



CITY OF HOUSTON

INVITATION TO BID

Issued: March 23, 2012

Bid Opening:

Sealed bids, in duplicate, will be received by the City Secretary of the City of Houston, in the City Hall Annex, Public Level, 900 Bagby, Houston, Texas 77002, until 10:30 a.m. Thursday, **April 12, 2012** and all bids will be opened and publicly read in the City Council Chamber, City Hall Annex, Public Level, 900 Bagby at 11:00 a.m. on that date for the purchase of:

**PUMPS, VARIOUS TYPES AND SIZES
FOR THE PUBLIC WORKS & ENGINEERING DEPARTMENT
BID INVITATION No. S12-N24245
NIGP CODE – 285-86**

Buyer:

Questions regarding this solicitation package should be addressed to **Martin L. King** at **832-393-8705**, or e-mail to **martin.king@houstontx.gov**.

Bidding forms, specifications, and all necessary information should be downloaded from the Internet at **http://purchasing.houstontx.gov** by registering and downloading this solicitation document, all updates to this solicitation document will be automatically forwarded via e-mail to all registered bidders. This information may also be obtained from the Supplier Assistance Desk, Strategic Purchasing Division, 901 Bagby, Concourse Level, Houston, Texas 77002.

Electronic Bidding:

In order to submit a bid for the items associated with this procurement, you must fill in the pricing information on the “**PLACE BID**” page.

Pre-Bid

A Pre-Bid Conference will be held for all prospective bidders at 1:30 P.M., Tuesday, April 3, 2012 at 901 Bagby, City Hall Basement, SPD-Conference Room No. 2.

All Prospective Bidders are urged to be present. It is the bidder's responsibility to ensure they have secured and thoroughly reviewed the solicitation documents prior to the Pre-Bid Conference. Any revisions to be incorporated into this solicitation document arising from discussions before, during and subsequent to the Pre-Bid Conference will be confirmed in writing by Letter(s) of Clarification prior to the bid due date. Verbal responses will not otherwise alter the specifications, terms and conditions as stated herein.

The place of the bid opening may be transferred in accordance with Paragraph (b), (5) of Section 15-3 of The Code of Ordinances, Houston, Texas. The bid opening meeting may be rescheduled in accordance with Paragraph (b), (6) of said Section 15-3.

The City reserves the right to reject any or all bids or to accept any bid or combination of bids deemed advantageous to it.

City Employees are prohibited from bidding on this solicitation in accordance with the Code of Ordinances, Section 15 - 1.

***CONTENTS:**

SECTION A: OFFER
SECTION B: SCOPE OF WORK/SPECIFICATIONS
SECTION C: GENERAL TERMS & CONDITIONS

***NOTE 1: Actual page numbers for each Section may change when the solicitation document is downloaded from the Internet or because of Letters of Clarification. Therefore, Bidders must read the bid document in its entirety and comply with all the requirements set forth therein.**

***NOTE 2: To be considered for award, please submit the electronic bid form and the forms listed in Section A, including the official signature page, which must be signed by a company official authorized to bind the company.**

**SECTION A
OFFICIAL BID FORM**



FORMAL ONE-TIME BID

**PUMPS, VARIOUS TYPES AND SIZES
FOR THE PUBLIC WORKS & ENGINEERING DEPARTMENT
BID INVITATION No. S12-N24205
NIGP CODE – 285-86**

To The Honorable Mayor
and City Council Members
of the City of Houston, Texas (the "City"):

The undersigned hereby offers to **Furnish and Deliver Pumps, Various Types and Sizes for the Public Works and Engineering Department**, Prepaid F.O.B. destination point Houston, Texas, the item(s) listed on the **electronic bid form** and on individual Purchase Orders, in accordance with the price(s) bid and other conditions shown herein, and in accordance with the City's Specifications and General Terms & Conditions and/or samples/drawings provided herein. When issued by the City of Houston, Letters of Clarification shall automatically become part of this bid document and shall supersede any previous specifications or provisions in conflict with Letters of Clarification. It is the responsibility of the bidder to ensure that it has obtained all such letters. By submitting a bid on this project, bidder shall be deemed to have received all Letters of Clarification and to have incorporated them into the bid.

The City may accept this bid offer by issuance of a Notice of Award Letter and/or a Purchase Order at any time on or before the 120th day following the day this Official Bid Form is opened by the City. This offer shall be irrevocable for 120 days after bid opening or for 90 days after City Council awards the bid, whichever comes last, but this period may be extended by written agreement of the parties.

