

****** SPECIFICATIONS ******

2016 SEWER PUMPS & RELATED MATERIALS

FOR:

**ST. JOHN THE BAPTIST PARISH
PUBLIC WORKS DEPARTMENT
1801 WEST AIRLINE HIGHWAY
LAPLACE, LOUISIANA 70068**

BY:

**ST. JOHN THE BAPTIST PARISH
UTILITY DEPARTMENT**

JANUARY 2016

ADVERTISEMENT FOR BIDS

ST. JOHN THE BAPTIST 2016 SEWER PUMPS & RELATED MATERIALS

St. John the Baptist Parish (herein referred to as the “Owner”)

Sealed Bids will be received by St. John the Baptist Parish Council in the Percy Hebert Building, 1801 W. Airline Highway, LaPlace, La. 70068, at the receptionist's desk, until 2:45 p.m., November 17, 2015 for the following:

ST. JOHN THE BAPTIST 2016 SEWER PUMPS & RELATED MATERIALS

Proposals shall be addressed to the St. John the Baptist Parish Council and delivered to the receptionist at St. John the Baptist Parish located at 1801 W. Airline Highway, LaPlace, LA 70068 and delivered no later than 2:45 p. m. on November 17, 2015. Proposals shall be designated as **“Sealed Bid – St. John the Baptist Parish- 2016 Bid for Sewer Pumps and Related Materials.”** Any bids received after the specified time and date will not be considered. The sealed bids will be publicly opened and read aloud at 3:00 o'clock p. m. November 17, 2015 in the St. John the Baptist Parish Joel S. McTopy Council Chambers located at 1801 W. Airline Highway, LaPlace, LA 70068.

The Bid Proposal, Plans and Specifications may be examined at the Office of St. John the Baptist Parish Utility Department at 1801 W. Airline Hwy., LaPlace, LA 70068. Copies may be obtained at this office upon payment of \$10.00 which constitutes the cost of reproduction and handling and is non-refundable. Details may be viewed and electronic bids are being accepted at www.centralbidding.com. All Bid Documents and Specifications may also be viewed at the Parish website, www.sjbparish.com.

The Owner reserves the right to accept or reject any and all bids and to waive any irregularities or informalities incidental thereto, and to accept any bid, which the Owner feels, serves their best interest. Such action will be in accordance with Title 38 of the Louisiana Revised Statutes.

*St. John the Baptist Parish Council, being a government agency, is exempt from all sales tax. The vendor awarded the contract will be provided documentation to support their tax free purchases for this project. Therefore, **the amount you bid should contain no sales tax.***

The Specifications have been prepared by St. John the Baptist Parish Utility Department setting forth those items deemed necessary by St. John the Baptist Parish personnel.

Pumps and materials will be awarded individually.

Each item of bid shall be awarded to the lowest bidder meeting Specifications and at the same time, best fulfilling the needs of St. John the Baptist Parish. The Utility Department will be the sole judge of equality of products and comparability to Specifications.

The term of this agreement shall be through December 31, 2016.

Order placement and order quantity will be determined by the St. John the Baptist Parish Council on an "as needed" basis. Purchase orders will be issued for all materials.

No bidder may withdraw his/her bid within thirty (30) days after the actual date of opening thereof.

Any person with disabilities requiring Special Accommodation must contact St. John the Baptist Parish at (985) 652-9569 no later than seven (7) days prior to bid opening. Participation by minority and female owned business, as well as businesses located in this Parish is encouraged.

ST. JOHN THE BAPTIST PARISH
Natalie Robottom, Parish President

Publish:
October 21, 2015
October 28, 2015
November 4, 2015

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<u>BID PROPOSAL</u>	BP-1 THRU BP-14
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**SPECIFICATIONS
FOR
2016 SEWER PUMPS & RELATED MATERIALS
FOR
ST. JOHN THE BAPTIST PARISH**

I. SCOPE:

The following Specifications have been prepared by the St. John the Baptist Parish Utility Department for the purpose of receiving bids on each of the type pumps herein specified for use in the St. John the Baptist Parish sewer system. These proposed pumps are to be delivered to the Parish upon request as replacement units to existing pumps. The request by the Parish shall be by purchase order (PO's) to the successful bidder for each type of pump. Each of the categorized type of pumps as designated in the bid form will be bid and awarded separately and considered as the price for that pump being delivered to the Parish within a maximum time limit of 28 days from receipt of the Purchase Order.

Certain brand names and "or approved equal" are listed to indicate the minimum quality standard acceptable to the St. John the Baptist Parish and do not restrict bidders to the specific brand name. Deviations to these Specifications that do not meet the stated minimal requirements must be submitted for prior written approval 15 days before the final bid date.

The bid for each type of pump shall be awarded to the lowest bidder meeting the specifications that best fulfill the requirements and needs of St. John the Baptist Parish. The Parish Director of Utilities and the Parish Engineer shall be the sole judge of the equality of each pump and motor in determining whether or not each item meets the stated specifications. Then Utility Department reserves the right to seek additional bids or pricing for special projects beyond the scope of these bid specifications.

The bid prices for these pumps, motors and related materials are to be in effect until December 31, 2016. No price adjustments due to materials or manufacturing cost increase shall be allowed or accepted. The Parish shall place orders on an "as needed" basis. The Parish reserves the right to cancel this bid award due to the supplier's inability to provide the specified materials within the stated time limits.

II. SEWER PUMPS

A. SUBMERSIBLE WASTEWATER PUMPS (UP TO 100 HP):

1. General

The products and services referenced herein pertain to pump stations up to 100 Hp, three phase 230/460 VAC for St. John Parish Utility. The pumps and controls shall be provided by a single source supplier to insure complete responsibility for an integrated pumping and controls solution; the System Supplier. The equipment performance and material specifications shall be used to establish a level of quality suitable for the intended service. Pumping equipment shall conform to standards set forth as a minimum level of performance. The control system shall be capable of being integrated into the St. John Parish SCADA system, if so desired. Where applicable, St. John Parish personnel shall perform the work of system integration. Any required data transmission devices (radios, modems, routers, etc.) shall be provided by St. John Parish at the time integration is performed and shall not be part of this contract. As indicated on the plans, Variable Frequency Drives (VFD's) are specified. Remove if VFD not required

2. The System Supplier shall furnish equipment for installation by the Parish. This equipment shall consist of submersible solids-handling pumps with integral electric submersible motors, radially cooled by the surrounding media or by closed loop cooling system base elbows, 316 stainless steel guide rails and brackets, and stainless steel lifting chain. Also, a control panel with level measurement instruments, as required by the Parish, shall also be furnished by the System Supplier for installation by the Parish. Mechanical and electrical connections shall be completed by the Parish.
3. The Bidder shall be responsible for supplying the equipment specified herein to meet or exceed these specifications as obtained from the System Supplier for this project. The System Supplier shall be an Authorized Distributor of the proposed products and shall be capable of a form of direct responsive communication within a two (2) hours notification in regards to service requests and parts availability. The responsive System Supplier shall routinely stock complete pumps, controls and parts to repair those units in their own facility. All equipment approved for this project shall meet or exceed all performance, service, and warranty requirements of this specification.

4. Manufacturer's Qualifications

- a. All equipment approved for this project shall meet or exceed all performance, service, and warranty requirements of this specification.
- b. The solids-handling pumps shall be suitable for domestic sewage containing rag laden solids, pre-treatment effluent, plant effluent, and possible storm water and shall be designed and fully guaranteed for this use. The fluid temperature range shall be from 40 degrees to 104 degrees F. The controls manufacturer shall provide products designed and constructed specifically for water and wastewater applications.
- c. Manufacturers, or Equal:
 1. Flygt
 2. Hydromatic
 3. Fairbanks
 4. Gormann-Rupp
 5. Yeomans
 6. Myers
 7. Johnson Equipment Company

5. Operating Conditions

- a. Each pump shall be rated at ___ H.P., ___ volts, 3 phases, 60 hertz, ___ R.P.M. and shall produce ___ gpm at ___ ft. TDH, with a minimum pump efficiency of ___. The pump shall be capable of handling a ___ spherical solid. The pump shall be non-overloading throughout the entire range of operation without employing a service factor. Motor speed shall be less than 1750 rpm for motors of 50hp or greater.
- b. The pumps shall also be capable of continuous operation at full load, fully submersed, without cavitation or overheating of the motor. The pump shall reserve a minimum service factor of 1.15.

