


SUBMIT BIDS TO:	CITY OF TUSCALOOSA P.O. BOX 2089 TUSCALOOSA, AL 35403	PURCHASING OFFICE 2201 UNIV. BLVD. TUSCALOOSA, AL 35401	INVITATION TO BID								
BID TITLE PRIMARY CLARIFIER PUMPS			BID NO. 9041-091219-1								
PAGE 1 OF <u>15</u> PAGES	BIDS WILL BE OPENED AT 2:00 PM ON SEPTEMBER 12, 2019 IN THE OFFICE OF THE PURCHASING AGENT, 2201 UNIVERSITY BLVD. TUSCALOOSA, AL 35401 AND MAY NOT BE WITHDRAWN FOR <u>THIRTY (30)</u> DAYS AFTER SUCH DATE & TIME.		ISSUE DATE 09/04/2019								
 <p style="text-align: center;"><u>MAYOR</u> WALTER MADDOX</p> <p style="text-align: center;"><u>COUNCIL MEMBERS</u></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">PHYLLIS W. ODOM</td> <td style="width: 50%;">VACANT</td> </tr> <tr> <td>RAEVAN HOWARD</td> <td>KIP TYNER</td> </tr> <tr> <td>CYNTHIA LEE ALMOND</td> <td>EDDIE PUGH</td> </tr> <tr> <td>SONYA MCKINSTRY</td> <td></td> </tr> </table> <p style="text-align: center;"><u>PURCHASING AGENT</u> DAVID COGGINS</p>		PHYLLIS W. ODOM	VACANT	RAEVAN HOWARD	KIP TYNER	CYNTHIA LEE ALMOND	EDDIE PUGH	SONYA MCKINSTRY		<p>Vendor Information (SECTION TO BE COMPLETED BY VENDOR)</p> <hr/> <p>Company Name (Please Print)</p> <hr/> <p>Phone Number Fax Number</p> <hr/> <p>Email Address</p>	
PHYLLIS W. ODOM	VACANT										
RAEVAN HOWARD	KIP TYNER										
CYNTHIA LEE ALMOND	EDDIE PUGH										
SONYA MCKINSTRY											

GENERAL CONDITIONS OF INVITATIONS TO BID

1. PREPARATION OF BIDS

Bids will be prepared in accordance with the following:

- (a) Our enclosed Bid forms are to be used in submitting your bid.
- (b) All information required by the Bid form shall be furnished. The bidder shall print or type his name and manually sign the schedule and each continuation sheet on which any entry is made.
- (c) Unit prices shall be shown and where there is an error in extension of price, the unit price shall govern.
- (d) Proposed delivery time must be shown and shall include Sundays and holidays.
- (e) Bidder will not include federal taxes nor State of Alabama sales, excise, and use taxes in bid prices as the City is exempt from payment of such taxes. An exemption certificate will be signed where applicable upon request.
- (f) Bidders shall thoroughly examine the drawings, specifications, schedule, instructions and all other contract documents.
- (g) Bidders shall make all investigations necessary to thoroughly inform themselves regarding plant and facilities for delivery of material and equipment as required by the bid conditions. No plea of ignorance by the bidder of conditions that exist or that may hereafter exist as a result of failure or omission on the part of the bidder to make the necessary examinations and investigations, or failure to fulfill in every detail the requirements of the contract documents, will be accepted as a basis for varying the requirements of the City or the compensation to the vendor.
- (h) Bidders are advised that all City Contracts are subject to all legal requirements provided for in the Purchasing ordinance and/or State and Federal Statutes.

2. DESCRIPTION OF SUPPLIES

- (a) Any manufacturer's names, trade names, brand name, or catalog numbers used in specifications are for the purpose of describing and establishing general quality levels. SUCH REFERENCES ARE NOT INTENDED TO BE RESTRICTIVE. Bids will be considered for any brand which meets the quality of the specifications listed for any items.
- (b) Bidders are required to state exactly what they intend to furnish, otherwise they shall be required to furnish the items as specified.
- (c) Bidders will submit, with their proposal, data necessary to evaluate and determine the quality of the item(s) they are bidding.

3. SUBMISSION OF BIDS

- (a) Bids and changes thereto shall be enclosed in sealed envelopes addressed to David Coggins, Purchasing Agent, 2201 University Blvd., Tuscaloosa, Alabama 35401. The name and address of the bidder, the date and hour of the bid opening and the material or service bid on shall be placed on the outside of the envelope.
- (b) Bids must be submitted on the forms furnished. Telegraphic bids will not be considered.

4. REJECTION OF BIDS

- (a) The City may reject a bid if:
 - 1. The bidder misstates or conceals any material fact in the bid, or if,
 - 2. The bid does not strictly conform to the law or requirement of bid, or if,
 - 3. The bid is conditional, except that the bidder may qualify his bid for acceptance by the City on an "all or none" basis, or a "low item" basis. An "all or none" basis bid must include all items upon which bids are invited.
- (b) The City may, however, reject all bids whenever it is deemed in the best interest of the City. The City may also waive any minor informalities or irregularities in any bid.

