

## **APPENDIX A - TECHNICAL SPECIFICATIONS**

### **PONY PUMPS FOR JEA LIFT STATIONS**

#### **1. SCOPE OF WORK:**

The Contractor shall furnish equipment, install, and test a complete, self-contained, automatic standby pony pump system as specified herein and according to established JEA Standards (attached). The self-contained emergency system shall consist of a motor and pump unit, which shall start and stop automatically utilizing float switches in the wet well. Contractor shall furnish fuel tank, sound attenuated aluminum pony pump set enclosure, and all accessories necessary for a complete and operable installation. All materials shall be new unless specifically called for otherwise. Diesel engine driven pony pump shall be of the latest commercial type and design with all necessary pipping, equipment, communications and controls and shall be in accordance with all applicable sections of JEA's Water and Wastewater Standards. All Standards are available on jea.com.

- 1.1 JEA intends to award up to 5 different contracts.
- 1.2 The lift station locations have been broken down into five (5) different groups, listed as Group A through Group E.
- 1.3 There are four (4) groups of five (5) and one (1) group of four (4).
- 1.4 The Contractor may place bids on one group or all five (5) groups.
- 1.5 The groups are ranked based on smaller pump engine sizes and least complexity of design. The least being Group A and the most being Group E. The complexity of design can differ based on site lay out, amount of concrete cutting, distance of pipe lengths, the need for the station to be shut down, the need for demarcation boxes, wetwell coring, backflow prevention relocation and/or fence relocations. Please see attached designs to determine the exact level of complexity.

#### **a. Group A: (Least Complex)**

LS-001276	10410 LAWSON RD	East Grid
LS-001799	4508 PORTSMOUTH AV	North Grid
LS-002030	7263 SECRET WOOD TL	East Grid
LS-001133	7535 INTERNATIONAL VILLAGE DR	East Grid
LS-001267	2421 LANSDOWNE DR	East Grid

#### **b. Group B:**

LS-001872	3989 RICHMOND PARK E	East Grid
LS-001390	12931 MANDARIN RD	South Grid
LS-001609	1648 NOTTINGHAM KNOLL DR	East Grid
LS-001201	1140 KNOLL DR W	West Grid
LS-001927	2269 ROYAL FERN LN S	South Grid

#### **c. Group C:**

LS-000367	178 BEDSTONE DR	South Grid
LS-000110	8825 ARBOR BREEZE LN	West Grid
LS-002187	14463 STACEY RD	East Grid
LS-004032	12276 ROUEN COVE DR	North Grid
LS-000448	6817 BOWDEN RD	East Grid

#### **d. Group D:**

LS-000469	5565 BRISTOL BAY LN	West Grid
LS-001619	103 OCEAN GRAND BV	East Grid
LS-002022	2620 SCOTT MILL DR S	South Grid
LS-002032	2337 SEGOVIA AV	South Grid

### **PONY PUMPS FOR LIFT STATIONS**

LS-001383	3482 MAJESTIC OAKS DR	East Grid
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e. Group E: (Most Complex)

LS-000647	1397 CREEK POINT BV	North Grid
LS-001631	9391 OLD KINGS RD S	South Grid
LS-000088	907 ALIZON ST	South Grid
LS-002197	900 STARRATT RD	North Grid

## 2. SHOP DRAWING SUBMITTALS AND ADDITIONAL SUBMITTALS:

The Contractor shall be required to submit a complete shop drawing to the project administrator as soon as possible for approval prior to start of construction. Pump, motor, and piping calculations shall be submitted with the shop drawings and a pump curve showing the design and run out points

- One paper set of shop drawings with an electronic copy, shall be submitted to the Project Administrator for approval.
- Shop drawings of the pony pump set, complete power and control wiring diagrams, foundation requirements, auxiliary equipment required including tanks, switches, controls, weatherproof enclosure, wiring, piping, fittings, valves and accessories shall be included.
- Manufacturer's product data describing unit, auxiliary equipment required, including switches, engine, pump and motor shall be included.