6. Testing

- a. General:

Each pump shall be shop tested and field-tested as specified hereinafter. All costs for the tests shall be borne by the Bidder. In the event any equipment fails to meet the performance values set forth in this specification, the equipment shall be modified and re-tested or replaced with equipment that performs in accordance with this specification.

b. Field Tests:

Equipment shall be field tested as specified hereinafter. Field tests shall be composed of preliminary tests and acceptance tests. The Bidder shall provide the services of authorized equipment supplier's representatives to conduct all field tests.

- 1.) Preliminary tests shall be run on all pumps, motors, and control systems to demonstrate that they are in proper working order. This shall include electrical resistance and 600V megger testing of the motor. Imbalance between stator phase outside of the manufacturer's recommended tolerance or a meg-ohm value of lower than 500 meg-ohms will not be acceptable.
- 2.) Acceptance tests shall be run to demonstrate that the pumping units, motors and control system meet the following requirements:
 - a.) The pumping units shall operate as specified without excessive noise, cavitation, vibration, and without overheating of the bearings, or without seal leakage as detected by the control equipment.
 - b.) All automatic and manual controls shall function in accordance with the specified requirements.

7. Submittals

- a. Furnish complete assembly, foundation support, and installation drawings, together with detailed specifications and data covering pumps, motors, material used, parts, devices and other accessories forming a part of the equipment furnished shall be submitted for approval in accordance with the procedure set forth in the General Conditions.
- b. Data and specifications for the equipment shall include, but shall not be limited to the following:
 - 1.) Setting Plans. Setting plans shall include:
 - a.) Anchor bolt layout
 - b.) Anchor bolt dimensions
 - c.) Outline dimensions and weights of pumps, bases, motors, and control enclosures.

2.) Pumps. Data and drawings shall include:

- a.) Manufacturer, type and model number.
- b.) Assembly drawing, nomenclature and material list, O&M manual, and parts list.
- c.) Type, manufacturer, model numbers.
- d.) Impeller type, diameter, thru-let dimensions, number of vanes and identification number.
- e.) Complete motor performance data including: rating, voltage/phase/frequency; design type; service factor; insulation class; motor pole number; actual rotation speed when combined with the specified pumps; current, power factor and active input power (KW) as a continuous function of shaft power from no load to at least 115 percent load, start (max. inrush) current; locked rotor current; NEC code letter; and motor torque as a continuous function through the motor start cycle from no rotation to synchronous speed.
- f.) Complete performance test curve(s) showing full range (shutoff to run-out) head vs. Capacity, NPSHR, hydraulic efficiency, motor active (KW) input power, and shaft power (BHP).
- g.) Location and description of Service Centers and spare parts stock.
- h.) Warranty for the proposed equipment.

Note:

The manufacturer shall indicate, by arrows to points on the Q/H curves, limits recommended for stable operation, between which the pumps are to be operated to prevent surging, cavitation, and vibration. The stable operating range shall be as large as possible, and shall be based on actual hydraulic and mechanical characteristics of the units and shall meet the hydraulic performance requirements of the proposed system.

- c. Furnish shop drawings and other pertinent data to the Engineer and obtain his approval before fabrication. The drawings shall be complete with respect to dimensions, materials of construction, wiring diagrams, and all supporting engineering information.
- d. At least one month before installation of this work, submit four (4) copies of operation and maintenance instructions to the Engineer.

8. Delivery, Storage and Handling

- a. Deliver store and handle items of equipment in a manner that will prevent any damage.
- b. Follow manufacturer's instructions for short term and long term storage, particularly with respect to proper lubricants and periodic rotation of shafts and bearing.
- c. Touch up shop paint to prevent corrosion.

9. Co-Ordination

- a. Co-ordinate this work with the work of other trades to avoid interferences and to provide for timely installation.

10. Solids-Handling Pumps with Electric Submersible Motors

- a. Furnish submersible solids-handling pumps as noted on the plans (Select: Duplex or Triplex). Each pump shall be equipped with either a radiant cooling or closed loop cooling system with submersible electric motors connected for operation on either 230/460 volts, 3 phase, 60 hertz, and 3 or 4-wire service as noted. Pumps shall be furnished with a submersible cable (SUBCAB) length as required to reach the termination point shown on plans plus an additional 5' (five) feet. The cable shall be suitable for submersible pump applications. The power cable shall be sized according to NEC and ICEA standards. Each pump shall be supplied with a mating cast iron base elbow drilled on an ANSI B16.1 bolt pattern.
 - 1.) Acceptable Manufacturers will be those who meet or exceed all performance, material, warranty and service requirements of these specifications

11. Pump Design

The pumps for this application shall be designed to operate in a fully submerged configuration without the need of an external cooling source. The motors and cable entry system shall be capable of complete submergence and capable of handling a liquid temperature of at least 104 degrees F.

12. Pump Construction

- a. Major pump components shall be of gray cast iron, ASTM A-48, Class 30 or 35B, with smooth surfaces devoid of blow holes or other casting irregularities. All exposed nuts or bolts shall be AISI type 300 series stainless steel. All metal surfaces coming into contact with the pumped media, other than stainless steel and/or brass, shall be protected by a factory-applied coating system suitable for sewerage pumping applications.

Sealing design shall incorporate metal-to-metal contact between machined surfaces. Pump/Motor unit mating surfaces where watertight sealing is required shall be machined and fitted with Nitrile or Viton Rubber O-rings. Joint sealing will be the result of controlled compression of rubber O-rings in two planes and O-ring contact of four sides without the requirement of a specific bolt torque limit.

Rectangular cross-sectioned gaskets that require specific torque limits to achieve compression shall not be considered as adequate or equal. No secondary sealing compounds, elliptical O-rings, grease or other devices shall be used in any part of the pump.

13. Cooling System

- a. Each unit shall be provided with an adequately designed integral cooling system that allows a minimum of 12 motor starts per hour with a partially-submerged motor on a continuous basis in an ambient 104 degree F environment, and in a standard available version, with no damage to motor windings, bearings, or drive shaft seals. The pump supplied under this specification shall be suitable for continuous operation; under, partially submerged conditions. The cooling system shall be either a radiant heat sink type system integral to the stator housing, or closed loop system providing for dissipation of motor heat, regardless of the type of pump installation.

14. Cable Entry Seal

- a. The cable entry seal design shall provide strain relief and preclude specific torque requirements to insure a watertight and submersible seal. The cable entry shall be a compression type with at least two compression seals. The assembly shall provide ease of changing the cable when necessary using the same entry seal.
- b. The cable junction chamber shall be separated from the stator housing and shall allow connection of the motor leads to the power cable in a separate sealing chamber

15. Motor

- a. Each pump shall be driven by a vertical, submersible squirrel cage induction motor, shell type NEMA B design, air or oil filled and housed in a dry watertight chamber. The motor and pump shall be provided by the same manufacturer. The motor shall be rated by Factory Mutual (FM) for NEC Class I, Div. I, Group C&D locations.
- b. The stator winding shall be insulated with moisture resistant Class H insulation, rated for a temperature of 180°C. The stator shall be insulated with a method of coverage providing for at least 95% coverage of the copper windings. The motor shall be designed for continuous duty, while handling pumped media of up to 104 degrees F. The motor shall be capable of withstanding at least 12 evenly spaced starts per hour.
- c. Three thermal switches shall be embedded in the stator end coils, one per phase winding, to monitor the stator temperature. These thermal switches shall be used in conjunction with, and supplemental to, external motor overload protection, and shall be connected to the motor control panel.
- d. The motor service factor (combined effect of voltage, frequency, viscosity, and specific gravity) shall be 1.15. The motor shall have a voltage tolerance of plus or minus 10%. The motor shall be designed for continuous operation in a 40°C. ambient environment and shall have a NEMA Class B maximum operating temperature rise of 80°C. A motor performance curve shall be provided upon request, showing torque as a function of speed, and current, power factor, speed, input power in KW, and efficiency as a function of shaft power.
- e. The motor shall be sized to be non-overloading when the pump is operated at any point on the pump performance characteristic curve.
- f. Pump and motor shaft shall be a solid continuous unit. The pump shaft is an extension of the motor shaft. Couplings and shafts incorporating sleeves shall not be acceptable. The pump shaft shall be completely isolated from the pumped liquid.
- g. Pump motor power cables installed shall be oil resistant rubber jacketed, type SPC multi-conductor cable, suitable for submersible pump applications and heavy mechanical stresses. The power cable shall also be sized according to NEC and ICEA standards. The total length of each cable shall be a minimum of 50 feet long. Power cables shall each include a ground check conductor.
- h. Motors shall conform to the NEMA Premium Efficiency Electric Motor Program or the IE3 standard.

