



**TOWN OF STRATFORD
PURCHASING DEPARTMENT
STRATFORD, CONNECTICUT**

BID No. 2016-039

Issued : August 11, 2016

Subject : Ryan's Lane Pump Station Improvements

The Town of Stratford through the Office of the Purchasing Agent, will receive SEALED BIDS for furnishing the equipment described in the accompanying specifications, in accordance with the instructions, conditions and reservations that follow:

A. CLOSING DATE:

Bids will be received until 11:00 am August 25, 2016, at which time they will be publicly opened and read. All bidders are invited to attend this public opening, which will be held immediately following the closing time specified above, in the Office of the Purchasing Agent, Room 202, Town Hall, 2725 Main Street, Stratford, CT 06615.

Any bid may be withdrawn prior to the above-scheduled time for receiving bids or authorized postponement thereof. Any bids received after the date and time specified shall NOT be considered. No bidder may withdraw a bid within 45 days after the actual opening thereof.

B. INSTRUCTIONS:

Bid proposals are to be submitted (**TWO COPIES**) in a sealed envelope and clearly marked with the bid number and description on the outside of the envelope, including all outer packaging (DHL, FedEx, UPS, etc).

Bids must be delivered to:

Purchasing Department
Stratford Town Hall – Rm 202
2725 Main Street
Stratford, CT 06615

C. CONDITIONS:

Bid Surety:

A Bid Bond in the amount of 5% (five percent) of the total bid must accompany each proposal, made payable to the Town of Stratford. No bid will be considered without this surety.

Payment: Final payment will be made upon the acceptance of the completed work by an authorized representative of the Town of Stratford. NO partial payments will be made. Invoices covering the work specified herein should be forwarded to the Purchasing Department upon completion of the project.

Taxes: The Town of Stratford is exempt from all State and Federal taxes. Do not include these amounts in your quotation.

Addendums: All addendums will be posted on the town website, www.townofstratford.com. It is the responsibility of the bidder to check the website for any addendums before submitting their bid.

Conflict of Interest: No public official or employee shall, while serving as such, have any financial interest or engage in any business, employment, transaction or professional activity or incur any obligation of any nature which is in substantial conflict with the proper discharge of his/her duties or employment in the public interest.

Insurance Requirements:

A. General Liability

Occurrence limit \$1,000,000; aggregate limit \$2,000,000. The insurance carried by the proposer shall be on form CG 00 01, or equivalent. The Town of Stratford shall be named as an additional insured on the contractor's General Liability Insurance Policy with form CG 20 10 or CG 20 33, *and* CG 20 37.

B. Automobile Liability

Combined single limit of \$1,000,000. Comprehensive automobile policy to cover all

- owned, hired or non-owned automobiles or vehicles.
- C. Workers Compensation

The proposer must have workers' compensation and employers liability insurance as required by Connecticut and federal law, plus employers liability limits of \$1,000,000 per accident, 1,000,000 disease each employee and \$1,000,000 disease policy limit.

- D. Umbrella Liability

The proposer shall have a minimum coverage of \$1,000,000 excess umbrella coverage, naming the Town as additional insured.

The proposer shall procure and pay for the insurance coverage described above and must maintain the indicated insurance for a period of two (2) years after completion of the contract. All policies shall provide for thirty (30) days written notice prior to cancellation, substantial change or nonrenewal. The successful bidder must file an Insurance Certificate within two weeks of the date of notification of award. Failure or neglect to do so may be considered by the Town as proof that the proposer is unable to fulfill the contract. A current insurance certificate and a copy of the endorsement or policy wording adding the Town as Additional Insured must be in the Town's possession at all times. In addition, the selected firm shall require its subcontractors, if any, to meet the same insurance requirements and to furnish the Town with similar evidence of insurance.

In addition, the proposer shall, at all times, save, indemnify and hold harmless the Town of Stratford, its officers, agents, employees and servants from liability of any nature or kind, including costs and expenses for or on account of, any patented or copyrighted equipment, materials, articles, or processes used in the performance of this contract, or on account of any and all claims, damages, losses, litigation expense and counsel fees arising out of loss or injuries (including death) sustained by or alleged to have been sustained by the public or any persons affected by the proposer's work, or by the proposer or any subcontractor, or anyone directly or indirectly employed by them while engaged in the performance of their duties in connect

D. RESERVATIONS:

The Town of Stratford may consider informal any bid not prepared and submitted to the Town in accordance with the provisions herein stated. The Town of Stratford reserves the right to reject any or all bids or parts of bids; to waive defects in same bids; or to accept any bid or part thereof deemed to be in the best interests of the Town of Stratford.