The City reserves the right to INCREASE quantities during the twelve-month (12) period following the issuance of the first purchase order subject to agreement in writing by the Contractor/Supplier to honor the same bid price.

The City reserves the option, after bids are opened, to adjust the quantities listed on the electronic bid form upward or downward, subject to the availability of funds, and/or make award (s) on a line item basis.

SECTION A

Documents/forms must be downloaded from the City’s Website:

<https://purchasing.houstontx.gov>

http://purchasing.houstontx.gov/solicitation_forms.htm

Additional Required Forms to be Included with this Bid:

In addition to the electronic Bid Form and the Official Signature Page, the Forms listed in Table 1 **must be completed and submitted to the Office of the City Secretary on or before the date and time the bid is due:**

Table 1 – Required Forms
Affidavit of Ownership
Hire Houston First Application & Affidavit
Fair Campaign Ordinance
Statement of Residency
Conflict of Interest Questionnaire

Table 2 lists other documents and forms that should be viewed/downloaded from the City’s website, but are not required to be submitted with the bid. **The City will request these forms, as applicable, to be completed and submitted to the City by the recommended/successful bidder:**

Table 2 – Documents and Forms
Drug Forms
Sample Insurance Over \$50,000.00
Formal Instructions for Bid Terms
EEOC
M/WBE

Questions concerning the Bid should be submitted in writing to: City of Houston, Strategic Purchasing Division, 901 Bagby, Room B506, Houston, TX 77002, Attn: Martin L. King or via fax: 832-393-8759 or via email (preferred method) to martin.king@houstontx.gov no later than **4:00 PM, Monday, February 27, 2012.**

HIRE HOUSTON FIRST:

Designation as a City Business or Local Business

To be designated as a City or Local Business for the purposes of the Hire Houston First Program, as set out in Article XI of Chapter 15 of the Houston City Code, a bidder or proposer must submit the **Hire Houston First Application and Affidavit (“HHF Affidavit”)** to the Director of the Mayor’s Office of Business Opportunities and receive notice that the submission has been approved prior to award of a contract. Bidders are encouraged to secure a designation prior to submission of a bid or proposal if at all possible.

Download the HHF Affidavit from the Office of Business Opportunities Webpage at the City of Houston e-Government Website at the following location:

www.houstontx.gov/obo/moreforms/hirehoustonfirstaffidavit.pdf

Submit the completed application forms to: Mayor’s Office of Business Opportunity, One Stop Business Center, 900 Bagby St., Public Level, Houston, TX 77002 or Applications may be submitted via e-mail to HHF-MOBO@houstontx.gov or faxed to 832.393.0952.

Award of a Procurement of \$100,000 or More for Purchase of Goods:

THE CITY WILL AWARD THIS PROCUREMENT TO A "CITY BUSINESS," AS THAT TERM IS DEFINED IN SECTION 15-176 OF THE CITY OF HOUSTON CODE OF ORDINANCES ("THE CODE"):

- IF THE BID OF THE CITY BUSINESS IS THE LOWEST RESPONSIBLE BID OR IS WITHIN 3% OF THE LOWEST BID RECEIVED, AND
- UNLESS THE USER DEPARTMENT DETERMINES THAT SUCH AN AWARD WOULD UNDULY INTERFERE WITH CONTRACT NEEDS, AS PROVIDED IN SECTION 15-181 OF THE CODE.

IF THERE IS NO BID OF A CITY BUSINESS THAT MEETS THESE CRITERIA, THE CITY WILL AWARD THE PROCUREMENT TO THE LOWEST RESPONSIBLE BIDDER.

Award of Procurement under \$100,000 for Purchase of Goods:

THE CITY WILL AWARD THIS PROCUREMENT TO A "CITY BUSINESS," AS THAT TERM IS DEFINED IN SECTION 15-176 OF THE CITY OF HOUSTON CODE OF ORDINANCES ("THE CODE"):

- IF THE BID OF THE CITY BUSINESS IS THE LOWEST RESPONSIBLE BID OR IS WITHIN 5% OF THE LOWEST BID RECEIVED, AND
- UNLESS THE USER DEPARTMENT DETERMINES THAT SUCH AN AWARD WOULD UNDULY INTERFERE WITH CONTRACT NEEDS, AS PROVIDED IN SECTION 15-181 OF THE CODE.