5. WITHDRAWAL OF BIDS

- (a) Bids may not be withdrawn after the time set for the bid opening for a period of time as specified.
- (b) Bids may be withdrawn prior to the time set for the bid opening.
- 6. LATE BIDS OR MODIFICATIONS**
- (a) Bids and modifications received after the time set for the bid opening will not be considered.
- (b) Modifications in writing received prior to the time set for the bid opening will be accepted.
- 7. CLARIFICATIONS OR OBJECTION TO BID SPECIFICATIONS**
- If any person contemplating submitting a bid for this contract is in doubt as to the true meaning of the specifications or other bid documents of any part thereof, he may submit to the Purchasing Agent on or before five (5) days prior to scheduled opening a request for clarification. All such requests for information shall be made in writing and the person submitting the request will be responsible for its prompt delivery. Any objection to the specifications and requirements as set forth in this bid must be filed in writing with the Purchasing Agent on or before five (5) days prior to scheduled opening.
- 8. DISCOUNTS**
- (a) Bidders may offer a cash discount for prompt payment; however, such discounts shall NOT be considered in determining the lowest net cost for bid evaluation purposes. Bidders are encouraged to reflect cash discounts in the unit prices quoted.
- (b) In connection with any discount offered, time will be computed from the date of receipt of supplies or services or from the date a correct invoice is received, whichever is the later date. Payment is deemed to be made on the date of mailing of the check.
- 9. SAMPLES**
- Samples, when required, must be submitted within the time specified at no expense to the City of Tuscaloosa. If not destroyed or used up during testing, samples will be returned upon request at the bidder's expense, unless stated otherwise in Special Conditions or Specifications. Each individual sample must be labeled with bidder's name and manufacturer's brand name and number.
- 10. AWARD OF CONTRACT**
- (a) The contract will be awarded to the lowest responsible bidder based upon the following factors: quality; conformity with specifications; purpose for which required; terms of delivery; transportation charges; dates of delivery.
- (b) The city reserves the right to accept and award item by item, and/or by group, or in the aggregate, unless the bidder qualifies his bid by specified limitations. Re Par.4(a)3.
- (c) If two or more bids received are for the same total amount or unit price, quality and service being equal, the contract shall be awarded to a local bidder.
- (d) Prices quoted must be FOB Destination to Tuscaloosa with all transportation charges prepaid unless otherwise specified in the Invitation to Bid.
- (e) A written award of acceptance (Purchase Order), mailed or otherwise furnished to the successful bidder shall result in a binding contract.
- 11. DELIVERY**
- (a) Deliveries are to be FOB Destination unless otherwise specified in the Invitation to Bids.
- (b) Deliveries are to be made during regular business hours.
- 12. CONDITION OF MATERIALS AND PACKAGING**
- All items furnished must be new and free from defects. No others will be accepted under the terms and intent of this bid. All containers shall be new and suitable for storage or shipment, and price bid shall include standard commercial packaging.
- 13. CLAIMS**
- Successful bidder(s) will be responsible for making any and all claims against carriers for missing or damaged items.
- 14. LOCAL, STATE, AND FEDERAL COMPLIANCE REQUIREMENTS**
- Bidders shall comply with all local, state, and federal directives, orders and laws as applicable to this bid and subsequent contract(s).
- 15. PROVISION FOR OTHER AGENCIES**
- Unless otherwise stipulated by the bidder, the bidder agrees when submitting his bid to make available to all City agencies, departments, and in-city municipalities the bid prices he submits, in accordance with the bid terms and conditions, should any said department, agency, or municipality wish to buy under this proposal.
- 16. COLLUSION**
- The bidder, by affixing his signature to this proposal, agrees to the following: "Bidder certifies that his bid is made without previous understanding, agreement, or connection with any person, firm, or corporation making a bid for the same items and is in all respects fair, without outside control, collusion, fraud, or otherwise illegal action".
- 17. VARIANCE IN CONDITIONS**
- Any and all special conditions and specifications attached hereto which vary from General Conditions shall have precedence.
- 18. MINORITY / DISADVANTAGED BUSINESS ENTERPRISE PROGRAM**
- The City of Tuscaloosa has voluntarily adopted a Minority / Disadvantaged Business Enterprise ("MBE/DBE/WBE") Program called Tuscaloosa Builds, which is designed to encourage the participation and development of minority and disadvantaged business enterprises and to promote equal business opportunities to the fullest extent allowed by state and federal law. To learn more about this program, visit the City's website at www.tuscaloosa.com.

SPECIAL CONDITIONS

The General Conditions of Invitations to Bid and any Special Conditions stated shall be considered as part of the specifications of the bid.

Reference to brand names and numbers is descriptive, but not restrictive, unless otherwise specified. Bids on equivalent items meeting the standards of quality thereby indicated will be considered, providing the bid clearly describes the article offered and indicates how it differs from the referenced brands. Descriptive literature and manufacturer's specifications plus any supplemental information necessary for comparison purposes must be submitted with the bid or the bid on that item will be rejected. Reference to literature submitted with a previous bid or on file with the Division of Purchasing will not satisfy this requirement. The burden is on the bidder to demonstrate that the item bid is equivalent to the item specified in the ITB. Any exceptions taken to any item(s) must be fully explained in written detail on bidders' letterhead and attached to the bid when submitted.

