



CITY OF HOUSTON

Administration and Regulatory Affairs Department
Strategic Purchasing Division

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December 26, 2012

Subject: Letter of Clarification No. 4 to Invitation to Bid No. S50-N24408 for the Purchase of Submersible Pumps for the Public Works and Engineering Department

To: All Prospective Bidders:

This letter of Clarification is being issued for the following reasons:

- **To revise SECTION "B", Part II, Scope of Work/Technical Specifications and respond to questions posed by perspective bidders:**

- 1.) Remove pages 17, 18, 19, 20 & 26 of 40 and replace attached pages 17, 18, 19, 20, & 26 of 40, marked REVISED 12/26/2012.
- 2.) The following are questions posed by perspective bidders and the City of Houston's response:

Question No. 1 Section 1.2.2 Line item no 1 has a specification for the pump that talks about construction, impeller material, mechanical seals, etc and line item 3 does not specify any of these materials. Do I assume the same materials of construction for Line 3 as it is written in Line 1?

Answer: Yes. See the attached page 17 of 40, marked REVISED 12/26/2012.

Question No. 2 Section 1.3.2.1: The MAS monitoring system is specified on Line 3 but not on Line 1. Is this correct or should it be on both?

Answer: They may not both have the exact same pump safe but, both are required to have a pump safe.

Question No. 3 Is the MAS supplied to be installed in an existing panel? If so, is there a specific part number so that we need to know? What is the connector like?

Answer: Yes to Question No.1. Question No. 2: The pump safe module shall be unique to the pump that is installed. No specific part number; each manufacturer has unique parts to meet the specifications.

Question No. 4 Section 1.2.3 of Line 1 has a motor spec and there is not a motor spec for Line item 3. Do I assume the same spec for both?

Answer: Yes. See the attached page 18 of 40, marked REVISED 12/26/2012.

Partnering to better serve Houston

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For the Public Works and Engineering Department**

Note: No further questions will be accepted after the publication of this Letter of Clarification.

When issued, Letter(s) of Clarification shall automatically become a part of the solicitation documents and shall supersede any previous specification(s) and/or provision(s) in conflict with The Letter(s) of Clarification. All revisions, responses, and answers incorporated into the Letter(s) of Clarification are collaboratively from both the Strategic Purchasing Division and the applicable City Department(s). It is the responsibility of the bidder/respondent to ensure that it has obtained all such letter(s). By submitting a bid on this project, bidders/respondents shall be deemed to have received all Letter(s) of Clarification and to have incorporated them into this solicitation and resulting bid.

Furthermore, it is the responsibility of each Contractor to obtain any previous Letter of Clarification associated with this solicitation.

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Attachments: Revised pages, 17, 18, 19, 20 & 26 of 40.

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Purchase of Submersible Pumps
For the Public Works and Engineering Department

1.0 Equipment:

REVISED 12/26/2012

LINE ITEM NO. 2 PUMP, BACKWASH SUBMERSIBLE

Make: FLYGT

Model: Model No. LL-3531 Or City Approved Equal

1.1 Summary of Requirement:

- 1.1.1 The Contractor shall be required to provide the pump(s) and all fittings, parts and modifications required for, FLYGT, Model No., LL-3531 or City approved equal for the Southwest Wastewater Treatment Plant, Facility No. 190 located at, 4211 Beechnut Ave., Houston, Texas 77096.
- 1.1.2 The pump shall be rated for wastewater applications.
- 1.1.3 **The pump shall be rated at 250HP, 14,500 GPM @ 41 ft. total dynamic head (TDH) pump or equal, as interpreted by the City. The Contractor shall be required to provide a written explanation on each deviation or substitution. A blanket statement that equipment proposed will meet all requirements will not be sufficient to establish equivalence.**

1.2 Pump Specifications:

1.2.1 Pump:

- 1.2.1.1 ***Pump shall be constructed of metal capable of withstanding full submersion in corrosive environments and conditions as typically experienced in a wastewater lift station.***
- 1.2.1.2 ***Pump seals shall be tungsten carbide, silicon carbide, or City of Houston approved equivalent.***
- 1.2.1.3 ***Pump Impeller shall be manufactured from a corrosion resistant material and coated with a corrosive resistant coating to prolong life and reduce wear.***
- 1.2.1.4 ***Pump Impeller shall be dynamically balanced.***
- 1.2.1.5 ***Pump shall be able to pass a minimum of a 4 inch spherical solid.***
- 1.2.1.6 ***Pump shall be equipped with mounting brackets to allow connection onto existing pump mounts.***