IF THERE IS NO BID OF A CITY BUSINESS THAT MEETS THESE CRITERIA, THE CITY WILL AWARD THE PROCUREMENT TO THE LOWEST RESPONSIBLE BIDDER.

Award of Procurement that may be More or Less than \$100,000 for Purchase of Goods:

THE CITY WILL AWARD THIS PROCUREMENT TO A "CITY BUSINESS," AS THAT TERM IS DEFINED IN SECTION 15-176 OF THE CITY OF HOUSTON CODE OF ORDINANCES ("THE CODE"):

- IF THE BID OF THE CITY BUSINESS IS LESS THAN \$100,000 AND IS THE LOWEST RESPONSIBLE BID OR IS WITHIN 5% OF THE LOWEST BID RECEIVED, OR
- IF THE BID OF THE CITY BUSINESS IS MORE THAN \$100,000 AND IS THE LOWEST RESPONSIBLE BID OR IS WITHIN 3% OF THE LOWEST BID RECEIVED, AND
- UNLESS THE USER DEPARTMENT DETERMINES THAT SUCH AN AWARD WOULD UNDULY INTERFERE WITH CONTRACT NEEDS, AS PROVIDED IN SECTION 15-181 OF THE CODE.

IF THERE IS NO BID OF A CITY BUSINESS THAT MEETS THESE CRITERIA, THE CITY WILL AWARD THE PROCUREMENT TO THE LOWEST RESPONSIBLE BIDDER.

PRIME CONTRACTOR/SUPPLIER REFERENCES

In order to receive bid award consideration, the bidder must be able to demonstrate that it has provided, as a prime contractor/supplier, products or services that are similar to those offered on the electronic bid form to governmental agencies or other entities of similar size/scope. The references should be listed in the space provided below. Please attach additional pages as necessary. If references are not included with the bid, the bidder shall be required to provide such references to the City of Houston within five working days from receipt of a written request from the City of Houston to do so. **Bidder's capability and experience shall be a factor in determining the Contractor's responsibility.** The City of Houston reserves the right to determine if such products or services are appropriately similar to those offered.

1. Entity Name: _____

Address: _____

City & State: _____

Name & Phone Number of Contact: _____

2. Entity Name: _____

Address: _____

City & State: _____

Name & Phone Number of Contact: _____

3. Entity Name: _____

Address: _____

City & State: _____

Name & Phone Number of Contact: _____

4. Entity Name: _____

Address: _____

City & State: _____

Name & Phone Number of Contact: _____

5. Entity Name: _____

Address: _____

City & State: _____

Name & Phone Number of Contact: _____

**SECTION B
PART I
GENERAL SPECIFICATIONS**

1.0 BIDDING AND AWARD:

- 1.1 The City may accept this bid offer by issuance of a Notice of Award Letter and/or a Purchase Order at any time on or before the 120th day following the day the Official Bid Form is opened by the City. This offer shall be irrevocable for 120 days after bid opening or for 90 days after City Council awards the bid, whichever comes last, but this period may be extended by written agreement of the parties.
- 1.2 Prices quoted shall remain firm through delivery and shall not be subject to increases (or supplemented on The Contractor/Supplier's invoice(s) for payment).
- 1.3 The City reserves the option to adjust the quantities listed on the City's Official Bid Form upward or downward, subject to the availability of funds, and/or make award on a line item basis. Therefore, the City shall not be liable for any contractual agreements/obligations the Bidder enters into based on the City purchasing all the quantities specified herein.
- 1.4 The City reserves the right to INCREASE quantities during the twelve-month period following the issuance of the first purchase order subject to agreement in writing by the Contractor/Supplier to honor the same bid price.

2.0 APPLICABLE SPECIFICATIONS:

- 2.1 "Notice to Bidders", the "Official Bid Forms", the "General Specifications", the "Technical Specifications", the "General Terms and Conditions" and other specifications that may be included herewith and the purchase orders which refer to these specifications.