Supply detailed descriptions and specifications of all items.

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Scope of work
- B. Submersible sewage pumps
- C. Execution

1.2 SCOPE OF WORK

- A. Contractor is responsible for the following work mentioned herein:
 - 1. Disconnect, remove and dispose of Aurora pumps, stands and reducers.
 - 2. Demolish, dispose of, and build new concrete bases.
 - 3. Build and paint new pump stands.
 - 4. Replace or restore intake and discharge reducers, build custom fittings to adapt existing intake and discharge piping to new pump dimensions.
 - 5. Replace the existing 10" check valves with in-kind check valves.
 - 6. Install (2) new dry-pit submersible pumps.
 - 7. Town of Stratford and the Pump Supplier will inspect the pump installation and pumps shall pass the customer acceptance test.
- B. Customer acceptance test includes:
 - 1. Visual inspection of the final pump station installation
 - 2. Visual observation of pump vibration after start-up

1.3 SERVICE CONDITIONS

- A. All components of the system shall be designed for continuous duty.
- B. Provisions shall be made for lubrication, adjustments, or replacement of all parts. Corresponding parts of multiple units shall be interchangeable.

1.4 SUBMITTALS

- A. Submittal data shall be provided to show compliance with these specifications, plans or other specifications that will influence the proper operation of the pump(s).
- B. Standard submittal data for approval must consist of:
 - 1. Pump Performance Curves.
 - 2. Pump Outline Drawing.
 - 3. Station Drawing for Accessories.
 - 4. Electrical Motor Data.
 - 5. Access Frame Drawing.
 - 6. Typical Installation Guides.
 - 7. Technical Manuals.

8. Parts List.
9. Printed Warranty.

C. Lack of the above requested submittal data is cause for rejection.

1.5 QUALITY ASSURANCE

- A. The pump(s) shall be heavy duty, electric submersible, centrifugal non-clog units designed for handling raw, unscreened sewage and wastewater and shall be fully guaranteed for this use. The pumps provided shall be capable of operating in an ambient liquid temperature of 104 degrees F. Since the high temperature of 104 degrees F is specified by the National Electrical Manufacturers Association (NEMA) and Factory Mutual (FM), motors with a maximum ambient temperature rating below 104 degrees F shall not be acceptable.
- B. The pump and motor unit shall be suitable for continuous operation at full nameplate load while the motor is completely submerged, partially submerged or totally non-submerged. The use of shower systems, secondary pumps or cooling fans to cool the motor shall not be acceptable.
- C. The pump, mechanical seals and motor units provided under this specification shall be from the same manufacturer in order to achieve standardization of operation, maintenance, spare parts, manufacturer's service and warranty.

1.8 GUARANTEE

- A. Provide a warranty certificate typed on manufacturer's letterhead.
- B. The manufacturer's standard five (5) year warranty on the pump and motor shall apply.
- C. In addition, the manufacturer shall guarantee all components of the equipment specified to be furnished under this Section to be free from defects in design, materials and workmanship for a period of one (1) year commencing on the date of the Manufacturer's Startup Report. That being the day that the pump was placed into permanent, automatic, and consistent, fault free operation.
- D. The manufacturer shall guarantee **clog-free** operation to the Owner for a period of 12 months from the date of start-up of the pumps by the local authorized factory representative. A certificate shall be provided to the Owner on the day of start up with the local contact information and effective date. Should the impeller clog with typical solids and debris normally found in domestic wastewater during this period, an authorized representative shall either travel to the jobsite remove the pump,

clear the obstruction and reinstall the pump at no cost or reimburse the Owner for reasonable cost to provide this service. A written report shall be provided to the Owner detailing the service call with pictures for verification purposes.

- E. The warranty shall be in printed form and previously published as the manufacturer's standard warranty for all similar units manufactured.

1.9 EXPERIENCE

- A. The pump manufacturer shall have a minimum of 10,000 heavy-duty submersible wastewater pumps installed and operating for no less than 5 years in the United States.

PART 2 - PRODUCTS

2.1 FABRICATION AND MANUFACTURE

- A. Performance:

- 1. Furnish and install submersible non-clog wastewater pump(s). Each pump shall be equipped with no larger than a **14 HP**, submersible electric motor connected for operation on 208 volts, 3 phase, 60 hertz. The power cable shall be sized according to NEC and ICEA standards and also meet with P-MSHA Approval.