**Pump selection will be made by the manufacturer utilizing the provided design point and run out condition information. Manufacturer should select the pump that has a curve which most efficiently meets the design and run out conditions provided.**

- JEA shall review and return all shop drawings within two (2) weeks of receipt.

## 3. SAFETY

- 3.1. All Contractor personnel who perform work on JEA property must be JEA safety certified and adhere to JEA Safety and Training regulations. The Contractor shall adhere to current JEA Safety and Training regulations as referenced in the contract documents.
- 3.2. The Contractor shall take all precautions to protect the safety of its employees and others. Work safety requirements shall comply with JEA Company Safe Work Practices Manual available on-line at:  
[https://www.jea.com/About/Procurement/Become\\_a\\_Vendor/Contractor\\_Safety/Qualification\\_Requirements/](https://www.jea.com/About/Procurement/Become_a_Vendor/Contractor_Safety/Qualification_Requirements/)
- 3.3. The Contractor shall familiarize every member of the crew with all fire and safety regulations recommended by OSHA, and other industry or local governmental groups.
- 3.4. The Contractor shall be responsible for ensuring that all personnel have received the appropriate training. Supervisors may also be required to have additional training.
- 3.5. The Contractor shall provide, and personnel must wear, proper Personal Protective Equipment (PPE) as required by OSHA and JEA. PPE minimums include safety footwear, plastic hard hat (no metal), and safety glasses. Hearing protection is required while operating machinery or equipment (including saws) or other loud equipment. Footwear must have steel toe caps.
- 3.6. The Contractor shall exercise extreme care when working around energized lines or equipment to prevent accidents and interrupting service. If any such incident should result, the JEA Contract Administrator shall be immediately notified of the location of such incident.
- 3.7. The Contractor shall be responsible for all damages to JEA property and personal injury caused by non-compliance with Safety and training requirements.

## 4. CONTRACTOR PERSONNEL

- 4.1. All services rendered shall be by uniformed employees (company identified shirts and hard hats) of the Contractor. Shirts with offensive logos or messages, ripped jeans, shorts, tennis shoes, and sleeveless shirts are not acceptable.

- 4.2. Parking is the responsibility of the Contractor. Parking on JEA property may be approved at the sole discretion of the JEA Contract Administrator.
- 4.3. Any worker employed by the Contractor, who exhibits inadequate experience and knowledge or is incapable in his/her field, shall be removed from the work site at the discretion of the JEA Contract Administrator.
5. **ADMINISTRATIVE COST AND PROFIT**
  - 5.1. The administrative cost, profit and other indirect Contractor costs shall not be permitted as separate billable costs. These costs should be included in the Bid Price.
  - 5.2. JEA shall pay the Contractor for each install per the Unit Price. Unit prices stated in the Bid Workbook shall include all labor expenses including, but not limited to, small tools and consumables needed to perform the install and testing, needed, travel, meals, per diem, salaries, benefits, overheads, etc. Travel costs and travel time shall not be paid by JEA.
6. **INVOICING**
  - 6.1. Company's invoice shall include the following: Contractor's company name and address, JEA's Purchase Order and work order numbers, the date and location of service provided, total amount payable with a breakdown showing cost per Unit.
  - 6.2. No invoice shall be paid without the required information as stated in Section 6.1 above.
  - 6.3. Invoiced pricing must match the pricing as stated on the Contractor's Bid Workbook.
7. **SITE CONDITIONS**
  - 7.1. The Contractor shall prevent access by the public to materials, tools, and equipment during the course of repair and maintenance.
  - 7.2. All doors, lids, and gates shall be locked and secured at all times when unattended.
  - 7.3. It is the policy of JEA to provide healthy, tobacco-free facilities for all employees and visitors. This policy prohibits the smoking of any tobacco product and the use of oral tobacco products, as well as e-cigarettes and it applies to employees, contractors and visitors. Company employees shall not use tobacco products while on JEA property or in the course of performing work on behalf of JEA.
8. **DISPOSAL OF WASTE GENERATED DUE TO CONTRACTOR WORK**
  - 8.1. The Contractor must dispose of all waste generated as a result of this Contract at an officially permitted location.
  - 8.2. Any fees and/or charges associated with this disposal should be included in the Contractor's Bid Price. JEA shall not pay additional charges/fees for waste disposal.
  - 8.3. The Contractor shall conform to environmental regulations of public agencies, including local jurisdiction.
  - 8.4. The Contractor shall be accountable for timely clean-up and remediation associated with any containment spills, accidental or otherwise, including, but not limited to, chemicals, diesel fuel, gasoline, lubricants, cleaning fluids, or toxic chemicals.
9. **PERMITS**