3.0 TECHNICAL LITERATURE:

- 3.1 To evaluate the bids, the user department and the City purchasing staff may require product literature/specification sheets. Technical literature may be provided with the bid submittal but is not required. However, the City reserves the right to request literature or clarifications, as needed, after bid submittal.
- 3.2 If required, the Bidder must submit a minimum of TWO SETS of the requested catalogue information, descriptive literature specifications and/or (if applicable) engineering drawings that completely identify the items bid. Bidder(s) shall furnish the requested literature within seven (7) calendar days after the receipt of the City's written request. FAILURE ON BIDDER'S PART TO FURNISH THE REQUESTED TECHNICAL DATA IN THE TIME LIMIT GIVEN MAY BE CAUSE FOR REJECTION OF THE BID.

4.0 WARRANTY:

- 4.1 A minimum twelve (12) month warranty on both materials and workmanship shall be provided. The warranty period shall commence the date the City officially accepts the completed item(s). When extended warranties are available as standard, they shall be included as a part of the bid for the benefit of the City. Any and all documents necessary to effect warranty shall be properly applied for and submitted by the Bidder.
- 4.2 Additional warranties required are listed in the Technical Specifications for each item.
- 4.3 With respect to any goods, materials, equipment, supplies and parts furnished by it, The Contractor/Supplier warrants:
 - That all items are new and free of defects in title, design, material and workmanship.
 - That each item meets or exceeds the manufacturer's specifications and requirements for the equipment structure, or other improvement in which the item is installed and conforms in all

- respects to the terms of the City Purchase Order and Specifications.
- That each replacement item is new, in accordance with original equipment
- Manufacturer's specifications are of a quality of at least as good as the quality of the item that it replaces (when the replaced item was new).
- That no item or its use infringes any patent, copyright or proprietary right.

4.4 The Contractor/Supplier's product shall be supported by an authorized service facility that can provide warranty repair, service and maintenance work within 24 hours from notification by the City.

4.5 Any warranty work shall be completed without cost to the City. The Contractor/Supplier shall be responsible for all shipping and/or freight expense from the City's designated location to the Contractor/Supplier's facility for all warranty repair and/or maintenance and return to the City's designated location.

5.0 DELIVERY/INSPECTION:

5.1 The item(s) specified above, with delivery tickets and/or other required documents shall be delivered FOB Destination, to the location(s) shown on the purchase order(s) **within the delivery time specified in Part II below** after receipt of City of Houston Purchase Order.

5.2 The Contractor/Supplier shall notify the City Contact listed in the "Ship To" section of the purchase order not less than three (3) days prior to expected delivery/arrival to permit inspection scheduling. The City Contact shall advise The Contractor/Supplier as to the date, time and location of authorized delivery/location. An authorized representative of the Contractor/Supplier shall supervise delivery to the City. The City will not assume any liability for equipment delivered to an unauthorized location.

5.3 Documentation at time of Delivery:

The Contractor/Supplier shall provide the following documentation **per purchase order** upon delivery:

- Copy of purchase order(s) and original invoice(s).
- Warranty policy (ies) and/or certifications as may be required in the Specifications.
- Parts, service, operators and maintenance manual(s) as may be required in the Technical Specifications.

6.0 DELIVERY REQUIREMENT:

6.1 The contractor/supplier shall be required to deliver the equipment/parts no later than the time as specified in Part II, or as indicated on City of Houston Purchase Order, after receipt of the City of Houston Purchase Order for the specified equipment/parts. The Contractor/Supplier shall notify the City three days prior to shipping.

7.0 SHIPPING TERMS:

7.1 Prices shall be prepaid F.O.B. Destination to the delivery locations, Houston, TX, as indicated on individual City of Houston purchase orders. The Contractor/Supplier shall retain title and control of all goods until they are delivered and the contract of coverage has been completed. All risk of transportation and all related charges shall be the responsibility of the Contractor/Supplier. All claims for visible or concealed damage shall be filed by the Contractor/Supplier. The City will notify the Contractor/Supplier promptly of any damaged goods and shall assist the Contractor/Supplier in arranging for inspection.