1.3 Design Requirements:

1.3.1 The submersible pump specified in this section will be used to pump treated wastewater effluent.

1.3.2 Operating flow chart:

OPERATING FLOW (Required)	14,500 GPM @ 41ft. TDH
MAXIMUM DUTY POINT	18,7000 GPM AT 24.5 ft. TDH
SECOND DUTY POINT	1,800 GPM AT 70 ft TDH
RATING	60 HZ 250 HP

Cable 65 ft

PUMP TO BE INSTALLED TO UTILIZE AN EXISTING DISCHARGE COLUMN, REQUIRED TO FIT AN EXISTING LOCKING MECHANISM AND NO STRUCTURE MODIFICATION

1.3.2.1 Protection-All stators shall incorporate three thermal switches, connected in series, to provide over temperature protection of the motor winding. Should high temperature occur, the thermal switches shall open, stop the motor and activate an alarm. The stator shall also include one PT-100 type temperature probe to provide for monitoring of the stator temperature

A lower bearing temperature sensor shall be provided. The sensor shall directly contact the outer race of the thrust bearing providing for accurate temperature monitoring.

Two leakage sensors shall be provided to detect water intrusion into the stator chamber and junction chamber. A Float Leakage Sensor (FLS), a small float switch, shall be used to detect the presence of water in either the stator chamber or junction chamber. When activated, the FLS will stop the motor and activate an alarm. USE OF VOLTAGE SENSITIVE SOLID STATE SENSORS SHALL NOT BE ALLOWED.

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The solid-state pump memory unit, three thermal switches, two FLS switches, PT-100 stator temperature monitor and the lower bearing PT-100 temperature monitor shall all be connected to a MAS (Monitoring and Status) monitoring unit. The MAS shall be designed to be mounted in the control panel and shall come with an Operator Panel that is dead-front panel mounted. The Operator Panel shall have soft-touch operator keys and provide local indication of the status of the alarms within the connected pump unit by means of an LCD screen read-out. Local MAS system change shall be made by use of the soft-touch keypad or local connection by means of a laptop computer. Remote indication of pump unit status shall be possible with connection to customer PLC or via LAN.

1.3.2.2 The pump shaft shall rotate on three grease-lubricated bearings. The upper bearing, provided for radial forces, shall be a single roller bearing. The two lower bearings shall consist of at least one roller bearing for radial forces and one angular contact ball bearing for axial thrust. The minimum L_{10} bearing life shall be 100,000 hours at any point along the usable portion of the pump curve at maximum product speed. The lower bearing housing shall include an independent thermal sensor to monitor the bearing temperature. The sensor shall be in direct contact with the outer race of the thrust bearing. If a high temperature occurs, the sensor shall activate an alarm and shut the pump down.

1.3.2.3 The pilot cable shall be designed specifically for use with submersible pumps and shall be type SUBCAB (Submersible Cable). The cable shall be multi-conductor type with stainless steel braided shielding, a chlorinated polyethylene rubber outer jacket and tinned copper conductors insulated with ethylene-propylene rubber. The conductors shall be arranged in twisted pairs. The cable shall be rated for 600 Volts and 90°C (194°F) with a 40°C (104°F) ambient temperature and shall be approved by the Factory Mutual (FM). The cable length shall be adequate to reach the junction box without the need for splices.

1.3.3 Motor Specification:

1.3.3.1 *The motor specification must meet the same as provided on a Flygt Model # LL-3531 rated at 250 HP, 14500GPM @ 41ft of total dynamic head, 3 phase 60hz 460 volts and also the same motor spec on Line Item No. 1, Section 1.2.3.*

2.1 Contractor Services:

2.1.1 The Contractor shall be required to provide the services of a competent factory representative to do the following:

2.1.1.1 Inspect the system prior to delivery, supervise the City of Houston start up and testing of the system, and certify the system has been properly furnished and is ready for operation.

2.1.1.2 Instruct the City's operating personnel in the proper operation and maintenance of the system for a period of not less than one half day.

2.1.1.3 Provide assistance to questions or follow-up training for the first 3 months after pump acceptance.

2.2 Tools and Spare Parts:

2.1.1 The Contractor shall be required to provide three Kellems Grips sized for each cable with the pump .

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- 2.1.2 The Contractor shall be required to provide an Operations and Maintenance Manual.
- 3.0 Deliveries / Performance Time:
- 3.1 The contractor/supplier shall be required to deliver the specific pump(s) to the City of Houston no later than **175 Calendar days** after receipt of the City of Houston Purchase Order.