16. Bearings

The integrated pump/motor shaft shall rotate on two (2) oil bath or sealed and permanently lubricated bearings. External bearing lubrication ports, which allow bearing contamination and over-packing, will not be allowed. The upper bearing, providing for radial thrust, shall be a single row, roller or ball bearing. The lower bearing shall consist of at least one double row angular contact bearing for combined axial and radial loads. Minimum L₁₀ bearing life shall be 50,000 hours at any usable portion of the pump curve.

17. Mechanical Seal

- a. Each pump shall be provided with dual tandem mechanical shaft seal system comprising two totally independent seal assemblies. The seals shall operate in a seal lubricant buffer chamber that hydro-dynamically lubricates the lapped seal faces at a constant rate. The inner seal, located between the lubricant buffer chamber and the stator housing, shall contain one stationary and one positively driven rotating ring, functioning as an independent secondary barrier between the pumped liquid and the stator housing. Both inner seal faces shall be corrosion resistant Tungsten Carbide. The outer of the tandem set of seals function as the primary barrier between the pumped liquid and the stator housing. This set shall consist of a stationary ring and a positively driven rotating ring, both of which shall be corrosion resistant.

Each interface shall be held in contact by its own spring system supplemented by external liquid pressures. The seals shall require neither maintenance nor adjustment, but shall be easily inspected and replaceable.

Conventional double mechanical seals with a common single or double spring acting between the upper and lower units which require a substantial pressure differential to offset external pressure and effect sealing, shall not be considered acceptable nor equal to the dual independent seal system specified. Cartridge-type seals comprising a single rotating element sandwiched between dual stationary elements will not be considered a dual tandem seal system and will not be accepted but capable of dual rotation with no damage. The shaft sealing system shall be capable of withstanding volute pressures up to 1.5 times pump shutoff head. No seal damage shall result from operating the pumping unit in its liquid environment, from running pump dry, or from reverse pump operation. The drain and inspection plug, with positive anti-leak seal, shall be easily accessible from the outside.

18. Pump Shaft

The pump and motor shaft shall be a single piece unit. The pump shaft is an extension of the motor shaft. Shafts using mechanical couplings shall not be acceptable. The shaft shall be 416 stainless steel and or – ASTM A479 S43100-T. Shaft sleeves will not be acceptable.

19. Impeller

The impeller shall be of Hi-Chrome Iron, ASTM A532 (Alloy III A) 25% or ductile iron ASTM A536 CLASS 65 dynamically balanced. The impeller shall be a non-clog design. The impeller to volute clearance shall be adjustable or the impeller shall have a separate SS wear ring assembly. The Impeller shall be locked to the shaft, held by an impeller bolt and treated with a corrosion inhibitor. The design as stated above shall be used, with a Brinnell hardness of at least 325.

20. Volute

The pump volute shall be a single piece gray cast iron, ASTM A-48, Class 30 or 35B, non-concentric design with smooth passages of sufficient size to pass any solids that may enter the impeller. The volute shall have an integral and replaceable wearing surface constructed of ASTM A532 (Alloy III A) 25% – Hi-Chrome Iron to provide an interface to the impeller or stainless steel wear ring.

21. Protection

- a. All stators shall incorporate thermal switches in series to monitor the temperature of each phase winding. At a maximum of 140°C the thermal switches shall open, stop the motor and activate an alarm. Use of voltage sensitive solid state sensors and trip temperature above 140°C shall not be allowed.
- b. Each pump/motor unit shall be provided with a stator leakage sensor that will sense water intrusion into the motor housing in the event of seal failure or cable entry failure.

22. Inspection

Inspect all equipment upon arrival at job site and prior to installation. Notify manufacturer of any damage and/or shortage.

23. Preparation

Make corrections and/or repairs as required for items inspected and found being deficient.

24. Field Quality Control

The manufacturer's field engineer or representative shall inspect and check the installation after erection and be on hand for initial start-up of the equipment for a period of at least three days. He shall also instruct waste water personnel in the operation and maintenance of the system.

25. Service

The pump manufacturer shall have a direct factory service center/stocking facility capable of completely servicing, and which stocks identical complete drive units, and spare parts for, the proposed pumps. The System Supplier shall be an Authorized Distributor of the proposed products and shall be capable of a form of direct responsive communication within a two (2) hours notification in regards to service requests and parts availability.

26. Warranty

The pump manufacturer shall provide a prorated warranty for the units supplied to the Owner against defects in material and workmanship for a period of at least five (5) years or 10,000 operating hours in writing under the operating conditions presented by this project, in accordance with their standard published Municipal Pump Warranty. Pump manufacturer shall demonstrate ability to support claimed warranty coverage by meeting all requirements of this specification.

B. SUBMERSIBLE CUTTER SEWAGE PUMPS:

1. General:

Each submersible cutter sewage pump shall be of the discharge, have the motor horsepower, RPM, voltage, and be capable of operating within the capacities and heads listed below. The pump shall incorporate cutting components to shear solids entering the pump and be capable of handling raw unscreened sewage. The pump shall be capable of operating in liquid temperatures of up to 104 degrees F continuously and shall also be capable of running dry for extended periods of time.

2. Castings:

The pump shall consist of Class 30 heavy duty cast iron castings and the exterior

3. Housing:

The motor housing must be of Class 30 heavy duty cast iron for durable structural strength and the most effective heat dissipation from the motor to the liquid passing by the pump. Lighter weight stamped or welded and extruded stainless steel housings are not acceptable.

4. Flanges:

The 125 lb. discharge flanges shall be ANSI design and capable for use with either a guide rail or hard piped installation.

5. Cutter Blade:

The cutter blade shall be adjustable or replaceable with minimal time and effort from outside the pump without the need to dis-assemble the pump. The cutter blades shall be heat treated steel with a 45/47 Rockwell "C" minimum. To improve the pump inlet conditions the cutter blade and holder shall act as a straightening vane.

6. Impeller:

The impeller shall be a two-vane, one piece, enclosed non-clog design and keyed to the motor shaft with a stainless steel socket head cap screw. The cone portion of the impeller shall be hardened to a 52/53 Rockwell "C" minimum for long life and forms a continuation of the impeller vanes into the eye of the impeller. The cone shall mate in close tolerance with the cutter blade so shearing occurs to all solids entering the impeller. The impeller shall be dynamically balanced to ISO G6.3 specifications.

7. Seal:

Tandem mechanical shaft seal with the inboard seal operating in an oil filled cavity. The outboard seal shall be carbon for rotating surfaces and stainless steel for the stationary seat. The inboard seal shall be tungsten carbide for both the rotating and stationary seats. All hardware for both seals shall be Series 300 stainless steel and all mechanical seal elastomers to be BUNA-N.

8. Moisture Detection System:

A moisture sensor detection system consisting of one normally open (NO) probe shall be installed in the pump seal chamber. The probe will detect any moisture present and shall be connected to an alarm device indicating moisture is present in the seal cavity.