- B. Manufacturer:

- 1. Two (2) sewage pumps shall be model Flygt NT3153 MT manufactured by Xylem/Flygt of Rye Brook, NY
- 2. **Only approved** equals are allowed.

- C. General Pumping Unit Requirements:

- 1. The pump shall be supplied with a mating cast iron 6" inch discharge connection and be capable of delivering 1200 GPM at 28 FT. TDH. Shut off head shall be 66 feet (minimum). The pump(s) shall be automatically and firmly connected to the discharge connection, guided by no less than two guide bars extending from the top of the station to the discharge connection. There shall be no need for personnel to enter the wet-well. Sealing of the pumping unit to the discharge connection shall be accomplished by a machined metal to metal watertight contact. Sealing of the discharge interface with a diaphragm, O-ring or profile gasket will not be acceptable.

2. Pump shall be capable of operating in a continuous non submerged condition in vertical (NT) position in a dry pit installation, permanently connected to inlet and outlet pipes. Pump shall be of submersible construction and will continue to operate satisfactorily should the dry pit be subjected to flooding. Pump in vertical position: inlet elbow shall have an inspection cover. Pump in horizontal position shall have a stainless steel telescoping inlet pipe for ease of inspection. Pressure gauge connection shall be included standard on telescoping inlet pipe. The volute shall have a conveniently located drain tube to aid with inspection and or maintenance operations. Optional service cart for NZ shall be available for safe handling during maintenance.
3. Major pump components shall be of grey cast iron, ASTM A-48, Class 35B, with smooth surfaces devoid of blow holes or other irregularities. The lifting handle shall be of stainless steel. All exposed nuts or bolts shall be AISI type 316 stainless steel construction. All metal surfaces coming into contact with the pumpage, other than stainless steel or brass, shall be protected by a factory applied spray coating of acrylic dispersion zinc phosphate primer with a polyester resin paint finish on the exterior of the pump.
4. Sealing design shall incorporate metal-to-metal contact between machined surfaces. Critical mating surfaces where watertight sealing is required shall be machined and fitted with Nitrile or optional Viton rubber O-rings. Fittings 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 torque limit.
5. Rectangular cross sectioned gaskets requiring 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.
6. Motor cooling shall be sufficient for continuous operation under full nameplate load in a dry environment. The pump(s) shall be capable of handling pumped media up to 104 degrees F.

D. Impellers

1. The impeller shall be of **Hard-Iron™** (ASTM A-532 (Alloy III A) 25% chrome cast iron), dynamically balanced, semi-open, multi-vane, back-swept, non-clog design. The impeller vane leading edges shall be mechanically self-cleaned upon each rotation as they pass across a spiral groove located on the volute bottom. The internal volute bottom shall provide effective sealing between the pump volute and the multi-

vane, semi-open impeller. The sharp spiral groove(s) shall provide the shearing edge(s) across which each impeller vane leading edge shall cross during its rotation in order to remain unobstructed. The clearance between the internal volute bottom and the impeller leading edges shall be adjustable.

E. Volute / Suction Cover:

1. The pump volute shall be a single piece grey cast iron, ASTM A-48, Class 35B, non-concentric design with smooth passages of sufficient size to pass any solids that may enter the impeller. Minimum inlet and discharge size shall be as specified.
2. The volute shall have a replaceable suction cover insert ring in which are cast spiral-shaped, sharp-edged groove(s). The spiral groove(s) shall provide trash release pathways and sharp edge(s) across which each impeller vane leading edge shall cross during rotation so to remain unobstructed.
3. The insert ring shall be cast of Hard-Iron™ (ASTM A-532 (Alloy III A) 25% chrome cast iron) when used with Hard-Iron™ impellers and provide effective sealing between the multi-vane semi-open impeller and the volute housing.

F. Shafts:

1. 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 stainless steel – ASTM A479 S43100-T. Shaft sleeves will not be acceptable.

G. Bearings:

1. The pump shaft shall rotate on two bearings. Motor bearings shall be permanently grease lubricated. The upper bearing shall be a single deep groove ball bearing.
2. The lower bearing shall be a two row angular contact bearing to compensate for axial thrust and radial forces. Single row lower bearings are not acceptable. The minimum L10 bearing life shall be 50,000 hours at any usable portion of the pump curve.