Awards shall be made or contracts entered into with the lowest responsible bidder(s) meeting all specifications and terms and conditions established by the Division of Purchasing. The Division of Purchasing reserves the right to determine the lowest responsible bidder on the basis of an individual item or group of items. Delivery dates may be a factor in awards. Local Bidder Preference will be used in bid evaluation in accordance with State of Alabama Bid Law Section 41-16-50(a).

The issuance of a City of Tuscaloosa Purchase Order or Purchasing Card is required to constitute a contract between the vendor and the City of Tuscaloosa, which shall bind the vendor to furnish and deliver the commodities and/or services ordered at the prices, terms, and conditions quoted.

Questions concerning the bid process should be directed to David Coggins at (205) 248-5186 or dcoggins@tuscaloosa.com (e-mail is preferred). Questions concerning Specifications should be directed to Josh Bonner at (205) 248-5925 or jbonner@tuscaloosa.com.

Any addendums issued for this bid will be posted on the City Of Tuscaloosa website at <http://www.tuscaloosa.com/bids>. It is the responsibility of the bidder to check this page for any addendums before submitting their bid.

The term of this contract shall be for a period of one (1) year from the date of the Purchase Order hereof and shall automatically renew each year for up to two (2) years for a total maximum contract term of three (3) years from the date of execution hereof, unless sooner terminated pursuant to the provision herein provided. However, either party may elect not to renew the contract by giving the other party thirty (30) days written notice prior to the anniversary date, in which event the contract shall terminate on the anniversary date.

Vendor to submit the following:

- Signed Special Conditions page
- Any necessary descriptive literature and/or specifications information as outlined above and/or elsewhere in this document
- Completed and signed General Information page
- Completed and signed Bidder's Response Form

NOTE: Sheet(s) submitted without Company Name & Signature WILL NOT be considered for bid award.

VENDOR MUST SUBMIT AN ORIGINAL BID AND ONE COMPLETE COPY OR THE BID MAY BE REJECTED.

Bid submissions shall be submitted in a sealed envelope and addressed to: David Coggins, Purchasing Agent, 2201 University Blvd., Tuscaloosa, AL 35401. The name and address of the bidder, the date and hour of the bid opening and the Bid Title shall be placed on the outside of the envelope. Failure to properly address and label sealed envelope may result in bid rejection.

GENERAL INFORMATION

The purpose of this bid is to establish pricing for two different types of Primary Clarifier Pumps. The pumps will be purchased on an as needed basis through the life of the contract, for up to a total of three (3) years as spelled out in Special Conditions on page 3. The quantities to be purchased over the term of the contract are not known, and there are no estimates or minimum purchase quantities.

Bidder shall submit with their bid a set of specifications and/or descriptive literature as instructed in Specifications. Failure to include this information will submit your bid to rejection.

The City has identified in Specifications an approved manufacturer for each pump type. These specific brands of pumps are approved based on prior performance, familiarity of operation/maintenance/replacement, and compatibility with existing equipment. The City strongly prefers these approved pumps.

If a bidder submits a bid for an alternate manufacturer/brand/model of pump, the burden is on the bidder to demonstrate that the item bid is equivalent to the item specified. Any alternate manufacturer/brand/model that is determined by City personnel to not be "equal to" the approved pumps will be rejected.

Delivery shall be F.O.B. Destination to the City's Fletcher Wastewater Treatment Plant. Bid price shall be inclusive of all freight, shipping, handling, and any other charges. No additional charges or fees shall apply.

Note: This bid is for the purchase of pumps only. Installation of pumps is not included.

SPECIFICATIONS**PRIMARY CLARIFIER SLUDGE PUMPS****PART 1 GENERAL**

1.01 DESCRIPTION

- A. The Vendor shall furnish double disc sludge pump and all appurtenances as specified. Pumps shall be a complete pump unit consisting of pump, V-belt drive arrangement, and motor all completely assembled on fabricated stainless steel base and shall conform to the pump requirements described herein.

1.02 QUALITY ASSURANCE AND PERFORMANCE AFFIDAVIT

- A. The equipment manufacturer shall be experienced in manufacturing pumping equipment of this technology as specified and have a record of successful in-service performance. Manufacturer must have at least ten (10) years of experience with (20) similar facilities in operation.
- B. All equipment must strictly conform to the requirements herein. If there are any exceptions, they must be clearly listed. If the equipment is approved for use on this project and is found at any time in the future that exceptions were not listed, the engineer shall have the right to reject the equipment or require the manufacturer to modify the equipment to bring it into compliance at no increase in cost to the contract.
- C. The equipment shall be 100% manufactured in the U.S. and all spare parts shall be available for same day shipment and next day delivery. The manufacturer shall maintain a fully equipped shop facility to perform all operations including welding, fabrication, assembly and testing. These integrated operations provide the level of quality necessary for the equipment specified. All materials shall be designed to withstand the stresses encountered in fabrication, erection and operation. All equipment shall be of corrosion resistant materials or shall be suitably protected by the supplier with corrosion resistant industrial coatings approved by the engineer.

