attached revised document.

TECHNICAL SPECIFICATIONS

16220 – Motors

1) Motor Requirements:

- a. **ADD** – the attached Section 16220 in its entirety to the contract technical specifications.

11601- Pump Equipment

1) Materials:

- a. **REPLACE** –11601.2.2.A (6) Pump Seals: with the following language:
“Seals –Mechanical with hard faces (Silicon Carbide) for wastewater use. (No seal water type seals will be acceptable).”

a. *Approved Seals*

- 1) *Chesterton, component type*
- 2) *John Crane Type I- Cycloseal*
- 3) *Burgmann- KSB*
- 4) *Chesterson split seal type 442 (Additive Alternate)”*

2) Fabrication:

- a. **REPLACE** –11601.2.5.F (5) Bearings, Bearing Support and Frame. with the following language: *“Provide axial thrust outboard bearings of deep groove single or triple row ball or type or angular contact double row ball or roller type suitable for thrust loads in two (2) planes.”*

3) Maintenance Materials:

- a. **REPLACE** –11601.2.7.A.1.(d) Extra Materials- Mechanical Seals: with the following language: “*Mechanical Seals: One (1) complete set per pump*”.

All Plan Holders shall acknowledge receipt and acceptance of Addendum No. 1 in the Proposal or by submitting the executed Addendum to Constantine Engineering prior to Proposal Submittal.

Constantine Engineering

//Signed//
Joey G. Crews

Receipt acknowledged and conditions agreed to this

_____ day of _____, 2014

BIDDER

By

END OF ADDENDUM NO. 1

BID SHEET

BID #: WS 57-14

BASE BID (Item 1) – EAST COUNTY REPUMP PACKAGED PUMP STATION

ADDITIVE ALTERNATE (Item 2) – Harden Steel Impeller, Volute & Wear plate (each pump)

ADDITIVE ALTERNATE (Item 3) – Chesterton 442 Split Mechanical Seal (each pump)

****Submit separate pricing for Item 1 (Base Bid), Item 2 (Additive Alt) and Item 3 (Additive Alt)**

ITEM	QTY		DESCRIPTION	UNIT PRICE	EXT. PRICE
1	1	LS	Three (3) 1800/1750 RPM,100 HP (min) motor and non-clog horizontal pumps, included with mounting base, coupling, site assembly and alignment.		
1	1	LS	5% Supply Bond in accordance with Section 00300 Article 19		
	1	LOT	Specific Specification Sections (01330E, 01332E, 1400,1650,11061, 16220) Drawings: All Submittals: (Include with this bid the following: Shop Drawings, Product Data, & Calculations (6 Copies w/Electronic PDF. Preliminary O&M Manuals, and Final O&M Manuals Warranty: Warranty shall be in accordance with the attached specifications Payment: List Freight and Manufacturer Services as a separate nontaxable item when submitting invoices	Cost associated with these requirements shall be included in the associated unit price shown for the specified equipment in Item 1	N/A
	1	Lot	Manufacturer Services as detailed in Specification Section 01640, and as required providing a fully operational and functioning system per the scope of this contract.		N/A
	1	Lot	Spare Parts and Tools: As specified in Equipment Sections 11061		N/A
			TOTAL BASE BID (ITEM 1)	\$	

2	1	LS.	ADDITIONAL COST: Total cost for Harden Metal Impeller, Volute And Wear Plate for all three (3) pumps	\$	
3	1	LS.	ADDITIONAL COST: Total additional cost to provide Chesterton 442-Mechanical Split Seals and Spare set for all three (3) pumps.	\$	

PUMP DELIVERY TIME: _____ MAXIMUM DAYS* FROM RECEIPT OF PURCHASE ORDER

*Max Days is defined as calendar days to deliver all equipment to the site as specified, including submittals, manufacturing and testing. Time will be from date of receipt of purchase agreement from OWNER. Allow a max 10 working days for initial submittal review and each resubmit required by ENGINEER / OWNER.

LUMP SUM BASE BID AMOUNT IS WRITTEN AS:

_____ Dollars and _____ Cents,
\$ _____,
To Be Fully Complete, Shipped and Delivered to the Project Site within _____ Calendar Days from Receipt of Official Purchase Order.

ANTI-COLLUSION STATEMENT: The below signed bidder has not divulged to, discussed or compared his bid with other bidders and has not colluded with any other bidder or parties to bid whatever. (Note: No premiums, rebates, or gratuities permitted either with, prior to, or after any delivery of materials. Any such violation will result in the cancellation and/or return of material (as applicable) and the removal from bid list(s).