The Contractor shall obtain all permits required by local agencies and pay all fees which may be required for the performance of the work and removal/disposal of hazardous materials. The Contractor shall provide copies of all local, state and Federal permits required for the work described in this contract to the JEA Contract Administrator.
10. **SPECIAL WEATHER EVENT**

In anticipation of a weather event where damage to JEA facilities could occur, the Contractor shall take steps to ensure that JEA shall be a priority for securing all equipment to minimize damage to equipment or existing facilities.
11. **TECHNICAL SPECIFICATIONS AND JEA STANDARDS.**

Diesel Engines shall comply with JEA Water and Wastewater Standards as listed on JEA.com

The following items shall be included in the solicitation in addition to, or in clarification of, the JEA Water and Wastewater Standards

2. A site preconstruction conference will be required for each location. The preconstruction conference shall be coordinated with JEA's construction inspection lead for this project, Mr. Charles Crosby (904-665-8352 or [croscf2@jea.com](mailto:croscf2@jea.com)).
3. When an existing plug valve on the pump out assembly is closed to allow connection of the discharge piping without the need for bypass pumping, the valve must be re-opened after piping completion to allow the pony pump to operate.
4. The electrical conduits shall be buried, in order to prevent potential tripping hazards. However, where digging would be difficult, or when not in direct walking area, conduits can run above ground. Conduits that are placed on top of concrete shall be fastened to the concrete.
5. Expansion joints are required at the pump flange tie-ins.
6. The engine manufacturer shall specify the engine starting voltage. For 12-volt systems, a DC inverter will be provided by JEA, within the JEA SCADA Panel (also labeled RTU on the drawings), which will provide a 24V feed to the RTU. The JEA SCADA Panel shall be powered, through the designated conduit, by the pony pump battery. The battery(s) shall be capable of providing 6 Amp 12VDC or 3 Amp 24VDC in addition to the engine cranking or operating requirements.
7. A distributed I/O panel shall be installed adjacent to the pony pump. JEA will provide the panel to the Contractor prior to July 1<sup>st</sup>. The Contractor shall include the cost to mount the panel and wire the panel per the schematic that will be included at the time the panel is delivered. The panel cost shall not be included in the Contractor's bid price. A 24VDC power supply shall be provided, through the designated conduit, from the JEA SCADA Panel (also labeled RTU on the drawings) to the distributed I/O panel.
8. All drain ports from the pump shall be piped through a single pipe into the wetwell. The pipe shall be sized by the pump manufacturer and shall be no less than one inch (1") Schedule 40 PVC. Where installed in non-concrete areas, the pipe shall be buried and cored into the side of the wetwell. Where an existing concrete slab prevents burying the drain pipe, the pipe shall be laid on, and secured to, the concrete slab utilizing stainless steel hardware. The route of the pipe shall be under and following the suction piping to avoid creating a tripping hazard and shall enter the top slab of the wetwell. When a core is required for the suction pipe, core a large enough hole to accommodate the drain as well. Where a suction pipe already exists, core a new hole into the top slab as close as possible to the existing suction pipe and repair the hole as indicated on the design drawings.
9. Start and stop float switches shall be in accordance with JEA Water and Wastewater Standards Section 433, Submersible Wastewater Pump Stations