PART 2 PRODUCTS

2.01 APPROVED MANUFACTURER

- A. Penn Valley Pump Company, Inc.
- B. Or Engineer Approved Equal

2.02 SERVICE CONDITIONS

The pumps specified in this section will pump primary clarifier sludge using the following design flow criteria:

GPM: 200

TDH: 40 feet

HP: 10

Motor RPM: 1200

2.03 SUBMITTALS

- A. Shop Drawings: Complete assembly, foundation, and installation drawings, together with detailed specifications and data covering materials used, drive unit, parts, devices, and other accessories forming a part of the equipment furnished shall be submitted in accordance with the submittals section. The data and specifications for each shall include detailed information on the pump to include:

Pump

Manufacturer
 Type and model
 RPM at rated condition
 Size of suction and discharge flanges
 Complete performance curves
 Net weight of pump and baseplate
 Base and anchor bolt details
 Data on pressure sensor and switch assemblies

Motor

Manufacturer
 Type, model, and enclosure
 Rated size of motor, HP and service factor
 Temperature rise and insulation rating
 Full load rotative speed
 Net weight
 Efficiency at full, $\frac{3}{4}$, and $\frac{1}{2}$ load
 Full load current
 Locked rotor current
 Overall dimensions and base details
 Power factor at no load and at full load

- B. Operation and Maintenance Manuals: Complete with manufacturer's instructions for equipment installation, equipment function, start-up procedures, operation, preventative maintenance, servicing and troubleshooting.

2.04 PUMP CONSTRUCTION

- A. Each pump shall be a simplex heavy duty, free disc style positive displacement type, with Class 30 Cast Iron Housings. Duplex pumping arrangements shall not be acceptable. The pump shall consist of three (3) housings horizontally split to allow access to the internal components. The pump shall incorporate a Maintain-in-Place hinged design that allows the pump to be serviced and discs replaced without removal of the pump or disturbing the suction and discharge piping. The discharge housing shall contain the mounting lugs and be bolted directly to the mounting frame. The discharge, intermediate and suction housings shall incorporate an integral hinge arrangement that allows the suction and intermediate housings to be lowered and removed. The hinges shall be connected to each other with a quick release ball detent pin allowing for easy pin removal.
- B. The pumps shall be capable of providing 0.76 gallons per revolution when operating at 60ft head. The pumps shall be capable of operating dry for an indefinite period of time without damage. The pumps shall be capable of self-priming up to 14" Hg and 25" Hg when fully primed.
- C. The pumping action shall be achieved by two (2) free floating reciprocating discs attached to high tensile aluminum connecting rods driven by a rotating eccentric shaft. Each disc shall be mounted to the connecting rod by a stub shaft constructed of hardened high tensile 400 series stainless steel. The discs

- shall be of integral design and constructed of high tensile neoprene with multiple layers of fabric for longevity and strength. Pump designs that use a captive diaphragm with metal plate shall not be acceptable. The suction and discharge discs shall be universal and interchangeable with each other to increase the commonality of spare parts and eliminate confusion. The reciprocating action of the discs shall also perform the duty of valves. Pumps that require internal check valves for operation shall not be acceptable.
- D. Sealing of the pump fluid chamber shall be achieved by flexible trunnions. The trunnion seal shall not be designed to provide any pumping action. The trunnion construction shall be of fabric-reinforced neoprene and shall be capable of withstanding pressures from 0 to 110 PSI on an intermittent basis. Maximum operating pressure is 140' TDH. Pump designs utilizing packing glands, mechanical seals or water seal systems will not be acceptable.
- E. The swan neck entry port to the suction housing shall be a two (2) piece design allowing for mounting of the suction connection in 90 degree increments and easy access for clack replacement. The upper swan neck shall be provided with a 3" NPT connection to allow mounting of the suction pulsation dampener. The opening shall be a full 6" diameter with a minimum opening of 28.26 square inches to minimize debris buildup and blockages. The seating surface for the clack valve shall be machined on the mounting face of the swan neck. The clack valve shall be integrally mounted to the swan neck to facilitate access and replacement. The clack valve shall be manufactured of neoprene construction with multiple layers of fabric encapsulating a rigid core. The clack valve shall incorporate an integral O-ring seal for positive sealing. Designs that incorporate a separate clack valve plate and smaller diameter opening shall not be acceptable.
- F. The bearing drive assembly shall consist of two (2) aluminum modular pedestals designed to provide accurate bearing alignment, superior bearing loading and ease of assembly. The drive shaft shall be a minimum 1-15/16" diameter and capable of withstanding a dead head situation. The shaft shall be constructed of hardened 400 series high-tensile stainless steel and shall be mounted on four (4) self-aligning, sealed bearings. The eccentric cams shall be constructed of high tensile, cast bronze alloy and shall be pinned to the shaft by spirol drive pins to allow for the absorption of reciprocating loads generated by the pumping action. Pump drive assemblies that utilize keyways and setscrews will not be acceptable. All drive bearings must be completely sealed with no provisions for scheduled grease lubrication. No grease fittings shall be supplied for the bearings.
- G. The pump shall be driven through a V-belt and drive assembly consisting of a 2 or 3 groove Type B arrangement. The pulley ratios shall be sized to provide the maximum pump speed listed in the pump schedule in this section and to provide the required torque generated between the pump and motor.
- H. Pump shall be provided with OSHA approved guards and covers. The V-belt drive cover and pump drive assembly cover shall be manufactured from 304 stainless steel material.
- I. Each pump and V-Belt assembly shall be mounted on a common 304 stainless steel sub base. Base design shall have raised cross-members on the suction and discharge end to allow for complete wash-out and draining without trapping liquid. Each sub base shall be manufactured from 2-1/2" 304 stainless steel square tubing. Base shall be sufficiently gusseted, reinforced and braced to withstand all shock loads and resist all wearing and buckling during pump operation. Tubing ends shall be capped with black plastic plugs for neat appearance.
- J. Pulsation dampeners shall be provided on the suction and discharge lines. The dampeners shall be 6" ASA 150 lb flanged units and the main tube shall be 8" diameter SCH 40 carbon steel pipe with fully welded end caps. The suction dampener shall mount directly to the suction swan neck through the 3" NPT connection. The discharge dampener shall be a separate piece with 6" ASA 150# flanged connections. The dampeners shall be pressure tested to 60 psi for leaks. Each dampener shall be provided with a 1-inch half coupling