8.0 RESOLUTION OF LATE DELIVERY FOR EQUIPMENT:

- 8.1 Time is of the essence in this Contract and accordingly all time limits shall be strictly construed and rigidly enforced. The work shall be furnished and fully completed within the delivery time specified in the Bid Proposal and Purchase Order to be furnished to the Contractor/Supplier by the City. In the event that the work or any portions thereof shall remain uncompleted after expiration of the specified time, the Contractor/Supplier shall furnish to the City a like number of comparable equipment for the City's use until such time as the ordered equipment are delivered. The equipment shall be furnished to the City with insurance to cover the use of this equipment by City personnel and in pursuit of the City's business. Should The Contractor/Supplier not furnish such specified equipment during the late delivery period, the City retains the right to lease such equipment from a equipment leasing firm and The Contractor/Supplier agrees and authorizes the City to deduct all such costs associated with such leases from the amounts due and owing to The Contractor/Supplier under the Purchase Order. The City may avail itself of other remedies that may be available to it in law or equity as to any other event of default
- 8.2 The Contractor/Supplier will not be liable for delays in performing its obligations to the extent such delays are caused by unforeseeable conditions that are beyond the Contractor/Supplier's reasonable control and directly interfere with performance, and are without The Contractor/Supplier's fault or negligence (force majeure). However, The Contractor/Supplier shall provide written notice to the City of the cause and extent of an **excusable delay** requesting a time extension equal to the estimated duration thereof. Upon cessation of the event causing the delay, The Contractor/Supplier shall provide written notice to the City of the actual delay incurred. Determination of force majeure shall rest solely with the City Purchasing Agent and the receiving department.

9.0 CONFLICT IN TERMS:

- 9.1 Should there be any conflict between the General Specifications and the Technical Specifications, the Technical Specifications shall prevail.

**PART II
TECHNICAL SPECIFICATIONS**

1.0 SCOPE:

- 1.1 The scope of work requires the contractor/supplier to provide all labor, materials, parts, supervision, transportation, tools and equipment necessary to furnish and deliver various types and size pumps in the quantities as specified in the electronic bid form/resulting purchase order, in strict accordance with City of Houston specifications stated herein.
- 1.2 **NOTE: The pumps supplied shall be direct replacements for the existing pumps. No modifications to the facility structure, mechanical features, electrical or controls shall be allowed.**
- 1.4 See Paragraph 4 entitled "Warranty" in Part I. If the manufacturer's standard warranty is greater than the period specified Part I, then the contractor/supplier shall pass the greater/longer warranty to the City of Houston.
- 1.5 Installation of Pumps will be performed by the City of Houston Maintenance Group.

2.0 GROUP I - FLYGT CORPORATION:

2.0.1 Bid Line Item No. 1

Pump, submersible, 250HP, 460 Volts, 3Phase, 60 Hertz, 900 RPM Motor, impeller #885B4, 50 Ft. of power cable, capable of producing 24,563 GPM @ 28.5 ft. Total Dynamic Head (TDH). Model No. PL-7081, or City approved equal.

2.0.2 Bid Line Item No. 2

Pump, submersible, 5HP, 460 Volts, 3Phase, 60 Hertz, 1750 RPM, explosion proof motor, impeller #463, 50 Ft. of power cable, capable of producing 385 GPM @ 30 ft. TDH. Model No. NP-3102, or City approved equal

2.0.3 Bid Line Item No. 3

Pump, submersible, 60HP, 460 Volts, 3Phase, 60 Hertz, 1750 RPM, explosion proof motor, impeller #804, 50 Ft. of power cable, capable of producing 4,722 GPM @ 38.2 ft. TDH. Model No. CT-3300, or City approved equal

2.0.4 Bid Line Item No. 4

Pump, submersible, 250HP, 460 Volts, 3Phase, 60 Hertz, 1750 RPM, explosion proof motor, impeller # 804, 70 Ft. of power cable, capable of producing 18,000 GPM @ 30 ft. TDH. Model No. CP-3531, or City approved equal

2.1 PUMP DESIGN:

The pumps shall be capable of being used in a portable configuration or with a Flygt guide rail configuration with existing discharge connections.

2.2 PUMP CONSTRUCTION:

- 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.
- 2.2.2 All exposed nuts or bolts shall be of stainless steel construction.
- 2.2.3 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.
- 2.2.4 Sealing design shall incorporate **metal-to-metal contact** between machined surfaces.

- 2.2.5 Critical mating surfaces where watertight sealing is required shall be machined and fitted with Nitrile or Viton rubber O-rings.
- 2.2.6 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.
- 2.2.7 Rectangular cross sectioned gaskets requiring specific torque limits to achieve compression shall not be considered as adequate or equal.
- 2.2.8 No secondary sealing compounds, elliptical O-rings, grease or other devices shall be used.

2.3 COOLING SYSTEM:

Motors are sufficiently cooled by the surrounding environment or pumped media. A water jacket is not required.

