

**PROJECT MANUAL
WASTEWATER SYSTEM IMPROVEMENTS
CONTRACT II: REPLACEMENT GRINDER PUMPS**

**EL DORADO RURAL PUBLIC WATER
AUTHORITY
PROJECT NO. 23-203**

**January 2024
Rev. March 2025**

**Prepared By: Gaunt Engineers, Inc.
3256 West Hillsboro ~ El Dorado, AR 71730
870-862-4231 Voice * 870-862-9453 Fax
bill@gauntengineers.net Email
www.gauntengineers.net Website**

TABLE OF CONTENTS

<u>Doc. No.</u>	<u>Document Title</u>	<u>No. of Pages</u>
A	Advertisement for Bids	1
D	Bid (Contract II).....	2

TECHNICAL SPECIFICATIONS

SECTION 11 – EQUIPMENT

11304A	Package Grinder Pump Equipment Purchase	7
--------	---	---

Document A
ADVERTISEMENT FOR BIDS

El Dorado Rural Public Water Authority
3256 W. Hillsboro
El Dorado, AR 71730

Separate sealed Bids for furnishing replacement pumps for **Wastewater System Improvements: Contract II (Replacement Grinder Pumps)** will be received by **the El Dorado Rural Public Water Authority** at **3256 W. Hillsboro, El Dorado, AR 71730** until _____, on _____ 20_____ and then at said office publicly opened and read aloud.

The Contract Documents may be examined at the following locations:

Gaunt Engineers, Inc., 3256 W. Hillsboro, El Dorado, AR 71730
www.gauntengineers.net

Copies of the Contract Documents may be obtained at the office of **Gaunt Engineers, Inc.** located at **3256 W. Hillsboro, El Dorado, AR 71730** upon **nonrefundable** payment of **\$10.00** for each set.

Any contract or contracts awarded under this invitation for bids will be subject to the requirements of the Arkansas Revolving Loan Fund (RLF) Programs as described in the contract documents.

All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin. Bidders on this work will be required to comply with the President's Executive Order 11246, as amended. The requirements for Bidders and Contractors under this order are explained in the specifications.

Each Bidder must comply with the requirements, terms, and conditions of the Arkansas Natural Resources Commission, the Disadvantaged, Minority and Women Business Enterprise (DBE/MBE/WBE) requirements, the Consolidated Appropriations Act of 2014 (Public Law 113-76) including the "American Iron and Steel (AIS)" requirement, Labor Standards, Equal Employment Opportunity, and the "Prohibition on certain telecommunication and video surveillance services or equipment provisions" during the performance of this contract. The Bidder commits itself to the requirements for the participation contained herein and all other requirements, terms, and conditions of these bid conditions by submitting a properly signed Bid. Each requirement listed above for the RLF programs are in the Supplemental Conditions in the Contract Documents.

Document D
BID

Proposal of _____ (hereinafter called "Bidder"), organized and existing under the laws of the State of _____ doing business as _____*. To the **El Dorado Rural Public Water Authority** (hereinafter called "Owner").

In compliance with your Advertisement for Bids, Bidder hereby proposes to perform all Work for the construction of **the Wastewater System Improvements: Contract II—Replacement Grinder Pumps** in strict accordance with the Contract Documents, within the time set forth therein, and at the prices stated below.

The Contractor's Act of Assurance Form must be included in the bid proposal. The DBE/MBE/WBE Compliance Evaluation Forms must be supplied after the Low Bidder is confirmed.

By submission of this Bid, each Bidder certifies, and in the case of a joint Bid each party thereto certifies as to its own organization, that this Bid has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this Bid with any other Bidder or with any competitor.

Bidder hereby agrees to commence Work under this contract on or before a date to be specified in the Notice to Proceed and to fully complete the Project within **120** consecutive calendar days thereafter. Bidder further agrees to pay as liquidated damages, the sum of **\$500.00** for each consecutive calendar day thereafter as provided in the Supplemental Conditions.