located at the top. This connection shall be suitable for the vacuum and pressure switch assembly or the ball valve/quick disconnect assembly should a switch not be specified. Each dampener shall be supplied with a 1 ½" NPT coupling and plug in the bottom to act as a drain/sample port. Bladder type and three-piece assemblies using connecting rods and gasket shall not be acceptable.

2.05 MOTOR REQUIREMENTS

- A. The motor shall be adequately sized to withstand the loads during starting and pump operation. The horsepower and motor speed shall conform to the specifications as outlined in the pump schedule in this section. Motor shall be severe duty, premium efficient, inverter ready per NEMA STD MG1 Part 31.4.4.2 with epoxy coated cast iron frame or equal. The motor enclosure shall be rated TENV. The motor enclosure and associated wiring connections shall be rated for a Class 1, Division 2 environment.

2.06 SUCTION VACUUM INDICATION

- A. The pump manufacturer shall provide a suction vacuum sensor and gauge assembly to mount on the suction pulsation dampener. The sensor shall be a PVP420, Red Valve 42/742 or equal 1-inch NPT isolation pressure sensor with 316 stainless steel body and EPDM elastomeric sensing tube. The process pressure is sensed through the 360 degree elastomeric tube and glycerin transfers pressure to the gauge. The gauge shall be 4" diameter stainless steel with a scale of 30" Hg – 30psi gauge. The units shall be capable of being cleaned in place by simply using the process pressure through a 316 stainless steel isolation valve mounted to the top of the sensor. The opposite end of the valve shall be fitted with a universal, quick acting coupling, suitable for compressed air. This valve connection will be suitable to charge the dampener with compressed air. Provide corrosion resistant contacts within the pressure switch. The pressure switch assembly shall be rated a Class 1, Division 2 atmosphere.

2.07 DISCHARGE PRESSURE PROTECTION

- A. The pump manufacturer shall provide a discharge pressure sensor and switch assembly to mount on the discharge pulsation dampener. The sensor shall be a PVP420, Red Valve 42/742 or equal 1-inch NPT isolation pressure sensor with 316 stainless steel body and EPDM elastomeric sensing tube. The process pressure is sensed through the 360 degree elastomeric tube and glycerin transfers pressure to the gauge and switch. The gauge and switch shall be attached to the sensor with 316 stainless steel fittings. The discharge assembly shall be fitted with a 4" diameter stainless steel gauge with a scale of 0 -100 psi. The assembly shall be supplied with an Ashcroft, Barksdale, or equal, adjustable switch preset at 30 psi. The units shall be capable of being cleaned in place by simply using the process pressure through a 316 stainless steel isolation valve mounted to the top of the sensor. The opposite end of the valve shall be fitted with a universal, quick acting coupling, suitable for compressed air. This valve connection will be suitable to charge the dampener with compressed air. Provide corrosion resistant contacts within the pressure switch. The pressure switch assembly shall be rated a Class 1, Division 2 atmosphere.

2.08 SPECIAL TOOLS AND SPARE PARTS

- A. Provide the following factory recommended spare parts, one (1) set total consisting of:

Two (2) Discs
 Two (2) Trunnions
 One (1) Complete set of gaskets
 One (1) Clack valve

- B. The pump manufacturer shall supply a universal, adjustable tool to aid in disc removal.