2.4 MOTOR:

- 2.4.1 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.
- 2.4.2 The stator windings shall be insulated with moisture resistant **Class H insulation** rated for 180°C (356°F).
- 2.4.3 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%.
- 2.4.4 The motor shall be inverter duty rated in accordance with NEMA MG1, Part 31.
- 2.4.5 The stator shall be heat-shrink fitted into the cast iron stator housing.
- 2.4.6 The use of multiple step dip and bake-type stator insulation process is not acceptable.
- 2.4.7 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.
- 2.4.8 The motor shall be designed for continuous duty while handling pumped media of up to 104°F. The motor shall be capable of withstanding at least 15 evenly spaced starts per hour.
- 2.4.9 The rotor bars and short circuit rings shall be made of aluminum.
- 2.4.10 Three thermal switches shall be embedded in the stator end coils, one per phase winding, to monitor the stator temperature.
- 2.4.11 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.
- 2.4.12 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.
- 2.4.13 The use of wire nuts or crimp-type connectors is not acceptable. The motor and the pump shall be produced by the same manufacturer.
- 2.4.14 The motor service factor (combined effect of voltage, frequency and specific gravity) shall be 1.15.
- 2.4.15 The motor shall have a voltage tolerance of +/- 10%.
- 2.4.16 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.
- 2.4.17 The chart shall also include data on motor starting and no-load characteristics.
- 2.4.18 Motor horsepower shall be sufficient so that the pump is non-overloading throughout its entire performance curve, from shut-off to run-out.

2.5 BEARINGS:

- 2.5.1 The integral pump/motor shaft shall rotate on two bearings.
- 2.5.2 The motor bearings shall be sealed and permanently grease lubricated with high temperature grease.
- 2.5.3 The upper motor bearing shall be a single ball type bearing to handle radial loads.
- 2.5.4 The lower bearing shall be a two row angular contact ball bearing to handle the thrust and radial forces.
- 2.5.5 The minimum L₁₀ bearing life shall be **50,000 hours at any usable portion of the pump curve.**

2.6 MECHANICAL SEALS:

- 2.6.1 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.
- 2.6.2 The lower primary seal, located between the pump and seal chamber, shall contain one stationary and one positively driven rotating corrosion resistant **tungsten-carbide** ring.
- 2.6.3 The upper secondary seal, located between the seal chamber and the seal inspection chamber, shall contain one stationary and one positively driven rotating corrosion resistant **tungsten-carbide** seal ring
- 2.6.4 All seal rings shall be individual solid sintered rings.
- 2.6.5 Each seal interface shall be held in place by its own spring system.
- 2.6.6 The seals shall not depend upon direction of rotation for sealing.
- 2.6.7 Mounting of the lower seal on the impeller hub is not acceptable.
- 2.6.8 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.
- 2.6.9 The seal springs shall be isolated from the pumped media to prevent materials from packing around them, limiting their performance.
- 2.6.10 Each pump shall be provided with a lubricant chamber for the shaft sealing system.
- 2.6.11 The lubricant chamber shall be designed to prevent overfilling and shall provide capacity for lubricant expansion.
- 2.6.12 The seal lubricant chamber shall have one drain and one inspection plug that are accessible from the exterior of the motor unit.
- 2.6.13 The seal system shall not rely upon the pumped media for lubrication.
- 2.6.14 The area about the exterior of the lower mechanical seal in the cast iron housing shall have cast in an integral concentric spiral groove.
- 2.6.15 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.
- 2.6.16 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.
- 2.6.17 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.

2.7 PUMP SHAFT:

- 2.7.1 The pump and motor shaft shall be a single piece unit.
- 2.7.2 The pump shaft is an extension of the motor shaft.
- 2.7.3 Shafts using mechanical couplings shall not be acceptable.
- 2.7.4 The shaft shall be AISI type 431 stainless steel.
- 2.7.5 Shaft sleeves will not be acceptable.