The following sections of JEA Water and Wastewater Standards, Section 470, Emergency Pump Engines, shall be amended as follows (revisions in red):

- A. II.5. Engine shall be provided with suitable safety controls to automatically **provide warnings and** stop the unit when low oil pressure, **low coolant level**, water temperature or engine speed exceeds safe limits. Pilot lights shall be provided to visually indicate **faults and warnings**. Pilot lights **and controls** shall operate off battery circuit and shall be on pump-engine control panel. Provide contacts for remote engine failure annunciation **and warnings**. The unit will also have a display that can read the last thirty-two (32) fault warning events with time stamps that also indicates the date.
- B. II.15.5 Battery charger shall perform diagnostics on the battery. It shall provide Battery Charger Fail, Low Battery Voltage and Low Cranking Voltage
- C. II.15.5. The service powered battery charger shall **provide the following features at a minimum. float-charge the battery pack and shall be solid state, full wave bridge rectified type, using silicon controlled rectifiers for power control. The battery charger shall be suitable for the required voltage, and current, battery pack type, shall have a de output circuit breaker, floating voltage equalization, equalizing timer, a ground detection system, a voltage relay to activate low battery voltage alarms at the engine generator control panel, and battery charger failure which shall alarm at the engine generator control panel.**

- i. Charger shall be 120v single phase.
  - ii. Intelligent Battery Charger with microprocessor based technology to provide accurate charging and monitoring of various battery types.
  - iii. AC input under/over voltage to protect the charger and provide alarm in the event of an AC input failure.
  - iv. Intelligent three & four stage charging profiles. Provides safe and complete charging and charge maintenance of various battery types.
  - v. Adjustable current limit. Output current can be adjusted to suit alternative battery sizes and prevent overcharging on custom curves.
  - vi. Manual & automatic boost. Provides a faster charging cycle and automatically maintains a full charge.
  - vii. Low output ripple/excellent line regulation. Safe charging of both sealed and vented battery types.
  - viii. Customizable charging curves. Provides the flexibility to charge battery types not available in the standard curve library.
  - ix. Auto self-test function. The battery charger self diagnosis at regular intervals, providing advance warning of any internal fault. Provides a warning if a battery Is not connected or has been disconnected. Provides warning in the event that the battery voltage is low and may not be charging.
  - x. Output short circuit and inversion polarity with auto recovery. Protects the charger in the event of a short circuit or crossed polarity with automatic charger on correction of the fault.
  - xi. Auto power de-rating at high ambient temperatures. Prevents damage to the battery and charger caused by overcharging in warm climates. Remote display for monitoring of the battery charging and charger status from a remote location.
- D. IV.3.3.5. The controller shall ~~be microprocessor based. have only one circuit board with eight built in relays. Three (3) of the~~ It shall have onboard relays that are ~~shall be~~ programmable to output desired parameter on display and to be used as dry-contacts for communication with JEA SCADA system, all via the keypad without changing relays, chips, printed circuits, or any hardware or software.
- E. IV.3.3.6. Standard components shall consist of (24) digital inputs, (7) analog inputs, (1) magnetic pick-up input, (8) 20-amp form "C" relays, ~~(1) RS232 port~~, (1) RS485 port, ~~(1) RS232/RS485 port~~, (1) J1939 port, and (1) Full graphic LCD display with backlight.
- F. IV.3.3.7. The industrially-hardened Controller shall ~~be conformal coated to~~ withstand 10ppm H2S, Vibration of 3 g, 3 axis, frequency swept 10-1000 Hz, in an operating temperature Range of 4 to 176F (-20 to 80C) and an operating humidity range of 0-95% Non-Condensing.
- G. IV.3.3.8. Controller shall be capable be capable of communicating all status and control via ONE of the following protocols Modbus, Profibus or Profinet. ~~No translators are to be allowed, protocols must be a native to the controller.~~
- H. VII.4.2.1. The steel tank shall be wrapped with a minimum of ¼ inch thick Styrofoam (foam) insulation and an impervious barrier of 30 MIL high density polyethylene membrane (poly). The 30 MIL poly shall provide containment for a fuel leak through the steel tank. A leak detector pipe terminating in the secondary containment shall provide positive-proof that the tank is not leaking. ~~Contractor shall be responsible for wiring the Fuel Level to the distributed I/O module for JEA SCADA.~~
- I. VII.4.5. Overfill Protection - The tank shall be provided with the following methods to protect against overfill: (a) direct reading level gauge at the tank which is visible from fill pipe location, Greenleaf EFG 8000-I solar gauge with AC back up mounted on exterior of enclosure and 4-20mA.1 data converter mounted in engine control panel; (b) valve located within fill pipe access to close automatically at a specified fill level. ~~Fuel level will be calibrated to tank size for proper 4-20ma scalling. Contractor shall be responsible for wiring the Fuel Level to the distributed I/O module for JEA SCADA.~~