2.09 FINISHES

- A. All cast iron and carbon steel components shall be finished with manufacturer’s standard industrial grade primer 2 – 3 mils DFT suitable for multiple top coat finishes. The top coat shall be industrial enamel 2 – 3 mils DFT.
- B. All stainless steel and aluminum surfaces will remain unpainted. All weld splatter shall be removed, and all welds ground smooth for a neat appearance.

PART 3 EXECUTION

3.01 FIELD REPRESENTATIVES SERVICES

- A. The equipment manufacturer shall furnish a qualified field service representative for the purpose of inspecting the equipment after installation and to supervise its initial operation. The manufacturer’s representative shall inspect the installation and shall provide a written certification that the pump is installed in accordance with the manufacturer’s requirements.

- 1. (3) man-days for start-up and training services.

3.02 INSTALLATION – **By Others**

- A. Install all items in accordance with the printed instructions of the manufacturer, as indicated and specified.
- B. Dowel to frame after alignment in the field to facilitate realignment after disassembly.
- C. Install and align on a concrete pad as specified in the drawings.
- D. Brace all piping at suction and discharge connections to with stand all shock loads and vibration.

3.03 ACCEPTANCE TESTS

- A. Furnish labor, piping, equipment and material for conducting the tests.
- B. Give each pump a running test in the presence of the ENGINEER demonstrating its ability to operate without vibration or overheating and deliver its rated capacity under specified conditions. Specifically, the following items shall be measured at five (5) points over the entire operating range:

- 1. Discharge Head
- 2. Suction Head
- 3. Capacity
- 4. Pump Speed
- 5. Amperage Draw

C. Correct all defects or replace defective equipment, revealed and noted during tests. Make necessary adjustments at the time of tests at the expense of the supplier. If deficiencies are due to installation deficiencies caused by the installation contractor, the supplier shall prepare a written report documenting the deficiencies and recommending solutions.

- D. Repeat tests if necessary, to obtain results acceptable to engineer.

TABLE 1 – PUMP PERFORMANCE

Material Being Pump	Primary Sludge
Number of Units	1
Percent Solids	2 – 4%
Capacity - Each Pump (GPM)	200
Rated Discharge Head in Feet	40
Maximum Discharge Head in Feet	140 ft. head (maximum TDH)
Suction & Discharge Port Size	6", 150 lbs., flanged
Drive Type	V-belt and pulley arrangement
Maximum Pump Speed (RPM)	225
Maximum Motor Horsepower	10
Maximum Motor Speed (RPM)	1200
Service Factor	1.15 minimum
Motor Enclosure	TENV
Motor Electrical	460 Volt/3 Phase/60 Hz

2.06 SURFACE REQUIREMENTS

SSPC-SP5 commercial sandblast, prime coated with 5-8 MDFT of Tnemec Zinc filled primer and finish coated 5-8 MDFT of Tnemec Series 27WB epoxy.

**VERTICAL RECIRCULATING CHOPPER PUMPS
(Primary Clarifier Scum Pumps)**

PART 1 GENERAL

1.01 DESCRIPTION

- A. The Vendor shall furnish vertical wet pit recirculating chopper pumps and all appurtenances as specified. The pump shall be specifically designed to pump and agitate waste solids at heavy consistencies. Materials shall be macerated and conditioned by the pump as an integral part of the pumping action. The pump must have demonstrated the ability to chop through, mix and pump high concentrations of solids such as plastics, heavy rags, grease and hair balls, wood, paper products and stringy materials without plugging, both in tests and field applications. Installation will be by others.

1.02 QUALITY ASSURANCE AND PERFORMANCE AFFIDAVIT

- A. The supplier shall submit manufacturer's standard warranty and a performance affidavit for equipment to be furnished in accordance with this section. The warranty for workmanship and materials shall be manufacturer's standard for 1 year from startup, not to exceed 18 months from factory shipment. In the performance affidavit, the manufacturer must certify to the Contractor and the Owner, that the Contract Documents have been examined, and that the equipment will meet in every way the performance requirements set forth in the Contract Documents for the application specified. Shop drawings will not be reviewed prior to the receipt by the Engineer of an acceptable performance affidavit. The performance affidavit must be signed by an officer of the company manufacturing the equipment and witnessed by a notary public. The performance affidavit must include a statement that the equipment will not clog or bind on solids typically found in the application set forth. Additionally, in the performance affidavit the manufacturer must provide documented proof that they have 20 years of experience in the design and supply of chopper pumps as referenced in paragraph 2.01 below. This documented proof shall be in the form of an installation/reference list showing the 20-year experience.
- B. An extensive parts inventory shall be maintained by the manufacturer such that all pump parts are available for delivery within one week during the life expectancy of the pump. Upon request by the engineer, the manufacturer shall provide digital photos of their parts inventory to verify this requirement.