2.8 IMPELLER:

- 2.8.1 The impeller shall be of gray cast iron, ASTM A-48 Class 35B, dynamically balanced, semi-open, multi-vane, back swept, screw-shaped, non-clog design.
- 2.8.2 The impeller leading edges shall be mechanically self-cleaned automatically upon each rotation as they pass across a spiral groove located on the volute suction.
- 2.8.3 The screw-shaped leading edges of the impeller shall be hardened to Rc 45 and shall be capable of handling solids, fibrous materials, heavy sludge and other matter normally found in wastewater.
- 2.8.4 The screw shape of the impeller inlet shall provide an inducing effect for the handling of up to 5% sludge and rag-laden wastewater.
- 2.8.5 The impeller to volute clearance shall be readily adjustable by the means of a single trim screw.
- 2.8.6 The impellers shall be locked to the shaft, held by an impeller bolt and shall be coated with alkyd resin primer.

2.9 VOLUTE/SUCTION COVER:

- 2.9.1 The pump volute shall be a single piece gray 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.
- 2.9.2 Minimum inlet and discharge size shall be as specified.
- 2.9.3 The volute shall have integral spiral-shaped, sharp-edged groove(s) that is cast into the suction cover.
- 2.9.4 The spiral groove(s) shall provide the sharp edge(s) across which each impeller vane leading edge shall cross during rotation so to remain unobstructed.
- 2.9.5 The internal volute bottom shall provide effective sealing between the multi-vane semi-open impeller and the volute.

2.10 PROTECTION:

- 2.10.1 Each pump motor stator shall incorporate three thermal switches, one per stator phase winding and be connected in series, to monitor the temperature of the motor.
- 2.10.2 Should the thermal switches open, the motor shall stop and activate an alarm.
- 2.10.3 A float switch shall be installed in the seal leakage chamber and will activate if leakage into the chamber reaches 50% chamber capacity, signaling the need to schedule an inspection.
- 2.10.4 The thermal switches and float switch shall be connected to the existing Mini CAS control and status monitoring unit.
- 2.10.5 **If pumps are supplied that will not operate with the existing monitoring unit, the pump supplier shall have an electrician approved by the City of Houston with the proper insurance and licenses, install the proper monitoring units at no cost to the City.**

2.11 WARRANTY:

The supplier shall provide a full one-year warranty on the pump, which includes parts and labor. The warranty work shall be conducted within three working days after receipt of written notice from the City. All shipping charges for warranty work that is required outside of the Houston area will be borne by the supplier.

2.12 LITERATURE:

The supplier shall provide two sets of operation, maintenance and parts manuals for each pump and hydraulic unit at the time of delivery.

2.13 DELIVERY:

Unit(s) as specified above, with delivery ticket and other documents and manuals, if requested shall be delivered to the location (s) as stated on each individual purchase order as expeditiously as possible, but no later than 120 calendar days after receipt of a City of Houston Purchase Order.

2.14 TRAINING:

A minimum of four hours of training shall be conducted by the successful bidder. All training will be conducted at a City of Houston location to be determined at a later date.

3.0 GROUP II - GORMAN RUPP:

3.0.1 Bid Line Item No. 5

Pump, skid mounted, 40HP, 60 Cable, 120/240 Volt, 1,800 RPM, Totally Enclosed Fan Cooled (TEFC) motor w/belts, sheaves, and guard on a galvanized base. Model No. T8A61S-B/F, or City approved equal.

3.0.2 Bid Line Item No. 6

Pump, skid mounted, 15HP, 60 Cable, 460 Volt, 1,800 RPM, TEFC motor w/belts, sheaves, and guard on a galvanized base. Model No. T6A3S-B/F, or City approved equal.

3.1 PUMP EQUIPMENT:

- 3.0.1 Belts & Sheaves
- 3.0.2 Belt Guards
- 3.0.3 Galvanized Base
- 3.0.4 Casing shall be Gray Iron 30
- 3.0.5 Impeller: Two Vane Vortex, SSTL 316
- 3.0.6 Replaceable Wear Plate: SSTL 316
- 3.0.7 Removable Adjustable Cover Plate: Gray Iron 30; 94 lbs.
- 3.0.8 Flap Valve: Neoprene w/Nylon and Steel Reinforcing
- 3.0.9 Seal Plate: SSTL 316
- 3.0.10 Bearing Housing: Gray Iron 30
- 3.0.11 Radial and Thrust Bearings: Open Double Row Ball
- 3.0.12 Bearing and Seal Cavity Lubrication: SAE 30 Non-Detergent Oil
- 3.0.13 Flanges: #125 Gray Iron 30
- 3.0.14 Gaskets: Buna-N, Compressed Synthetic Fibers, PTFE, Cork, and Rubber
- 3.0.15 O-Rings: Buna-N
- 3.0.16 Internal Wetted Hardware: SSTL 316
- 3.0.17 External Hardware: Standard plated steel
- 3.0.18 Pressure Relief Valve: SSTL 316
- 3.0.19 Bearing and Seal Cavity oil level sight gauges;
- 3.0.20 Steel base with pump and motor attached
- 3.0.21 Metal Bellows Seal
- 3.0.22 Automatic air release valve
- 3.0.23 Pulley and belt drive