Bidder acknowledges receipt of the following Addendum:

* Insert "a corporation", "a partnership", or "an individual" as applicable.

BID SCHEDULE

BIDDER agrees to perform all the work described in the CONTRACT DOCUMENTS for the following unit prices or lump sums:

NOTE: Bids shall include sales tax and all other applicable taxes & fees.

Item No.	Item Description	Est Qty	Unit	Unit Price	Total Amount
1	Replacement Pumps for Package Grinder Pump Station	120	EA		
				Dollars (\$_____)	\$_____
1	Replacement Control Panels for Package Grinder Pump Station	120	EA		
				Dollars (\$_____)	\$_____
Total Bid Amount					\$_____

Respectfully submitted:

_____	_____
Signature	Address
_____	_____
Title	Date
License Number (if applicable)	_____

SEAL - (if BID is by a Corporation)

Section 11304A
PACKAGE GRINDER PUMP EQUIPMENT PURCHASE

PART 1 - GENERAL

1.01 Unit Price

- A. The supplier will be paid for the furnishing and delivering of the package grinder pump, which shall be paid for at the unit price listed in the bid, which cost shall be inclusive of taxes and delivery charge. The price for the pump and the control panel shall be listed separately.

1.02 Pre-Bid Submittals

- A. Manufacturers other than the manufacturer specified must have their submittals in the Engineer's office ten (10) days prior to the bid opening.
- B. Submittals must include:
 - 1. A complete description of any changes that will be necessary to the system design
 - 2. A system hydraulic analysis based on the proposed pump (including pipe sizes, flows, velocities, retention times and number and location of recommended valves and cleanouts, if any)
 - 3. A list of exceptions to this specification
 - 4. Demonstration of compliance to Section 1.05 Experience Clause of this specification.
 - 5. Supplier must complete a Manufacturer Disclosure Statement indicating all aspects of the proposed alternate that do not conform to specification.
 - 6. If the equipment differs materially or differs from the dimensions given on the Drawings, the contractor shall submit complete drawings showing elevations, dimensions, or any necessary changes to the Contract Documents for the proposed equipment and its installation.
 - 7. If the Engineer's approval is obtained for Alternate Equipment, the contractor must make any needed changes in the structures, system design, piping or electrical systems necessary to accommodate the proposed equipment at the expense of the contractor.
- B. The Engineer will review these submittals and will furnish a letter to all bidders listing any additional manufacturers which have been approved at least 5 days prior to the bid opening.

1.03 Experience Clause:

- A. The equipment furnished hereunder shall be the product of a company experienced in the design and manufacture of grinder pumps specifically designed for use in low pressure systems.
- B. All manufacturers proposing equipment for this project shall have at least 10 years of experience in the design and manufacture of units of identical size(s) and performance to the specified units.
- C. All manufacturers proposing equipment for this project must also have not less than 100 successful installations of low pressure sewer systems utilizing grinder pumps of like type to the grinder pumps specified herein. An installation is defined as a minimum of 25 pumps discharging into a common force main which forms a low pressure sewer system.
- D. The contractor (supplier) proposing alternate equipment shall also submit, as part of the bid schedule, an installation list with contact person(s), phone number(s) and date(s) of at least 10 installations of the type of pump specified herein that have been in operation for at least 10 years.

1.04 Warranty

- A. The grinder pump manufacturer shall provide a part(s) and labor warranty on the complete station and accessories, including, but not limited to, the panel for a period of 30 months (minimum) after notice of owner's acceptance. Any manufacturing defects found during the warranty period will be reported to the manufacturer by the owner and will be corrected by the manufacturer at no cost to the owner.

PART 2 - PRODUCTS

2.01 General Requirements

- A. The equipment specified shall be a product of a company experienced in the design and manufacture of grinder pumps for specific use in low pressure sewage systems. The company shall submit detailed installation and user instructions for its product, submit evidence of an established service program including complete parts and service manuals, and be responsible for maintaining a continuing inventory of grinder pump replacement parts.