The motor windings shall have Class "F" insulation and operate in an air filled environment. The motor shall meet NEMA Design "B" specifications. The pump shall be non-overloading throughout the entire pump curve and be capable of operating in a totally or partially submerged condition for extended periods of time without damage due to the heat generated. The shaft shall be 416 stainless steel. The lower shall be of the heavy duty double row ball type to accept all thrust and radial loads and the upper bearing shall be of the heavy duty single row ball type for radial loads. All bearings shall be permanently lubricated.

Thermal sensors shall be provided to monitor the stator temperatures and are to be embedded in the end coils of the stator windings. The sensors shall be used in conjunction with an external motor overload protection and wired to the control panel.

The power and sensor cords shall be of the SO type and shall be 50' long. All incoming lead wires shall enter the motor through a sealing gland into a dry chamber above the winding chamber.

Prior to shipment, the manufacturer will perform a continuity check and the motor chamber shall be Hi-Potted to test for electrical integrity. The manufacturer shall confirm that the motor voltage and frequency matches the nameplate data. The pump shall be pressurized and an air leak test will be performed to ensure the integrity of the motor housing. The pump shall be submerged and run to determine that it meets required hydraulic performance. Vibration and noise test certification will be completed on the pump.

C. SUBMERSIBLE GRINDER PUMPS:

1. General:

The submersible grinder pump shall be capable of handling sanitary sewage and grinding it into fine slurry enabling it to be pumped thru small diameter piping, valves, and fittings. Each submersible grinder pump shall have the discharge size, motor horsepower, RPM, voltage and capable of operating within the capacities and heads listed below.

2. Pump:

The pump castings shall be of Class 30 cast iron and the motor housing shall be finned to dissipate heat from the motors. The castings shall be protected by a powder coated epoxy system. Air filled motors will not be considered since they do not properly dissipate heat from the motors. All external mating parts shall be machined fits and sealed with square BUNA-N rings. All fasteners exposed to the waste shall be Series 300 stainless steel. The motor shall be protected on the top side with an attached sealed junction box chamber which in the event of cord damage will prevent moisture from wicking into the motor housing. The motor shall be protected on the bottom side with a tandem seal arrangement with each seal having a separate spring assembly. The oil filled seal chamber located between the two seals shall contain two probes to detect seal leakage. The upper and lower ball bearings shall be capable of handling all thrust loads. The pump housing shall be of the concentric design thereby equalizing the pressure forces inside the housing which will extend the life of the seals and bearings. The top cap shall have a stainless steel lifting bracket.

3. Motor:

The oil filled motor shall be Class F insulated, NEMA B design rated for continuous duty. At maximum load, the winding temperature shall not exceed 250 degrees F, while un-submerged.

There shall be bimetallic thermal sensors in the motor windings and shall use magnetic starters with overload relays in the control panel for further protection. The bearings shall be made of high carbon chromium steel and shall be provided to prevent shaft deflection by withstanding all thrust and radial loads. The bearing system shall be designed to enable proper cutter alignments from shutoff head to a maximum load at 5' TDH. The motor shaft shall be 416 stainless steel with a minimum diameter of 1". The power cord shall be of the SO type and be 50' long.

4. Seals:

The pumps shall have a dual seal configuration with the seals mounted in tandem and each seal shall have carbon ceramic faces and Series 316 stainless steel springs. Double seal configurations with a common intermediate spring will not be acceptable.

5. Impeller:

The impellers shall be fully balanced bronze vortex design with pump out vanes on the back shroud and shall be keyed and bolted to the motor shaft. Pump performance shall be the same regardless of the rotation and single rotation impellers will not be acceptable. The cutters and plates shall be Series 416 stainless steel with a Rockwell C hardness of 55 to 60.

D. SELF-PRIMING SEWAGE PUMPS (HORIZONTAL):

1. General

The pump manufacturer must be ISO 9001:2008 revision certified, with scope of registration including design control and service after sales activities. The pump manufacturer must be registered to the ISO 14001 Environmental Management System standard and as such is committed to minimizing the impact of its activities on the environment and promoting environmental sustainability by the use of best management practices, technological advances, promoting environmental awareness and continual improvement. Pumps must be designed to handle raw, unscreened, domestic sanitary sewage. Pumps shall have (3")(4")(6")(8") suction connection, and (3")(4")(6")(8") discharge connection. Each pump shall be selected to perform under following operating conditions:

2. Pump Performance Certifications

a. Solids Handling Capability

All internal passages, impeller vanes, and recirculation ports shall pass a 3" spherical solid. Smaller internal passages that create a maintenance nuisance or interfere with priming and pump performance shall not be permitted. Upon request from the engineer, manufacturer's certified drawings showing size and location of the recirculation port(s) shall be submitted for approval.

3. Reprime Performance

a. Consideration shall be given to the sanitary sewage service anticipated, in which debris is expected to lodge between the suction check valve and its seat, resulting in the loss of the pump suction leg, and siphoning of liquid from the pump casing to the approximate center line of the impeller. Such occurrence shall be considered normal, and the pump must be capable of automatic, unattended operation with an air release line installed.

b. During unattended operation, the pump shall retain adequate liquid in the casing to insure automatic repriming while operating at its rated speed in a completely open system. The need for a suction check valve or external priming device shall not be required.

c. Pump must reprime for a set lift in vertical ft. at the specified speed and impeller diameter. Reprime lift is defined as the static height of the pump suction above the liquid, while operating with only one-half of the liquid remaining in the pump casing. The pump must reprime and deliver full capacity within five minutes after the pump is energized in the reprime condition. Reprime performance must be confirmed with the following test set-up:

1.) A check valve to be installed downstream from the pump discharge flange. The check valve size shall be equal (or greater than) the pump discharge diameter.

2.) A length of air release pipe shall be installed between pump and the discharge check valve. This line shall be open to atmosphere at all times duplicating the air displacement rate anticipated at a typical pump station fitted with an air release valve.

3.) The pump suction check valve shall be removed. No restrictions in the pump or suction piping will prevent the siphon drop of the suction leg. Suction pipe configuration for reprime test shall incorporate a 2 feet minimum horizontal run, a 90° elbow and vertical run at the specified lift. Pipe size shall be equal to the pump suction diameter.

- 4.) Impeller clearances shall be set as recommended in the pump service manual.
- 5.) Repeatability of performance shall be demonstrated by testing five consecutive reprime cycles. Full pump capacity (flow) shall be achieved within five minutes during each cycle.
- 6.) Liquid to be used for reprime test shall be water.
- 7.) Upon request from the engineer, certified reprime performance test results, prepared by the manufacturer, and certified by a registered professional engineer, shall be submitted for approval prior to shipment.

4. Manufacturer's Warranty

- a. The pump manufacturer shall warrant the pump equipment to be of quality construction, free of defects in material and workmanship. A written warranty shall include specific details described below.
- b. All equipment, apparatus, and parts furnished shall be warranted for sixty (60) months, excepting only those items that are normally consumed in service, such as oils, grease, packing, gaskets, O-rings, etc. The pump manufacturer shall be solely responsible for warranty of the pump equipment and all components.
- c. Components failing to perform as specified by the engineer, or as represented by the manufacturer, or as proven defective in service during the warranty period, shall be replaced, repaired, or satisfactorily modified by the manufacturer.
- d. It is not intended that the pump manufacturer assume liability for consequential damages or contingent liabilities arising from failure of any vendor supplied product or part which fails to properly operate, however caused. Consequential damages resulting from defects in design, or delays in delivery are also beyond the manufacturer's scope of liability.
- e. This limited warranty shall be valid only when installation is made and use and maintenance is performed in accordance with manufacturer recommendations. The warranty shall become effective on the date of acceptance by the purchaser or the purchaser's authorized agent, or sixty (60) days after installation, or ninety (90) days after shipment from the factory, whichever occurs first.