Bidder's Company Name

Authorized Signature – Manual

Authorized Signature – Typed

Address

Title

Phone #

Fax #

Federal ID # or SS #

SECTION 16220

MOTORS

PART 1 - GENERAL

1.1 SUMMARY:

- A. Section Includes:
 - 1. Induction motors.
- B. Related Sections include but are not necessarily limited to:
 - 1. Division 13 - Special Construction.
 - 2. Division 16 - Electrical.
- C. When motors are furnished with driven equipment, the driven equipment supplier shall be responsible for assembling the motor and driven equipment as a complete unit, correctly aligned and coupled with the coupling or sheave specified on the driven equipment data sheet, and designing for vibration, special, or unbalanced forces resulting from equipment operation.

1.2 QUALITY ASSURANCE:

- A. Referenced Standards:
 - 1. Institute of Electrical and Electronic Engineers (IEEE):
 - a. 841, Severe Duty Totally Enclosed Fan-Cooled (TEFC) Squirrel Cage Induction Motors - Up To and Including 370 KW (500 HP).
 - 2. Institute of Electrical and Electronic Engineers/American National Standards Institute (IEEE/ANSI):
 - a. 43, Recommended Practice for Testing Resistance of Rotating Machinery.
 - 3. National Electrical Manufacturers Association (NEMA):
 - a. 250, Enclosures for Electrical Equipment (1000 Volt Maximum).
 - b. MG 1, Motors and Generators.
 - 4. National Fire Protection Association (NFPA):
 - a. 70, National Electrical Code (NEC).
 - 5. Underwriters Laboratories (UL):
 - a. 674, Standard for Safety Electric Motors and Generators for Use in Division 1 Hazardous Locations.
 - b. 1836, Outline of Investigation: Electric Motors and Generators for Use in Class I, Division 2 and Class II, Division 2 Hazardous (Classified) Locations.

1.3 DEFINITIONS:

- A. Inverter Duty Motor: An AC induction motor complying with all requirements of NEMA MG 1 Part 31 for definite-purpose inverter-fed motors.

B. Abbreviations:

1. DPGF - Drip proof Fully Guarded.
2. ODP - Open Drip proof.
3. TEFC - Totally Enclosed Fan Cooled.
4. TENV - Totally Enclosed Non-ventilated.
5. Motor Controllers:
 - a. FVNR - Full Voltage Non-Reversing.
 - b. VFD - Variable Frequency Drive.

1.4 SUBMITTALS:

A. Shop Drawings:

1. See Section 01340 for requirements for the mechanics and administration of the submittal process.
2. Product technical data:
 - a. Identify each motor by driven machine identification.
 - b. Motor manufacturer and model number.
 - c. Complete motor nameplate data.
 - d. Weight.
 - e. NEMA design type.
 - f. Enclosure type.
 - g. Frame size.
 - h. Winding insulation class and temperature rise.
 - i. Starts per hour.
 - j. Performance data:
 - i. Motor speed-torque curve superimposed over driven machine speed-torque curve during start-up acceleration and at rated terminal voltage and minimum permissible or specified terminal voltage for all motors equal to or over 300 HP.
 - ii. Time-current plots with acceleration verses current and thermal damage curves at the operating and ambient temperatures and at rated terminal voltage and minimum permissible or specified terminal voltage for all motors equal to or over 300 HP.
 - iii. Guaranteed minimum efficiencies at 100 percent, 75 percent and 50 percent of full load.
 - iv. Guaranteed minimum power factor at 100%, 75% and 50% of full load.
 - v. Locked rotor and full load current at rated terminal voltage and minimum permissible or specified terminal voltage.
 - vi. Starting, full load and breakdown torque at rated terminal voltage and minimum permissible or specified terminal voltage.
 - k. Bearing data and lubrication system.
3. Thermal protection system including recommended alarm and trip settings for winding and bearing Thermostats.
4. Fabrication and/or layout drawings:
 - a. Dimensioned outline Drawing.
 - b. Connection diagrams including accessories (strip heaters, thermal protection, etc.).

5. Certifications:
 - a. When utilized with a reduced voltage starter, certify that motor and driven equipment are compatible.
 - b. When utilized with a variable frequency controller, certify motor is inverter duty and the controller and motor are compatible.
 - i. Include minimum speed at which the motor may be operated for the driven machinery.
6. Test reports:
 - a. Motor test reports for all testing required in this Section.
- B. Operation and Maintenance Manuals:
 1. See Section 01340 for requirements for:
 - a. The mechanics and administration of the submittal process.
 - b. The content of Operation and Maintenance Manuals.
 2. Installation instructions.
 3. Operation and maintenance instructions.
 4. Recommended spare parts list.