H. Mechanical Seals:

1. Each pump shall be provided with a positively driven dual, tandem mechanical shaft seal system consisting of two seal sets, each having an independent spring. The lower primary seal, located between the pump and seal chamber, shall contain one stationary and one positively driven rotating corrosion and abrasion resistant tungsten-carbide ring. The upper secondary seal, located between the seal chamber and the seal inspection chamber shall be a leakage-free seal. The upper seal shall contain one stationary and one positively driven rotating corrosion and abrasion resistant tungsten-carbide seal ring. The rotating seal ring shall have small back-swept grooves laser inscribed upon its face to act as a pump as it rotates, returning any fluid that should enter the dry motor chamber back into the lubricant chamber. All seal rings shall be individual solid sintered rings. Each seal interface shall be held in place by its own spring system. The seals shall not depend upon direction of rotation for sealing. Mounting of the lower seal on the impeller hub is not acceptable. Shaft seals without positively driven rotating members or conventional double mechanical seals containing either a common single or double spring acting between the upper and lower seal faces are not acceptable. The seal springs shall be isolated from the pumped media to prevent materials from packing around them, limiting their performance.
2. Each pump shall be provided with a lubricant chamber for the shaft sealing system. The lubricant chamber shall be designed to prevent overfilling and shall provide capacity for lubricant expansion. The seal lubricant chamber shall have one drain and one inspection plug that are accessible from the exterior of the motor unit. The seal system shall not rely upon the pumped media for lubrication.
3. The area about the exterior of the lower mechanical seal in the cast iron housing shall have cast in an integral concentric spiral groove. This groove shall protect the seals by causing abrasive particulate entering the seal cavity to be forced out away from the seal due to centrifugal action.
4. A separate seal leakage chamber shall be provided so that any leakage that may occur past the upper, secondary mechanical seal will be captured prior to entry into the motor stator housing. Such seal leakage shall not contaminate the motor lower bearing. The leakage chamber shall be equipped with a float type switch that will signal if the chamber should reach 50% capacity.

I. Power and Control Cables:

1. The power cable shall be sized according to the NEC and ICEA standards and shall be of sufficient length to reach the junction box without the need of any splices. The outer jacket of the cable shall be oil resistant chlorinated polyethylene rubber. The cable shall be capable of continuous submergence underwater without loss of watertight integrity to a depth of 65 feet or greater.
2. The cable entry seal design shall preclude specific torque requirements to insure a watertight and submersible seal. The cable entry shall consist of dual cylindrical elastomer grommets, flanked by washers, all having a close tolerance fit against the cable outside diameter and the entry inside diameter. The grommets shall be compressed by the cable entry unit, thus providing a strain relief function. The assembly shall provide ease of changing the cable when necessary using the same entry seal. The cable entry junction chamber and motor shall be sealed from each other, which shall isolate the stator housing from foreign material gaining access through the pump top. Epoxies, silicones, or other secondary sealing systems shall not be considered equal.

J. Motors:

1. The pump motor shall be a NEMA B design, induction type with a squirrel cage rotor, shell type design, housed in an air filled, watertight chamber. The stator windings shall be insulated with moisture resistant Class H insulation rated for 180°C (356°F). The stator shall be insulated by the trickle impregnation method using Class H monomer-free polyester resin resulting in a winding fill factor of at least 95%. The motor shall be inverter duty rated in accordance with NEMA MG1, Part 31. The stator shall be heat-shrink fitted into the cast iron stator housing. The use of multiple step dip and bake-type stator insulation process is not acceptable. The use of pins, bolts, screws or other fastening devices used to locate or hold the stator and that penetrate the stator housing are not acceptable. The motor shall be designed for continuous duty while handling pumped media of up to 104°F. The motor shall be capable of no less than 30 evenly spaced starts per hour. The rotor bars and short circuit rings shall be made of aluminum. 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.

2. The junction chamber shall be sealed off from the stator housing and shall contain a terminal board for connection of power and pilot sensor cables using threaded compression type terminals. The use of wire nuts or crimp-type connectors is not acceptable. The motor and the pump shall be produced by the same manufacturer.
3. The motor service factor (combined effect of voltage, frequency and specific gravity) shall be 1.15. The motor shall have a voltage tolerance of +/- 10%. The motor shall be designed for continuous operation in up to a 40°C ambient and shall have a NEMA Class B maximum operating temperature rise of 80°C. A motor performance chart shall be provided upon request exhibiting curves for motor torque, current, power factor, input/output kW and efficiency. The chart shall also include data on motor starting and no-load characteristics.
4. Motor horsepower shall be sufficient so that the pump is non-overloading throughout its entire performance curve, from shut-off to run-out. The motor and cable shall be capable of continuous submergence underwater without loss of watertight integrity to a depth of 65 feet or greater.