5. Manufacturer

- a. The specifications and project drawings depict equipment and materials manufactured by The Gorman-Rupp Company which are deemed most suitable for the service anticipated. It is not intended, however, to eliminate other products of equal quality and performance. The contractor shall prepare his bid based on the specified equipment for purposes of determining low bid. Award of a contract shall constitute an obligation to furnish the specified equipment and materials.
- b. After execution of the contract, the contractor may offer substitutions to the specified equipment for consideration. The equipment proposed for substitution must be superior in construction and performance to that specified in the contract, and the higher quality must be demonstrated by a list of current users of the proposed equipment in similar installations.
- c. In event the contractor obtains engineer's approval for equipment substitution, the contractor shall, at his own expense, make all resulting changes to the enclosures, buildings, piping or electrical systems as required to accommodate the proposed equipment. Revised detail drawings illustrating the substituted equipment shall be submitted to the engineer prior to acceptance.
- d. It will be assumed that if the cost to the contractor is less for the proposed substitution, then the contract price shall be reduced by an amount equal to the savings.

6. Pump Design

- a. Pumps shall be horizontal, self-priming centrifugal type, designed specifically for handling raw, unscreened, domestic sanitary sewage. Pump solids handling capability and performance criteria shall be in accordance with requirements listed under PART 1 - GENERAL of this section.
- b. The pump manufacturer must be ISO 9001:2008 revision certified, with scope of registration including design control and service after sales activities.
- c. Materials and Construction Features
 - 1.) Pump casing shall be cast iron Class 30 with integral volute scroll. Casing shall incorporate following features:
 - a.) Mounting feet sized to prevent tipping or binding when pump is completely disassembled for maintenance.

- b.) Fill port coverplate, 3 1/2" diameter, shall be opened after loosening a hand nut/clamp bar assembly. In consideration for safety, hand nut threads must provide slow release of pressure, and the clamp bar shall be retained by detente lugs. A Teflon gasket shall prevent adhesion of the fill port cover to the casing.
 - c.) Casing drain plug shall be at least 1 1/4" NPT to insure complete and rapid draining.
 - d.) Liquid volume and recirculation port design shall be consistent with performance criteria listed under PART 1 - GENERAL of this section.
- 2.) Coverplate shall be cast iron Class 30. Design must incorporate following maintenance features:
- a.) Retained by hand nuts for complete access to pump interior. Coverplate removal must provide ample clearance for removal of stoppages, and allow service to the impeller, seal, wearplate or check valve without removing suction or discharge piping.
 - b.) A replaceable wearplate secured to the coverplate by weld studs and nuts shall be AISI 1015 HRS.
 - c.) In consideration for safety, a pressure relief valve shall be supplied in the coverplate. Relief valve shall open at 75-200 PSI.
 - d.) Two O-rings of Buna-N material shall seal coverplate to pump casing.
 - e.) Pusher bolt capability to assist in removal of coverplate. Pusher bolt threaded holes shall be sized to accept same retaining capscrews as used in rotating assembly.
 - f.) Easy-grip handle shall be mounted to face of coverplate.
- 3.) Rotating assembly, which includes impeller, shaft, mechanical shaft seal, lip seals, bearings, sealplate and bearing housing, must be removable as a single unit without disturbing the pump casing or piping. Design shall incorporate following features:

- a.) Sealplate and bearing housing shall be cast iron Class 30. Separate oil filled cavities, vented to atmosphere, shall be provided for shaft seal and bearings. Cavities must be cooled by the liquid pumped. Three lip seals will prevent leakage of oil. The bearing cavity shall have an oil level sight gauge and fill plug check valve. The clear sight gauge shall provide easy monitoring of the bearing cavity oil level and condition of oil without removal of the fill plug check valve. The check valve shall vent the cavity but prevent introduction of moist air to the bearings. The seal cavity shall have an oil level sight gauge and fill/vent plug. The clear sight gauge shall provide easy monitoring of the seal cavity oil level and condition of oil without removal of the fill/vent plug. Double lip seal shall provide an atmospheric path providing positive protection of bearings, with capability for external drainage monitoring.
- b.) Impeller shall be ductile iron, two-vane, semi-open, non-clog, with integral pump out vanes on the back shroud. Impeller shall thread onto the pump shaft and be secured with a lockscrew and conical washer.
- c.) Shaft shall be AISI 4140 alloy steel unless otherwise specified by the engineer, in which case AISI 17-4 pH stainless steel shall be supplied.
- d.) Bearings shall be anti-friction ball type of proper size and design to withstand all radial and thrust loads expected during normal operation. Bearings shall be oil lubricated from a dedicated reservoir. Pump designs which use the same oil to lubricate the bearings and shaft seal shall not be acceptable.
- e.) Shaft seal shall be cartridge oil lubricated mechanical type. The stationary and rotating seal faces shall be tungsten titanium carbide alloy. Each mating surface shall be lapped to within three light bands flatness (35 millionths of an inch), as measured by an optical flat under monochromatic light. The stationary seal seat shall be double floating by virtue of a dual O-ring design; an external O-ring secures the stationary seat to the sealplate, and an internal O-ring holds the faces in alignment during periods of mechanical or hydraulic shock (loads which cause shaft deflection, vibration, and axial/radial movement). Elastomers shall be viton; cage and spring to be stainless steel. Seal shall be oil lubricated from a dedicated reservoir. The same oil shall not lubricate both shaft seal and shaft bearings. Seal shall be warranted in accordance with requirements listed under PART 1 - GENERAL of this section.

- f.) Pusher bolt capability to assist in removal of rotating assembly. Pusher bolt threaded holes shall be sized to accept same capscrews as used for retaining rotating assembly.
- 4.) Adjustment of the impeller face clearance (distance between impeller and wearplate) shall be accomplished by external means.
- a.) Clearances shall be maintained by a four point external shimless coverplate adjustment system, utilizing a four collar and four adjusting screw design allowing for incremental adjustment of clearances by hand as required. Each of the four points shall be lockable to prevent inadvertent clearance increases or decreases due to equipment vibration or accidental operator contact. The four point system also allows for equal clearance gaps at all points between the impeller and wear plate. Requirement of realignment of belts, couplings, etc., shall not be acceptable. Coverplate shall be capable of being removed without disturbing clearance settings. Clearance adjustment systems that utilize less than four points will not be considered.
 - b.) There shall be provisions for additional clearance adjustment in the event that adjustment tolerances have been depleted from the coverplate side of the pump. The removal of stainless steel shims from the rotating assembly side of the pump shall allow for further adjustment as described above
 - c.) Clearance adjustment which requires movement of the shaft only, thereby adversely affecting seal working length or impeller back clearance, shall not be acceptable.
- 5.) Suction check valve shall be molded Neoprene with integral steel and nylon reinforcement. A blow-out center shall protect pump casing from hydraulic shock or excessive pressure. Removal or installation of the check valve must be accomplished through the coverplate opening, without disturbing the suction piping. Sole function of check valve shall be to save energy by eliminating need to reprime after each pumping cycle. Pumps requiring a suction check valve to assist reprime will not be acceptable.
- 6.) Spool flanges shall be one-piece cast iron, class 30 fitted to suction and/or discharge ports. Each spool shall have one 1-1/4" NPT and one 1/4" NPT tapped hole with pipe plugs for mounting gauges or other equipment.

7.) Serviceability

- a.) The pump manufacturer shall demonstrate to the engineer's satisfaction that consideration has been given to reducing maintenance costs.
- b.) No special tools shall be required for replacement of any components within the pump.

7. Examination

Contractor shall off-load equipment at installation site using equipment of sufficient size and design to prevent injury or damage. Immediately after off-loading, contractor shall inspect complete pump and appurtenances for shipping damage or missing parts. Any damage or discrepancy shall be noted in written claim with shipper prior to accepting delivery. Validate all pump serial numbers and parts lists with shipping documentation. Notify the manufacturer's representative of any unacceptable conditions noted with shipper.