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1.0 Equipment:

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LINE ITEM NO. 3 PUMP, PORTABLE NON-POTABLE SUBMERSIBLE
Make: FLYGT
Model: Model No. NS-3153X Or City Approved Equal

1.1 Summary of Requirement:

1.1.1 The Contractor shall be required to provide the pump(s) and all fittings, parts and modifications required for, FLYGT, Model No., NS-3153X, with hard-metal impeller specifications or City approved equal for various Wastewater Operations Facilities.

1.1.2 The pump shall be rated for wastewater applications.

1.1.3 The pump shall be rated at 434 Impeller, 6 inch 20 HP submersible **Explosion-Proof** electric motor, connected for operation on 230 / 460 volts, 3 phase, 60 hertz, 4 wire service, with 50 feet of submersible cable (SUBCAB) suitable for submersible pump applications. The power cable shall be sized according to NEC and the Insulated Cable Engineers Association (ICEA) standards and have a Mine Safety and Health Administration (P-MSHA) approval . The pump voltage shall be changeable from 230 to 460 volts by a simple wiring change. The control shall be wired for both 230 and 460 volts.

1.2 Pump Specifications:

1.2.1 Pump Design Configuration:

1.2.1.1 The pump shall be supplied with a 6 inch discharge flange connected to an elbow with 6 inch male NPT threads. The pump shall be capable of delivering 1034 GPM at 48 ft. TDH at 79 % efficiency. The pump shall be capable of operating at additional points on the same curve 1783 GPM at 20 feet total head and 500 GPM at 63 feet total head. Shut off head shall be 83 feet (minimum). The pumps shall be portable and capable of operating complete non submerged.

1.2.2 Pump Construction:

1.2.2.1 All major pump components shall be of grey cast iron, ASTM A-48, Class 35B, with smooth surfaces devoid of blow holes or other irregularities. All exposed nuts or bolts shall be American Iron and Steel Institute (AISI) type 304 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.

1.2.2.2 The 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 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.

1.2.2.3 The 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.

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1.0 Equipment:

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LINE ITEM NO. 4 PUMP, PORTABLE NON-POTABLE SUBMERSIBLE

Make: FLYGT

Model: Model No. NS-3127X Or City Approved Equal

1.1 Summary of Requirement:

1.1.1 The Contractor shall be required to provide the pump(s) and all fittings, parts and modifications required for, FLYGT, Model No., NS-3127X, with hard-metal impeller specifications or City approved equal for various Wastewater Operations Facilities.

1.1.2 The pump shall be rated for wastewater applications.

1.1.3 The pump shall be rated at 438 Impeller, 4 inch, 10 HP submersible **Explosion-Proof** electric motor, connected for operation on 230 / 460 volts, 3 phase, 60 hertz, 4 wire service, with 50 feet of submersible cable (SUBCAB) suitable for submersible pump applications. The power cable shall be sized according to NEC and Insulated Cable Engineers Association (ICEA) standards and have P-MSHA Approval. The pump voltage shall be changeable from 230 to 460 volts, by a simple wiring change. The control shall be wired for both 230 and 460 volts.

1.2 Pump Specifications:

1.2.1 Pump Design Configuration:

1.2.1.1 The pump shall be supplied with a 4 inch discharge flange connected to an elbow with male 4 inch NPT threads. The pump shall be capable of delivering 656 GPM at 40 ft. TDH at 74 % efficiency. The pump shall be capable of operating at additional points on the same curve 1124 GPM at 20 feet total head and 200 GPM at 60 feet total head. Shut off head shall be 71 feet (minimum). The pump shall be portable and capable of operating complete non submerged.

1.2.2 Pump Construction:

1.2.2.1 Major pump components shall be of grey cast iron, ASTM A-48, Class 35B, with smooth surfaces devoid of blow holes or other irregularities. All exposed nuts or bolts shall be AISI type 304 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.

1.2.2.2 The 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 Viton rubber O-rings. Fittings shall 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.

1.2.2.3 The rectangular cross sectioned gaskets requiring specific torque limits to achieve compression shall not be considered. *Secondary sealing compounds, elliptical O-rings, grease or other devices are not acceptable.*

1.2.3 Cooling System:

1.2.3.1 The motor shall be sufficiently cooled by the surrounding environment or pumped media.