1.5 DELIVERY, STORAGE, AND HANDLING:

- A. See Section 01600.
- B. Protect equipment during shipment, handling, and storage by suitable boxes, crates, or other complete enclosures.
 1. Protect equipment from exposure to elements and keep thoroughly dry.
- C. Protect painted surfaces against impact, abrasion, discoloration, and other damage.
 1. Repaint damaged painted surfaces to satisfaction of Engineer.
- D. Store all motors in a clean and dry indoor location until final installation.
- E. Where space heaters are provided in motors, provide temporary electrical power and operate heaters during storage and after motors are installed in permanent location until equipment is placed in service.
- F. For storage longer than one (1) month, see manufacturer's storage instructions.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

- A. Subject to compliance with the Contract Documents, the following Manufacturers are acceptable:
 1. Rockwell - Reliance.
 2. TECO-Westinghouse.
 3. U.S. Electrical Motors.

4. WEG.
- B. Submit request for substitution in accordance with specification guidelines.

2.2 EQUIPMENT:

- A. General Requirements:
 1. Standards: NEMA MG 1.
 2. Identify each motor by the driven machine identification.
 3. An embossed or engraved stainless steel nameplate, with the required NEC and NEMA data, to be permanently attached to the motor.
 4. Maximum motor loading shall not exceed motor nameplate horsepower rating, exclusive of service factor.
 5. All motors shall be sized to carry continuously all loads, which may be imposed through their full range of operation.
 6. Altitude: For applications above 3300 FT, motors to be specifically designed and certified for operation at the specified altitude.
 7. NEMA MG 1, Design B (unless otherwise required), constant speed squirrel-cage induction type having normal starting torque with low starting current.
 8. Suitable for the starting method indicated (e.g., full voltage, autotransformer, solid state reduced voltage, VFD, etc.).
 9. Where frequent starting occurs, design for frequent starting duty equivalent to duty service required by driven equipment.
 10. Lifting devices: Motors weighing 265 LBS or more shall have suitable lifting eyes for installation and removal.
 11. Grounding:
 - a. Lug suitable to terminate ground wire in terminal box, sized as indicated on the Drawings.
 - b. Frame ground pad on medium voltage induction motors.
 12. Stator windings: Copper.
 13. Rotor cage: Aluminum or copper.
 14. Motor leads shall be non-wicking with permanent identifiers.
 15. Totally enclosed motor to have one-way breather drains.
 16. Efficiency:
 - a. Meet NEMA MG 1 (NEMA Premium) efficiencies.
 - b. If motor type, horsepower or speed is not included in the NEMA requirements for NEMA Premium, provide manufacturers "premium energy efficient" design.
 17. Power factor:
 - a. Minimum of 80 percent lagging at full load, except on motors with speed slower than 900 RPM.
 - b. Power factor correction capacitors to be utilized when indicated on the Drawings.
 18. Service factor:

- a. 100 hp or less: 1.15.
- b. Greater than 100 hp: 1.0 unless noted otherwise.
- c. Inverter duty: 1.0.

19. Standards: NEMA MG 1, UL 674, UL 1836.
20. Frame and end brackets shall be cast iron, all hardware shall be zinc plated or stainless steel with corrosion resistant mill and 3 mil chemical finish painting system.

2.3 FRACTIONAL INDUCTION MOTORS:

- A. Electrical Ratings:
 1. Appropriate for the voltage system indicated, single phase, 60 Hz.
 2. Dual voltage rated motors (e.g., 115/230 V) are acceptable, provided all leads are brought out to the terminal box and permanently marked.
- B. Enclosure: TENV or TEFC, rolled steel enclosure permitted.
- C. Bearings: Lubricated-for-Life ball bearings
- D. Insulation: Class F insulation with temperature rise not to exceed the insulation class.
- E. Thermal Protection: Integral manual or automatic reset thermal protector.

2.4 INDUCTION MOTORS, 600 VOLT AND LESS:

- A. Horizontal Shaft:
 1. Electrical rating:
 - a. Appropriate for the voltage system indicated, 3 PH, 60 Hz.
 - b. Dual voltage rated motors (e.g., 230/460 V) are acceptable, provided all leads are brought out to the terminal box and permanently marked.
 2. Enclosure:
 - a. Cast iron (exception: fan covers can be steel).
 - b. Type: DPF, TEFC, WP-I or WP-II as indicated in the schedule.
 3. Terminal box:
 - a. Gasketed.
 - b. Diagonally split.
 - c. Field adjustable in 90-degree increments.
 - d. Oversized to accept the required conductors and conduits.
 - e. Located on "F1" side unless specifically indicated to be on the "F2" side.
 - f. Separate terminal box with terminal blocks for winding thermal protection devices.
 - g. Condulets with terminal blocks at bearing thermal protection devices