2.02 Acceptable Manufacturer: Grinder pump stations, complete with all appurtenances, form an integral system, and as such, shall be supplied by one grinder pump station manufacturer.

- A. Environment One Corporation, Niskayuna, New York
- B. Other manufacturers who submit their information 10 days prior to the bid opening and who can prove that their equipment is comparable to the equipment specified will be considered an approved equal. Submittals must be in accordance with 1.04 Pre-Bid Submittals.

2.03 Operating Conditions:

- A. The pumps shall be capable of delivering 15 GPM against a rated total dynamic head of 0 feet (0 PSIG), 11 GPM against a rated total dynamic head of 92 feet (40 PSIG), and 7.8 GPM against a rated total dynamic head of 185 feet (80 PSIG).
- B. The pump(s) must also be capable of operating at negative total dynamic head without overloading the motor(s). Under no conditions shall in-line piping or valving be allowed to create a false apparent head.

2.04 Pump

- A. The pump shall be a custom designed, integral, vertical rotor, motor driven, solids handling pump of the progressing cavity type with a single mechanical seal.
- B. Double radial O-ring seals are required at all casting joints to minimize corrosion and create a protective barrier.
- C. Unit housings constructed from cast iron shall be fully epoxy coated to 8-10 mil Nominal dry thickness, wet applied. Housings not constructed of cast iron shall be injection molded from thermoplastic composite materials specifically selected for excellent corrosion resistance, high impact strength and superior resistance to UV degradation..
- D. The rotor shall be through-hardened, highly polished, precipitation hardened stainless steel.
- E. The stator shall be of a specifically compounded ethylene propylene synthetic elastomer. This material shall be suitable for domestic wastewater service. Its physical properties shall include:
 - 1. High tear and abrasion resistance
 - 2. Grease resistance
 - 3. Water and detergent resistance
 - 4. Temperature stability

5. Excellent aging properties
 6. Outstanding wear resistance.
- Buna-N is not acceptable as a stator material because it does not exhibit the properties as outlined above and required for wastewater service.

2.05 Grinder

- A. The grinder shall be placed immediately below the pumping elements and shall be direct-driven by a single, one-piece motor shaft.
- B. The grinder impeller (cutter wheel) assembly shall be securely fastened to the pump motor shaft by means of a threaded connection attaching the grinder impeller to the motor shaft. Attachment by means of pins or keys will not be acceptable.
- C. The grinder impeller shall be a one-piece, 4140 cutter wheel of the rotating type with inductively hardened cutter teeth. The cutter teeth shall be inductively hardened to Rockwell 50 – 60c for abrasion resistance.
- D. The shredder ring shall be of the stationary type and the material shall be white cast iron. The teeth shall be ground into the material to achieve effective grinding. The shredder ring shall have a staggered tooth pattern with only one edge engaged at a time, maximizing the cutting torque.
- E. These materials have been chosen for their capacity to perform in the intended environment as they are materials with wear and corrosive resistant properties.
- F. This assembly shall be dynamically balanced and operate without objectionable noise or vibration over the entire range of recommended operating pressures. The grinder shall be constructed so as to minimize clogging and jamming under all normal operating conditions including starting. Sufficient vortex action shall be created to scour the tank free of deposits or sludge banks which would impair the operation of the pump. These requirements shall be accomplished by the following, in conjunction with the pump:
 1. The grinder shall be positioned in such a way that solids are fed in an upward flow direction.
 2. The maximum flow rate through the cutting mechanism must not exceed 4 feet per second. This is a critical design element to minimize jamming and as such must be adhered to.
 3. The inlet shroud shall have a diameter of no less than 5 inches. Inlet shrouds that are less than 5 inches in diameter will not be accepted due to their inability to maintain the specified 4 feet per second maximum inlet velocity which by design prevents unnecessary jamming of the cutter mechanism and minimizes blinding of the pump by large objects that block the inlet shroud.