The following items are to be included as additive bid items and may or may not be included in the awarded contract:

1. An additive bid item A is included in the bid worksheet for additional grounding rods if required.

A grounding detail sheet is provided. Bid prices shall include a single 60 foot grounding rod. The new grounding rod shall be tied into the pump station ground. If that grounding system is not accessible, the Contractor shall tie the JEA SCADA Panel (also labeled RTU on the drawings) into the newly installed ground. Ground shall range between 5 and 10 ohms. Any required additional grounding rods are to be included in the additive bid price.

2. An **additive bid item B** is included in the bid worksheet. This item is to include cost alternatives for the following proposed revision to Section 470, paragraph I.3 (revisions in red):

Pump Engine set shall be capable of producing rated output for continuous duty at rated engine pump RPM when equipped with necessary operating accessories such as air cleaners, lubricating oil pump, fuel transfer pump, radiator fan, and jacket water pump. Unit shall be sized to pump \_\_\_\_\_. Responsibility for sizing pump engine shall lie with the pump engine supplier and Engineer. **Due to the corrosive nature of wastewater all equipment, electronics, fasteners or anything else within the pony pump system shall be rated for continuous 10 ppm of Hydrogen Sulfide. All control boards shall be conformal coated for corrosion resistance.** The cost for this line item includes materials and installation for this listed modification.

3. An **additive bid item C** is included in the bid worksheet. This item is to include cost alternatives for the following proposed revision to Section 470, paragraph IV.2 (revisions in red):

Pump-engine controls will include an auto start feature controlled by one or more float balls or submersible transducer. It shall be a mechanical non-mercury type float switch housed in a hermetically sealed polypropylene enclosure designed to extend into a wet well. The transducers polyurethane jacket shielded cable shall be of suitable length for proper installation into a wet well without splicing. The level control system shall continuously monitor the wet well level. Upon operator selection of automatic operation, the level controller shall start the pump- engine unit when the liquid level in the wet well rises to the pump start level. When the liquid is lowered to the pump stop level the level controller shall stop this pump – engine. **The pump shall have the ability to limit the maximum speed as a setting on the control panel to prevent excessive pressures. The pump shall be able to have a programmable ramp speed that is adjustable through the controller. The pump will also monitor the pressure on the discharge and, if it exceeds an adjustable setpoint, the engine will automatically throttle back until the pressure goes below the setpoint.** The Contractor may utilize one of the two inch (2”) welded steel nipples on the discharge piping to install the required pressure monitoring equipment to accomplish the revision. The cost for this line item includes materials and installation for this listed modification.