PART 2 PRODUCTS

2.01 APPROVED MANUFACTURER

- A. Pump shall be Model V3GR as manufactured by Vaughan Co., Inc. OR Engineer approved equal.
- B. The naming of a manufacturer in this Specification Section is not an indication that the manufacturer's standard equipment is acceptable in lieu of the specified component features. Naming is only an indication that the manufacturer may have the capability of engineering and supplying the pumps as specified herein. The manufacturer shall clearly note on his bid proposal and submittal data any and all deviations to this specification.
- C. It is the express intent of these specifications to accurately describe equipment that is a regular production item of the specified manufacturer, and that it has a proven record of performance in identical (not just similar) applications in other treatment facilities. The chopper pump manufacturer shall have a minimum of ten (10) years of documented experience in the design and production of chopper pumps of all types, and not less than five (5) years of experience in the production of the exact equipment as specified herein.

- D. Proposed Alternates shall include all documentation noted herein with their bid submittal. The bid package shall include a list of no less than twenty (20) reference installations of chopper pumps in identical service applications. At least five (5) of the reference installations provided shall be of the exact model pump specified herein. References shall be pumps that have been used in continuous service for a period of no less than three (3) years. Only equipment that is in service at the time of referral shall be considered valid. Pumps that have been removed from service for any reason will not be considered as references. Telephone numbers and contact names shall be provided for any/all references upon request from the Engineer. Provision of performance bonds or other means of circumventing the above requirements for historical references and verification of past performance in identical applications are not considered an acceptable means of verifying the manufacturer's experience.

2.02 SERVICE CONDITIONS

The pumps specified in this section will pump clarifier scum using the following design flow criteria:

Design Rating: 100 GPM @ 39' TDH

Secondary Rating: 300 GPM @ 28' TDH

Motor HP: 5

Motor RPM: 1750

2.03 PUMP CONSTRUCTION

The naming of a manufacturer in this Specification Section is not an indication that the manufacturer's standard equipment is acceptable in lieu of the specified component features. Naming is only an indication that the manufacturer may have the capability of engineering and supplying the pumps as specified herein. The manufacturer shall clearly note on his bid proposal and submittal data any and all deviations to this specification.

- A. Casing: Shall be of semi-concentric design, with the first half of the circumference being cylindrical beginning after the pump outlet, and the remaining circumference spiraling outward to a class 125 flanged centerline discharge. Casing shall be A536 ductile cast iron with all water passages to be smooth, and free of blowholes and imperfections for good flow characteristics. All fasteners used for assembly of the pump liquid end shall be 316 stainless steel.
- B. Impeller: Shall be semi-open chopper type. Chopping/maceration of materials must be accomplished by the action of the curved, cupped and sharpened leading edges at the bottom of the impeller blades as they move across the cutter bar, creating a smooth efficient slicing effect. Pump out vanes must be provided across the entire diameter of the impeller on the backing plate, in order to reduce pressure in the seal area, and to draw lubricant down from the reservoir should seal leakage occur. The impeller shall be held in place with a key, shall have no axial adjustments or set screws, and shall not extend past the cutter bar. The impeller shall be cast alloy steel heat treated to a minimum 60 Rockwell C Hardness, and dynamically balanced. Open type impellers or impellers without pump out vanes shall not be allowed on this project.
- C. Cutter Bar: Shall be a single cast component recessed into the pump bowl, with a funnel shaped inlet opening. As a part of the casting, segment bars shall extend inwardly, to within .015" of the cutter nut. The set clearance between the cutter bar and impeller shall be adjustable to .005" to .020". The cutter bar shall be cast alloy steel heat treated to a minimum 60 Rockwell C Hardness.

- D. Upper Cutter Assembly: The impeller pump-out vanes shall be specially modified to shear against an upper cutter assembly mounted into the back side of the casing, in order to eliminate any build up of rags, hair, or other stringy material in the seal area or between the impeller and the pump casing. The upper cutter shall consist of no more than 2 cutting anvils to minimize the potential for binding. The set clearance between the impeller and upper cutter shall be adjustable to .010" or less. The upper cutter shall be cast alloy steel heat treated to a minimum 60 Rockwell C Hardness. The upper cutter shall be a replaceable item and be separate from the casing back plate.
- E. Cutter Nut: The cutter nut shall be used to affix the impeller to the shaft, and to eliminate binding or wrapping of stringy materials at the pump inlet. The cutter nut shall consist of a hex head sufficiently sized for ease of removal and shall include an integral cast anvil which shears against the adjacent surface of the segment bars on the cutter bar. The cutter nut shall be cast alloy steel heat treated to a minimum 60 Rockwell C Hardness. Due to the solids handling demand in this application, nuts, bolts, or other impeller securing devices that lack the ability to cut debris from the pump suction shall not be allowed on this project.
- F. Recirculation Nozzle: The pump shall be fitted with a recirculation nozzle assembly to permit recirculation of the pit contents prior to discharge. The recirculation nozzle shall be adjustable minimum 180 degrees horizontally and 45 degrees vertically.
- G. Valve: Shall be connected to the pump discharge to adjust pump flow either to the recirculation/mixing nozzle or the pump discharge flange. Valve shall be ductile cast iron with 316 stainless steel valve disk.
- H. Operating Levers: Shall be located above the mounting plate for easy access during pump operation.
- I. Pump Shafting: The pump shaft and impeller shall be supported by ball bearings. There shall be a heat treated stub shaft through the pump casing connected through a solid steel shaft coupling to a stress-proof shaft extension to the top of the pump. All Shafting shall have a minimum diameter of 1.5 inches in order to minimize deflection during solids chopping.
- J. Pump Support Column: The shaft column shall be 4 inch OD precision steel tubing welded to steel flanges and machined with piloted bearing fits for concentricity of all components. All support columns tubes shall be leak tested. Distance between shaft bearings shall not exceed critical speed dimensions.
- K. Pump Shaft Ball Bearings: Lower and intermediate bearings shall be oil bath lubricated by I.S.O. Grade 46 turbine oil. The top bearings shall be permanently greased packed. Bearings shall have a minimum B-10 life rated 100,000 hours.
- L. Thrust Bearings: Shaft thrust shall be taken up by either a double row angular contact ball bearing or two back-to-back mounted single row angular contact ball bearings, which bear against a machined shoulder on one side and the seal sleeve on the other side. Overhang from the centerline of the lower thrust bearing to the seal faces shall be a maximum of 1.2". Shaft overhang exceeding 1.2 inches from center of lower thrust bearing to seal faces shall be considered unacceptable. A mechanical seal shall isolate the bearings from the pumped media at operating temperatures up to 250 degrees F.
- M. Mechanical seal: Shall be cartridge type and fitted with silicon carbide seal faces to provide long life expectancy in the presence of grit and abrasive solids. The seal shall include a 316 stainless steel shaft sleeve, with the seal tension held integral to the cartridge assembly. Seal shall be tested for flatness within 2 helium light bands under a helium light source and optical flat. For ease of future maintenance, the mechanical seal for these pumps shall be cartridge type.