8. Operational Test

- a. Prior to acceptance by owner, an operational test of all pumps, drives, and control systems shall be conducted to determine if the installed equipment meets the purpose and intent of the specifications. Tests shall demonstrate that all equipment is electrically, mechanically, structurally, and otherwise acceptable; it is safe and in optimum working condition; and conforms to the specified operating characteristics.
- b. After installation by the Owner the supplier or his representative shall check the pumps while in operation to determine if the pumps are adequate to operate the station through several pumping cycles. Observe and record operation of pumps, suction and discharge gage readings, ampere draw, pump controls, and liquid level controls. Check

E. SELF-PRIMING PUMP (ROTATING UNITS):

The factory assembled rotating unit shall include all of the rotating assembly components including the casing of A48COL30 high strength cast iron, a A60-40-18 enclosed two-port impeller capable of passing 3" minimum spherical solids, an ANSI 4140HT stainless steel impeller with a replaceable stainless steel shaft sleeve with grease lubricated support ball bearing, the ball bearing chamber to be A48CL30 cast iron, oil lubricated double mechanical seal with 316 stainless steel casings, BUNA and VITON O-Rings and tungsten carbide faces. The rotating shall be capable of being installed in Gorman-Rupp "T" Series or Gator-Prime GP self-priming sewage pumps.

F. MISCELLANEOUS PUMPS:

1. General:

The St. John the Baptist Parish Utility Department has various self priming sewerage pumps currently in use throughout the Parish. These pumps need replacing at various times throughout the year. The replacement pumps must fit the design requirements and conditions of the existing pump so that the damaged existing pump can be removed and replaced with a new pump identical in nature without the need for retrofitting of mounting brackets, check valves, piping etc. These various pump types, brands, models and serial numbers are specified below for pricing on the bid form.

2. Pumps:

a. 4" Gator Prime Influent Pump:

Model LPH Gator Prime Self Priming Above Ground
Serial # 608859.06

b. 4" Aurora Pumps:

Type 661A-SF Self Priming above ground
Serial # 90-15603-2-1

c. 4" Vortex Pumps:

VXTN441121 Self Priming above Ground
Serial # 9802446-13-A

d. 5" Crane Deming Pump:

Dia. 8-778 Type BF 1750 RPM
Serial # DC-842504

e. WEG Pump/Motor 7.5 HP BT88346 Frame 215JM:

Model 1036E53E215JM Volts 208/230/460
Amps 26.8/24.4/12.2-3510 rpm

f. Hydromatic Sludge Pump:

Serial # 113199 Model HE4L6S
Imp. Dia. 8.3 Pump Speed 117 Total 25 Flow
300GPM 5 hp. Submersible

- g. **3" ITT/Flygt 86 Submersible Pump:**
3085182-05109935 3ph. 60Hz. 2.2kw. 3hp
1700 rpm TP111C1.H.IEC 6034-1 460 Volt
3085-32-9374
- h. **4" Denver Orion Return Self-Priming Above Ground Pump:**
Model 6x4x24 FRE Joy Mfg.
Serial # 193346004
- i. **6" Denver Orion Self Priming Above Ground Pump:**
Model 100/75D
Serial # SPA1170
- j. **6x4" Fairbanks Morse Pentair Pump Group:**
Process Water Pump Model 456452-1
Serial # H16F7100A
5 Stage Submersible Pump
- k. **4" Denver Orion Extra Process Water Pump:**
Serial # 193851-001 Model 4x3x12 FRD
Self-Priming Above Ground
- l. **8" Positive Displacement Pump:**
NET2SCH Type NE100A 1234

LOUISIANA UNIFORM PUBLIC WORK BID FORM

TO: St. John the Baptist Parish
1801 West Airline Hwy.
Laplace, Louisiana 70068

(Owner to provide name and address of owner)

BID FOR: St. John the Baptist Parish
2016 Sewer Pumps and Related Materials

(Owner to provide name of project and other identifying information)

The undersigned bidder hereby declares and represents that she/he; a) has carefully examined and understands the Bidding Documents, b) has not received, relied on, or based his bid on any verbal instructions contrary to the Bidding Documents or any addenda, c) has personally inspected and is familiar with the project site, and hereby proposes to provide all labor, materials, tools, appliances and facilities as required to perform, in a workmanlike manner, all work and services for the construction and completion of the referenced project, all in strict accordance with the Bidding Documents prepared by: St. John the Baptist Parish Utility Department and dated: January 2016

(Owner to provide name of entity preparing bidding documents.)

Bidders must acknowledge all addenda. The Bidder acknowledges receipt of the following **ADDENDA:** (Enter the number the Designer has assigned to each of the addenda that the Bidder is acknowledging) _____.

TOTAL BASE BID: For all work required by the Bidding Documents (including any and all unit prices designated "Base Bid" * but not alternates) the sum of:

_____ Dollars (\$ _____)

ALTERNATES: For any and all work required by the Bidding Documents for Alternates including any and all unit prices designated as alternates in the unit price description.

Alternate No. 1 *(Owner to provide description of alternate and state whether add or deduct)* for the lump sum of:

_____ Dollars (\$ _____)

Alternate No. 2 *(Owner to provide description of alternate and state whether add or deduct)* for the lump sum of:

_____ Dollars (\$ _____)

Alternate No. 3 *(Owner to provide description of alternate and state whether add or deduct)* for the lump sum of:

_____ Dollars (\$ _____)

NAME OF BIDDER: _____

ADDRESS OF BIDDER: _____

LOUISIANA CONTRACTOR'S LICENSE NUMBER: _____

NAME OF AUTHORIZED SIGNATORY OF BIDDER: _____

TITLE OF AUTHORIZED SIGNATORY OF BIDDER: _____

SIGNATURE OF AUTHORIZED SIGNATORY OF BIDDER **: _____

DATE: _____

* The Unit Price Form shall be used if the contract includes unit prices. Otherwise it is not required and need not be included with the form. The number of unit prices that may be included is not limited and additional sheets may be included if needed.

** If someone other than a corporate officer signs for the Bidder/Contractor, a copy of a corporate resolution or other signature authorization shall be required for submission of bid. Failure to include a copy of the appropriate signature authorization, if required, may result in the rejection of the bid unless bidder has complied with La. R.S. 38:2212(B)5.

BID SECURITY in the form of a bid bond, certified check or cashier's check as prescribed by LA RS 38:2218.A is attached to and made a part of this bid.

LOUISIANA UNIFORM PUBLIC WORK BID FORM UNIT PRICE FORM

TO: St. John the Baptist Parish **BID FOR:** St. John the Baptist Parish
1801 West Airline Hwy. 2016 Sewer Pumps and Related Materials
Laplace, Louisiana 70068

(Owner to provide name and address of owner) *(Owner to provide name of project and other identifying information)*

UNIT PRICES: This form shall be used for any and all work required by the Bidding Documents and described as unit prices. Amounts shall be stated in figures and only in figures.

DESCRIPTION:	REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#					
A-1	4" SUBMERSIBLE SOLID HANDLING PUMP, 1 H.P., 1750 RPM 3/60/230/460 DESIGN CRITERIA 100 GPM AT 14' HEAD TO 240 GPM AT 6' HEAD SHUTOFF HEAD 20'	LUMP SUM	LUMP SUM	\$ _____ /	
<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#					
A-2	4" SUBMERSIBLE SOLID HANDLING PUMP, 1.5 H.P., 1750 RPM 3/60/230/460 DESIGN CRITERIA 100 GPM AT 20' HEAD TO 300 GPM AT 7' HEAD SHUTOFF HEAD 26'	LUMP SUM	LUMP SUM	\$ _____ /	
<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#					
A-3	4" SUBMERSIBLE SOLID HANDLING PUMP, 2 H.P., 1750 RPM 3/60/230/460 DESIGN CRITERIA 100 GPM AT 25' HEAD TO 380 GPM AT 8' HEAD SHUTOFF HEAD 31'	LUMP SUM	LUMP SUM	\$ _____ /	

DESCRIPTION:		<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#	UNIT PRICE EXTENSION (Quantity times Unit Price)
REF. NO.	UNIT OF MEASURE:	QUANTITY:	UNIT PRICE
A-4 4" SUBMERSIBLE SOLID HANDLING PUMP, 3 H.P., 1750 RPM 3/60/230/460 DESIGN CRITERIA 100 GPM AT 32' HEAD TO 480 GPM AT 5' HEAD SHUTOFF HEAD 40'	LUMP SUM	LUMP SUM	\$ _____ /