4. Bearings:
 - a. 5 HP and less: Lubricated-for-Life ball bearings.
 - b. Greater than 5 HP:
 - i. Relubricatable.
 - ii. Antifriction.
 - iii. Minimum rated ABMA L-10 life of 10 years or 100,000 hours.
5. Insulation:
 - a. Class F insulation with Class B temperature rise.
 - b. Dipped and baked with non-hydroscopic varnish or epoxy.
6. Accessories: See Accessories article in PART 2 and Schedules article in PART 3.
7. Modifications:
 - a. Inverter duty:
 - i. At a minimum, applied to motors connected to a VFD.
 - ii. Windings insulated for 1600 peak volts and voltage rise times of 0.1 microseconds.
 - iii. Nameplate identification of meeting NEMA MG 1 Part 31 requirements.
 - iv. Have the following minimum turndown ratio without the use of a blower to provide continuous supply of cooling air over the motor.
 - a) Variable torque: 10:1.
 - b) Constant torque: 6:1.
 - b. For motors 250 HP and larger, both bearings shall be of the insulated type.
 - c. Severe duty:
 - i. Standard: IEEE 841.
 - ii. All cast iron enclosure.
 - iii. Terminal box threaded and gasketed.
 - iv. Internal and external epoxy base paint system.
 - v. Drain and breather.

2.5 ACCESSORIES:

A. Thermal Protection:

1. Thermostats:

- a. Two (2) winding thermostats per phase for alarm and shutdown.
- b. Snap action, bi-metallic, temperature-actuated switch type.
- c. Normally closed, wired in series.
- d. Automatic reset.
- e. Switch point shall be pre-calibrated by the manufacturer.

B. Space Heaters:

1. Silicone rubber strip type, 120 V rated.
2. Provided on:
 - a. All motors 10 HP and larger mounted outdoors.
 - b. Indoor motors in humid environments as indicated.

2.6 SOURCE QUALITY CONTROL:

- A. Test motors in accordance with NEMA, IEEE and manufacturer procedures.
 - 1. The test shall include but not necessarily be limited to the following:
 - a. Routine test:
 - i. No-load current and speed at rated voltage and frequency.
 - ii. Locked rotor current.
 - iii. Winding resistance.
 - iv. Vibration check.
 - v. High potential.
 - b. Complete test (in addition to the routine tests):
 - i. Rated load temperature rise.
 - ii. Winding resistance.
 - iii. Slip test, measured in percent slip.
 - iv. Locked rotor torque.
 - v. Breakdown torque.
 - vi. Efficiencies tabulated at 100, 75, and 50 percent of full load.
 - vii. Power factor tabulated at 100, 75, and 50 percent of full load.
- B. Motors to be tested:
 - 1. Each motor shall receive an unwitnessed short commercial test per NEMA MG-1, Part 12.
 - 2. All motors, at a minimum, to receive a routine test.
- C. The Owner (or designee) reserves the right to select and have tested any motor included within the project.
 - 1. If motor passes testing requirements, the Owner shall be responsible for any shipping and testing costs incurred.
 - 2. Costs shall be determined by current freight rates and manufacturer's published rates at the time of the test.
 - 3. If motor fails test, Supplier shall be responsible for all costs incurred.
 - 4. If two successive motors fail the test, the Owner (or designee) has the right to reject any or all motors from that manufacturer.
 - 5. The Owner (or designee) also reserves the right to witness any routine or complete tests at the Owner's expense.
 - 6. Notify the Owner (or designee) a minimum of 14 days in advance of the testing.

PART 3 - EXECUTION

3.1 INSTALLATION:

- A. Install products in accordance with manufacturer's instructions.
- B. Ground all motors in accordance with Section 16060 - Grounding.

3.2 SCHEDULES:

A. Motors:

Starter	VFD
Horsepower (Min.)	100
RPM	1800
Nominal System Voltage	480
Design Terminal Voltage at Starting	460
Shaft	Horiz.
Enclosure	TEFC
Duty	Inverter
Terminal Box Location	F2
Thermal Protection	Thermostat
Space Heater	Yes
Test	Routine

3.3 FIELD QUALITY CONTROL:

- A. Check motor installation for adequate mounting method, shaft alignment, adjustment, cleanliness, and lubrication.
- B. Inspect each motor installation for any deviation from rated voltage, phase or frequency; or improper installation.
- C. Visually check for proper phase and ground connections.
 - 1. Verify that multi-voltage motors are connected for proper voltage.
- D. Check thermal protection devices and space heaters for functional operation.
- E. Test insulation resistance of all new motors in accordance with IEEE/ANSI 43 and NEMA MG-1.
 - 1. Test voltage per manufacturer.
 - 2. Test values shall be temperature corrected if not measured when motor is at ambient conditions.
 - 3. Report insulation resistance and dielectric absorption ratio for medium sized motors or polarization index for large motors.
- F. Test for proper rotation prior to connection to the driven equipment.
- G. Vibration Test:
 - 1. Program the VFD to prevent the VFD from running the motor at a speed associated with the critical frequency.
 - 2. For pump applications, the critical frequency test shall be done in both the parallel and perpendicular direction of the discharge pipe.

END OF SECTION