4. The impeller mechanism must rotate at a nominal speed of no greater than 1800 rpm.

G. The grinder shall be capable of reducing all components in normal domestic sewage, including a reasonable amount of “foreign objects,” such as paper, wood, plastic, glass, wipes, rubber and the like, to finely-divided particles which will pass freely through the passages of the pump and the 1-1/4" diameter stainless steel discharge piping.

2.06 Electric Motor

A. As a maximum, the motor shall be a 1 HP, 1725 RPM, 240 Volt 60 Hertz, 1 Phase, capacitor start, ball bearing, air-cooled induction type with Class F installation, low starting current not to exceed 30 amperes and high starting torque of 8.4 foot pounds.

B. The motor shall be press-fit into the casting for better heat transfer and longer winding life.

C. Inherent protection against running overloads or locked rotor conditions for the pump motor shall be provided by the use of an automatic-reset, integral thermal overload protector incorporated into the motor. This motor protector combination shall have been specifically investigated and listed by Underwriters Laboratories, Inc., for the application.

D. Non-capacitor start motors or permanent split capacitor motors will not be accepted because of their reduced starting torque and consequent diminished grinding capability.

E. The wet portion of the motor armature must be 300 Series stainless.

F. To reduce the potential of environmental concerns, the expense of handling and disposing of oil, and the associated maintenance costs, oil-filled motors will not be accepted.

2.07 Mechanical Seal:

A. The pump/core shall be provided with a mechanical shaft seal to prevent leakage between the motor and pump. The seal shall have a stationary ceramic seat and carbon rotating surface with faces precision lapped and held in position by a stainless steel spring.

2.08 Alarm Panel

A. Each grinder pump station shall include a NEMA 4X, UL-listed alarm panel suitable for wall or pole mounting. The NEMA 4X enclosure shall be

manufactured of thermoplastic polyester to ensure corrosion resistance. The enclosure shall include a hinged, lockable cover with padlock, preventing access to electrical components, and creating a secured safety front to allow access only to authorized personnel. The enclosure shall not exceed 10.5" W x 14" H x 7" D, or 12.5" W x 16" H x 7.5" D if certain options are included.

- B. The alarm panel shall contain one 15-amp, double-pole circuit breaker for the pump core's power circuit and one 15-amp single-pole circuit breaker for the alarm circuit. The panel shall contain an elapsed time meter, a push-to-run feature, an internal run indicator, and a complete alarm circuit. All circuit boards in the alarm panel are to be protected with a conformal coating on both sides and the AC power circuit shall include an auto resetting fuse.
- C. A separate, internal breaker rated and approved for use as "service equipment" and acts as a main service disconnect of the grinder pump station shall be provided.
- D. The alarm panel shall include the following features: external audible and visual alarm; push-to-run switch; push-to-silence switch; redundant pump start; and high level alarm capability. The alarm sequence is to be as follows when the pump and alarm breakers are on:
 - 1. When liquid level in the sewage wet-well rises above the alarm level, audible and visual alarms are activated, the contacts on the alarm pressure switch activate, and the redundant pump starting system is energized.
 - 2. The audible alarm may be silenced by means of the externally mounted, push-to-silence button.
 - 3. Visual alarm remains illuminated until the sewage level in the wet-well drops below the "off" setting of the alarm pressure switch.
- E. The visual alarm lamp shall be inside a red, oblong lens at least 3.75" L x 2.38" W x 1.5" H. Visual alarm shall be mounted to the top of the enclosure in such a manner as to maintain the NEMA 4X rating. The audible alarm shall be externally mounted on the bottom of the enclosure, capable of 93 dB @ 2 feet. The audible alarm shall be capable of being deactivated by depressing a push-type switch that is encapsulated in a weatherproof silicone boot and mounted on the bottom of the enclosure (push-to-silence button).
- F. For duplex stations, in addition to the above, two high level indicator lights shall be mounted within the enclosure on the duplex panel's alarm circuit board. During high level alarm indication on duplex stations, the appropriate indicator light will illuminate to indicate which core requires service.
- G. The entire alarm panel, as manufactured shall be listed by Underwriters Laboratories, Inc.

END OF SECTION