DESCRIPTION:		<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#	UNIT PRICE EXTENSION (Quantity times Unit Price)
REF. NO.	UNIT OF MEASURE:	QUANTITY:	UNIT PRICE
A-5 4" SUBMERSIBLE SOLID HANDLING PUMP, 5 H.P., 1750 RPM 3/60/230/460 DESIGN CRITERIA 80 GPM AT 40' HEAD TO 540 GPM AT 12' HEAD SHUTOFF HEAD 49'	LUMP SUM	LUMP SUM	\$ _____ /

DESCRIPTION:		<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#	UNIT PRICE EXTENSION (Quantity times Unit Price)
REF. NO.	UNIT OF MEASURE:	QUANTITY:	UNIT PRICE
A-6 4" SUBMERSIBLE SOLID HANDLING PUMP, 7.5 H.P., 1750 RPM 3/60/230/460 DESIGN CRITERIA 80 GPM AT 48' HEAD TO 600 GPM AT 16' HEAD SHUTOFF HEAD 53'	LUMP SUM	LUMP SUM	\$ _____ /

DESCRIPTION:		<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#	UNIT PRICE EXTENSION (Quantity times Unit Price)
REF. NO.	UNIT OF MEASURE:	QUANTITY:	UNIT PRICE
A-7 4" SUBMERSIBLE SOLID HANDLING PUMP, 5 H.P., 1750 RPM 3/60/230/460 DESIGN CRITERIA 80 GPM AT 42' HEAD TO 750 GPM AT 7' HEAD SHUTOFF HEAD 47'	LUMP SUM	LUMP SUM	\$ _____ /

DESCRIPTION:				<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# _____	
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)	
A-8 4" SUBMERSIBLE SOLID HANDLING PUMP 7.5 H.P., 1750 RPM 3/60/230/460 DESIGN CRITERIA 80 GPM AT 52' HEAD TO 800 GPM AT 13' HEAD SHUTOFF HEAD 58'	LUMP SUM	LUMP SUM	\$ _____ /		

DESCRIPTION:				<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# _____	
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)	
A-9 4" SUBMERSIBLE SOLID HANDLING PUMP 10 H.P., 1750 RPM 3/60/230/460 DESIGN CRITERIA 80 GPM AT 58' HEAD TO 900 GPM AT 13' HEAD SHUTOFF HEAD 63'	LUMP SUM	LUMP SUM	\$ _____ /		

DESCRIPTION:				<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# _____	
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)	
A-10 4" SUBMERSIBLE SOLID HANDLING PUMP 15 H.P., 1750 RPM 3/60/230/460 DESIGN CRITERIA 100 GPM AT 72' HEAD TO 850 GPM AT 18' HEAD SHUTOFF HEAD 80'	LUMP SUM	LUMP SUM	\$ _____ /		

DESCRIPTION:				<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# _____	
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)	
A-11 4" SUBMERSIBLE SOLID HANDLING PUMP 20 H.P., 1750 RPM 3/60/230/460 DESIGN CRITERIA 100 GPM AT 92' HEAD TO 1,150 GPM AT 14' HEAD SHUTOFF HEAD 98'	LUMP SUM	LUMP SUM	\$ _____ /		

DESCRIPTION:	REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
A-12 6" SUBMERSIBLE SOLID HANDLING PUMP 5 H.P., 1750 RPM 3/60/230/460 DESIGN CRITERIA 80 GPM AT 42' HEAD TO 750 GPM AT 7' HEAD SHUTOFF HEAD 47'		LUMP SUM	LUMP SUM	\$ _____ /	

DESCRIPTION:	REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
A-13 6" SUBMERSIBLE SOLID HANDLING PUMP 7.5 H.P., 1750 RPM 3/60/230/460 DESIGN CRITERIA 80 GPM AT 52' HEAD TO 800 GPM AT 13' HEAD SHUTOFF HEAD 58'		LUMP SUM	LUMP SUM	\$ _____ /	

DESCRIPTION:	REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
A-14 6" SUBMERSIBLE SOLID HANDLING PUMP 10 H.P., 1750 RPM 3/60/230/460 DESIGN CRITERIA 80 GPM AT 58' HEAD TO 900 GPM AT 13' HEAD SHUTOFF HEAD 63'		LUMP SUM	LUMP SUM	\$ _____ /	

DESCRIPTION:	REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
A-15 6" SUBMERSIBLE SOLID HANDLING PUMP 15 H.P., 1750 RPM 3/60/230/460 DESIGN CRITERIA 100 GPM AT 72' HEAD TO 850 GPM AT 18' HEAD SHUTOFF HEAD 80'		LUMP SUM	LUMP SUM	\$ _____ /	

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
A-16 6" SUBMERSIBLE SOLID HANDLING PUMP 20 H.P., 1750 RPM 3/60/230/460 DESIGN CRITERIA 100 GPM AT 92' HEAD TO 1,150 GPM AT 14' HEAD SHUTOFF HEAD 98'		LUMP SUM	LUMP SUM	\$ _____	

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
A-17 6" SUBMERSIBLE SOLID HANDLING PUMP 25 H.P., 1750 RPM 3/60/230/460 DESIGN CRITERIA 200 GPM AT 65' HEAD TO 1,800 GPM AT 22' HEAD SHUTOFF HEAD 70'		LUMP SUM	LUMP SUM	\$ _____	

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
A-18 6" SUBMERSIBLE SOLID HANDLING PUMP 30 H.P., 1750 RPM 3/60/230/460 DESIGN CRITERIA 200 GPM AT 75' HEAD TO 2,000 GPM AT 22' HEAD SHUTOFF HEAD 82'		LUMP SUM	LUMP SUM	\$ _____	

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
A-19 6" SUBMERSIBLE SOLID HANDLING PUMP 40 H.P., 1750 RPM 3/60/230/460 DESIGN CRITERIA 200 GPM AT 94' HEAD TO 2,400 GPM AT 35' HEAD SHUTOFF HEAD 1100'		LUMP SUM	LUMP SUM	\$ _____	

DESCRIPTION:				<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#	UNIT PRICE EXTENSION (Quantity times Unit Price)
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE		
A-20 6" SUBMERSIBLE SOLID HANDLING PUMP 50 H.P., 1750 RPM 3/60/230/460 DESIGN CRITERIA 200 GPM AT 105' HEAD TO 2,400 GPM AT 35' HEAD SHUTOFF HEAD 110'	LUMP SUM	LUMP SUM	\$ _____ /		

DESCRIPTION:				<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#	UNIT PRICE EXTENSION (Quantity times Unit Price)
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE		
A-21 6" SUBMERSIBLE SOLID HANDLING PUMP, 60 H.P., 1750 RPM 3/60/230/460 DESIGN CRITERIA 200 GPM AT 115' HEAD TO 2,300 GPM AT 50' HEAD SHUTOFF HEAD 125'	LUMP SUM	LUMP SUM	\$ _____ /		

DESCRIPTION:				<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#	UNIT PRICE EXTENSION (Quantity times Unit Price)
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE		
B-1 4" SUBMERSIBLE CUTTER SEWAGE PUMP 4.2 H.P., 1150 RPM 3/60/230/460 DESIGN CRITERIA 50 GPM AT 20' HEAD TO 250 GPM AT 6' HEAD	LUMP SUM	LUMP SUM	\$ _____ /		

DESCRIPTION:				<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#	UNIT PRICE EXTENSION (Quantity times Unit Price)
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE		
B-2 4" SUBMERSIBLE CUTTER SEWAGE PUMP 4.8 H.P., 1750 RPM 3/60/230/460 DESIGN CRITERIA 50 GPM AT 20' HEAD TO 350 GPM AT 20' HEAD	LUMP SUM	LUMP SUM	\$ _____ /		

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#			UNIT PRICE EXTENSION (Quantity times Unit Price)
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	
B-3 4" SUBMERSIBLE CUTTER SEWAGE PUMP 4.2 H.P., 1150 RPM 3/60/230/460 DESIGN CRITERIA 50 GPM AT 28' HEAD TO 275 GPM AT 5' HEAD	LUMP SUM	LUMP SUM	\$ _____ /	