- N. Automatic Oil Level Monitor: Shall be located above the mounting plate and be fitted with an internal 50 watt capacity oil level switch to detect oil level and shut off the motor in event of low oil level. A sensitive relay shall be included for mounting in the motor control panel.
- O. Pump Discharge Pipe: The pump assembly shall be mounted vertically on a common steel base plate with 150 pound standard discharge flange.
- P. Shaft Coupling: Shall be T.B. Woods Sureflex elastomeric type with a minimum 1.5 service factor based on the drive rated horsepower, and shall be protected with a guard meeting OSHA requirements.
- Q. Motor Support Base: Shall be a fabricated carbon steel weldment machined with piloted fits to positively align the C-flange motor and pump shaft, with no adjustments required.
- R. Pump Assembly Base Plate: Shall be fabricated carbon steel, 1/2" minimum thickness, and shall include lifting lugs.
- S. Stainless Steel Nameplates: Shall be attached to the pump and drive motor giving the manufacturer's model and serial number, rated capacity, head, speed and all pertinent data.

2.04 MOTOR REQUIREMENTS

Drive motor shall be rated 5 HP, 1750 RPM, 460 volts, 3 phase, 60 hertz, 1.15 service factor, C-Flange mounted. The motor shall be sized for non-overloading conditions. The motor enclosure shall be rated TEFC. The motor enclosure and associated wiring connections shall be rated for a Class 1, Division 1 environment. Thermostats (NC) shall be included in the motor.

2.05 SURFACE REQUIREMENTS

SSPC-SP5 commercial sandblast, prime coated with 5-8 MDFT of Tnemec Zinc filled primer and finish coated 5-8 MDFT of Tnemec Series 27WB epoxy.

BIDDER'S RESPONSE FORM

MESSAGE TO BIDDERS: Please review your bid documents for accuracy, completeness, required documentation, and necessary signatures before submitting. Please label the outer mailing/shipping package with the bid information as directed.

BID PRICE EACH - PRIMARY CLARIFIER SLUDGE PUMP: _____

BID PRICE EACH - VERTICAL RECIRCULATING CHOPPER PUMP: _____

DELIVERY TIME: _____

COMPANY NAME: _____

CONTACT PERSON: _____

COMPLETE MAILING ADDRESS: _____

AUTHORIZED SIGNATURE: _____

PRINTED NAME: _____

TELEPHONE NUMBER: _____

E-MAIL ADDRESS: _____

COPIES SUBMITTED:

_____ **VENDOR MUST SUBMIT AN ORIGINAL BID AND ONE COMPLETE COPY OR THE BID MAY BE REJECTED.**

Awarded bidder(s) may be required to obtain a City of Tuscaloosa business license in order to provide goods and/or services in response to this bid and subsequent contract(s). Inquiries regarding business license requirements should be directed to the City's Revenue & Financial Services Division at (205) 248-5200. Failure to obtain and maintain required city business license(s) may result in rescinding of bid award and contract termination.

Note: By signing this contract, the contracting parties affirm, for the duration of the agreement, that they will not violate federal immigration law or knowingly employ, hire for employment, or continue to employ an unauthorized alien within the State of Alabama. Furthermore, a contracting party found to be in violation of this provision shall be deemed in breach of the agreement and shall be responsible for all damages resulting therefrom.

FAILURE TO COMPLETE ALL OF THE ABOVE WITH AN AUTHORIZED SIGNATURE MAY SUBJECT BID TO REJECTION.