The optional LSPM motor shall have the same features specified under the MOTOR section, above, plus have a rotor fitted with permanent magnets. The **premium efficiency** motor shall meet or exceed the efficiency levels specified in the IEC standard 60034-30 for international efficiency, Class IE3. The motor shall have the capability to be started across the line, start and accelerate as an induction motor. Upon reaching full speed, the motor shall operate as a synchronous motor. The motor shall also have the capability of being controlled by a variable frequency drive.

K. Cooling System

1. Each unit shall be provided with an integral motor cooling system. A stainless steel motor cooling jacket shall encircle the stator housing, providing for dissipation of motor heat regardless of the type of pump installation. An impeller, integral to the cooling system and driven by the pump shaft, shall provide the necessary circulation of the cooling liquid through the jacket. The cooling liquid shall pass about the stator housing in the closed loop system in turbulent flow providing for superior heat transfer. The cooling system shall have one fill port and one drain port integral to the cooling jacket. The cooling system shall provide for continuous pump operation in liquid or ambient temperatures of up to

104°F (40°C.). Operational restrictions at temperatures below 104°F are not acceptable. Fans, blowers or auxiliary cooling systems that are mounted external to the pump motor are not acceptable.

L. Pump Motor Protection:

1. Furnish and install one Flygt MiniCAS (Mini Control and Status) module to monitor the temperature and leakage detectors installed in each Flygt pump or mixer. The MiniCAS shall be capable of monitoring the thermal switches embedded in the stator end coils, the Flygt FLS (float switch type) water-in-stator-housing sensor, and the Flygt CLS (capacitive type) water-in-oil sensor. The MiniCAS shall monitor both the series connected thermal switches and leakage sensor(s) by outputting 12 VDC on a single two wire circuit. When both CLS and FLS leakage sensors are specified they shall be connected in parallel with each other and then in series with the thermal switches.

The MiniCAS circuitry shall operate on the current sensing principle whereby a change in temperature or leakage condition shall change the resistance of the associated sensor and thus alter the current in the sensing circuit. The MiniCAS shall contain two sets of form C dry contacts, one for overtemperature and one for leakage. The dry contacts shall change status upon occurrence of an over temperature or leakage condition so as to indicate that condition to other control components in the pump control panel. In the case of an overtemperature, and in keeping with Flygt's warranty policy, the overtemperature dry contacts shall be used to trip the pump off line. The MiniCAS shall be designed to be plugged into a standard 11-pin circular socket. Detailed technical data and wiring connections shall be found in the MiniCAS Manual.

M. EXPLOSION-PROOF PUMPS

1. The pump system including the pump, motor and power cable shall be approved for use in areas classified as hazardous locations in accordance with the NEC Class I, Div. 1, Group C and D service as determined and approved by a U.S. nationally recognized testing laboratory (U.L., FM, CSA) at the time of the bidding of the project. As required by Factory Mutual (FM) the motor shall be capable of operating in pumped media up to 104 degrees F. Motor thermal switches shall monitor and protect the motor from excessive temperature. An internal Float Switch shall be available, as an option, in the motor chamber. Service of explosion-proof submersible units shall be performed by qualified FM experienced personnel. The pump manufacturer must provide training schools to qualify personnel in the proper service and repair of explosion-proof pumps.

PART 3 - EXECUTION

3.1 SCHEDULING & PLANNING

- a. After the receipt of the pumps, Town of Stratford will notify the contractor of three (3) possible dates for the demolition of old pumps and installation of new pumps.
- b. The contractor will inform the town in which date the installation will occur.
- c. Town of Stratford will tag-out one (1) of the pumps and allow the contractor to work on one pump at a time.
- d. Town of Stratford is responsible for electrical installation of the pumps.
- e. After the pumps are installed, sales representative will visually inspect the installation and be present at the start-up.

TOWN OF STRATFORD
WATER POLLUTION CONTROL
BID 2016-039
RYAN'S LANE PUMP STATION IMPROVEMNTS
BID FORM

Pricing for (2) pumps, spare parts and startup as described in the specifications:

\$ _____

In words _____

Company Name: _____

Address: _____

Phone: _____ Fax: _____ Email: _____

Authorized Signature: _____ Date: _____

Title: _____

References (At least three with contact information):