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#			UNIT PRICE EXTENSION (Quantity times Unit Price)
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	
B-4 4" SUBMERSIBLE CUTTER SEWAGE PUMP 7.1 H.P., 1750 RPM 3/60/230/460 DESIGN CRITERIA 100 GPM AT 45' HEAD TO 450 GPM AT 15' HEAD	LUMP SUM	LUMP SUM	\$ _____ /	

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#			UNIT PRICE EXTENSION (Quantity times Unit Price)
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	
B-5 4" SUBMERSIBLE CUTTER SEWAGE PUMP 4.2 H.P., 1150 RPM 3/60/230/460 DESIGN CRITERIA 50 GPM AT 28' HEAD TO 450 GPM AT 10' HEAD	LUMP SUM	LUMP SUM	\$ _____ /	

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#			UNIT PRICE EXTENSION (Quantity times Unit Price)
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	
B-6 4" SUBMERSIBLE CUTTER SEWAGE PUMP 17.7 H.P., 1750 RPM 3/60/230/460 DESIGN CRITERIA 100 GPM AT 60' HEAD TO 600 GPM AT 20' HEAD	LUMP SUM	LUMP SUM	\$ _____ /	

DESCRIPTION:				<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)			
C-1 1-1/4" SUBMERSIBLE CUTTER SEWAGE PUMP 2 H.P., 3,450 RPM 1/60/230 DESIGN CRITERIA 5 GPM AT 98' HEAD TO 45 GPM AT 20' HEAD	LUMP SUM	LUMP SUM	\$ _____ /				

DESCRIPTION:				<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)			
C-2 1-1/4" SUBMERSIBLE CUTTER SEWAGE PUMP 2 H.P., 3,450 RPM 3/60/230/460 VAC DESIGN CRITERIA 5 GPM AT 98' HEAD TO 45 GPM AT 20' HEAD	LUMP SUM	LUMP SUM	\$ _____ /				

DESCRIPTION:				<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)			
D-1 3"x3" SELF PRIMING SEWER PUMP	LUMP SUM	LUMP SUM	\$ _____ /				

DESCRIPTION:				<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)			
D-2 4"x4" SELF PRIMING SEWER PUMP	LUMP SUM	LUMP SUM	\$ _____ /				

DESCRIPTION:				<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)			
D-3 6"x6" SELF PRIMING SEWER PUMP	LUMP SUM	LUMP SUM	\$ _____ /				

DESCRIPTION:				<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#		UNIT PRICE EXTENSION (Quantity times Unit Price)	
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)	UNIT PRICE EXTENSION (Quantity times Unit Price)	UNIT PRICE EXTENSION (Quantity times Unit Price)
D-4	8"x8" SELF PRIMING SEWER PUMP	LUMP SUM	LUMP SUM	\$ _____ /			

DESCRIPTION:				<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#		UNIT PRICE EXTENSION (Quantity times Unit Price)	
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)	UNIT PRICE EXTENSION (Quantity times Unit Price)	UNIT PRICE EXTENSION (Quantity times Unit Price)
D-5	10"x10" SELF PRIMING SEWER PUMP	LUMP SUM	LUMP SUM	\$ _____ /			

DESCRIPTION:				<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#		UNIT PRICE EXTENSION (Quantity times Unit Price)	
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)	UNIT PRICE EXTENSION (Quantity times Unit Price)	UNIT PRICE EXTENSION (Quantity times Unit Price)
D-6	12"x12" SELF PRIMING SEWER PUMP	LUMP SUM	LUMP SUM	\$ _____ /			

DESCRIPTION:				<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#		UNIT PRICE EXTENSION (Quantity times Unit Price)	
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)	UNIT PRICE EXTENSION (Quantity times Unit Price)	UNIT PRICE EXTENSION (Quantity times Unit Price)
E-1	3"x3" SELF PRIMING PUMPS ROTATING UNITS	LUMP SUM	LUMP SUM	\$ _____ /			

DESCRIPTION:				<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#		UNIT PRICE EXTENSION (Quantity times Unit Price)	
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)	UNIT PRICE EXTENSION (Quantity times Unit Price)	UNIT PRICE EXTENSION (Quantity times Unit Price)
E-2	4"x4" SELF PRIMING PUMPS ROTATING UNITS	LUMP SUM	LUMP SUM	\$ _____ /			

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
E-3 6"x6" SELF PRIMING PUMPS ROTATING UNITS		LUMP SUM	LUMP SUM	\$ _____ /	

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
E-4 8"x8" SELF PRIMING PUMPS ROTATING UNITS		LUMP SUM	LUMP SUM	\$ _____ /	

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
E-5 10"x10" SELF PRIMING PUMPS ROTATING UNITS		LUMP SUM	LUMP SUM	\$ _____ /	

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
E-6 12"x12" SELF PRIMING PUMPS ROTATING UNITS		LUMP SUM	LUMP SUM	\$ _____ /	

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
F-1 4" GATOR PRIME INFLUENT PUMP MODEL LPH GATOR PRIME SELF PRIMING ABOVE GROUND SERIAL #608859.06		LUMP SUM	LUMP SUM	\$ _____ /	

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
F-2 4" AURORA PUMPS TYPE 661A-SF SELF PRIMING ABOVE GROUND SERIAL #90-15603-2-1		LUMP SUM	LUMP SUM	\$ _____ /	

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
F-3 4" VORTEX PUMP VXTN441121 SELF PRIMING ABOVE GROUND SERIAL # 9802446-13-A		LUMP SUM	LUMP SUM	\$ _____ /	

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
F-4 5" CRANE DEMING PUMP DIA. 8- 778- TYPE BE 1750 RPM SERIAL # DC-842504		LUMP SUM	LUMP SUM	\$ _____ /	

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
F-5 WEG PUMP/MOTOR 7.5 HP BT88346 FRAME 215JM/MODEL 1036E53E215JM VOLTS 208/230/460 AMPS 26.8/24.4/12.2-3510 RPM		LUMP SUM	LUMP SUM	\$ _____ /	

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
F-6 HYDROMATIC SLUDGE PUMP SERIAL # 113199 MODEL HE4L6S, IMP. DIA. 8.3 PUMP SPEED 117 TOTAL 25 FLOW 300 GPM 5 HP		LUMP SUM	LUMP SUM	\$ _____ /	

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
F-7 3" IT/FLYGT 86 SUBMERSIBLE PUMP 3085182-05109935 3HP 60HZ 2.2KW 3HP 1700 RPM TP111CI.HIEC 6034-1 460 VOLT 3085-32-9374	LUMP SUM	LUMP SUM	\$ _____ /	

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
F-8 4" DENVER ORION RETURN SELF PRIMING ABOVE GROUND PUMP MODEL 6X4X24 FRE JOY MFG. SERIAL # 193346004	LUMP SUM	LUMP SUM	\$ _____ /	

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
F-9 6" DENVER ORION SELF PRIMING ABOVE GROUND PUMP MODEL 10075D SERIAL # 193346004	LUMP SUM	LUMP SUM	\$ _____ /	

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
F-10 6X4" FAIRBANKS MORSE PENTAIR PUMP GROUP PROCESS WATER PUMP MODEL 456452-1 SERIAL # H16F7100A 5 STAGE SUBMERSIBLE PUMP	LUMP SUM	LUMP SUM	\$ _____ /	

DESCRIPTION:	<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.#	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
F-11 4" DENVER EXTRA PROCESS WATER PUMP SERIAL #193851-001 MODEL 4X3X12 FRD SELF-PRIMING ABOVE GROUND PUMP	LUMP SUM	LUMP SUM	\$ _____ /	

DESCRIPTION:		<input type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# _____		
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
F-12 8" POSITIVE DISPLACEMENT PUMP NET2SCH TYPE NE100A 1234	LUMP SUM	LUMP SUM	\$ _____ /	

Wording for "DESCRIPTION" is to be provided by the Owner.
 All quantities are estimated. The contractor will be paid based upon actual quantities as verified by the Owner