3.2 WARRANTY:

The supplier shall provide a full one-year warranty on the pump, which includes parts and labor. The warranty work shall be conducted within three working days after receipt of written notice from the City. All shipping charges for warranty work that is required outside of the Houston area will be borne by the supplier.

3.3 LITERATURE:

The supplier shall provide two sets of operation, maintenance and parts manuals for each pump and hydraulic unit at the time of delivery.

3.4 DELIVERY:

Unit(s) as specified above, with delivery ticket and other documents and manuals, if requested shall be delivered to the location (s) as stated on each individual purchase order as expeditiously as possible, but no later than 120 calendar days after receipt of a City of Houston Purchase Order.

3.5 TRAINING:

A minimum of four hours of training shall be conducted by the successful bidder. All training will be conducted at a City of Houston location to be determined at a later date.

4.0 GROUP III - CHICAGO YEOMAN:

4.0.1 Bid Line Item No. 7

Pump, submersible, 125HP, 460V, 3Phase, 900 RPM, 7500 GPM @ 50' TDH w/75' of power cable, Size: 14". Model No. 14206, or City approved equal.

4.0.2 Bid Line Item No. 8

Pump, vertical dry pit, 30 HP, 480V, 870 RPM, Size: 10". Model No. VPM-OLC10, or City approved equal.

4.1 BEARINGS AND LUBRICATION:

4.1.1. Bearings shall be specifically selected to carry all radial and axial loads imposed by the pump and motor.

4.1.2. Bearings shall be rated to provide a minimum L₁₀ Bearing Life of 100,000 hours at any design operating point within the allowable operating region (limit lines). Bearing selection shall limit the bearing temperature rise to a maximum of 60° C under full load operation.

4.1.3. All bearings shall be permanently lubricated with a premium moisture resistant grease containing rust inhibitors and shall be suitable for operation over a temperature range of -25° C to +120° C. The bearings shall not require any additional or periodic lubrication. All bearings shall be commercially available from third party sources other than the pump/motor manufacturer.

4.2 SHAFT SEALS:

4.2.1. Two independent, tandem mounted, mechanical seals shall be provided in the oil filled housing to isolate and protect the air-filled motor from the pumped media. The oil level shall not require constant monitoring and shall be suitable for a minimum of two (2) years service under specified operating conditions before requiring replacement for normal maintenance. The oil reservoir shall act as a barrier to trap moisture and provide sufficient time for a planned shutdown in the event of an outer seal failure. The inner mechanical seal shall be constructed with a solid block carbon rotating seal face and a solid block silicon carbide stationary seal face. The outer mechanical seal shall be constructed with a solid block silicon carbide rotating seal face and a solid block silicon carbide stationary face. All other metal components of the inner and outer seals shall be AISI 316 stainless steel. All elastomers of both inner and outer seals shall be of Viton[®] material. The outer mechanical seal shall be located in a recessed housing outside the main flow path of the pump to avoid damage. Mechanical seals that employ sprayed or laminated seal faces shall neither be considered equal, nor shall they be acceptable.

4.2.2. Mechanical seals shall be readily and commercially available from third party sources other than the pump and motor manufacturer, their agents, dealers and/or distributors. Mechanical Seals shall be Type 21 or approved equivalent.

4.3 MOISTURE DETECTION SYSTEM:

A dual (2) probe moisture sensing system shall detect the entrance of moisture and provide an alarm. The moisture detection system shall be designed to detect the entrance of moisture in the stator and lower oil seal housing. The use of single probe or float switch type sensor systems shall not be acceptable. The moisture sensing probe leads shall terminate at a conductance relay located in the control panel, which shall provide an alarm in the event of moisture intrusion. The sensing relay (if not specifically ordered from the pump manufacturer) shall be approved by the pump/motor manufacturer.

4.4 CABLE ENTRY SYSTEM:

- 4.4.1. The power and control cable entry system shall be designed to provide a positive, leak-free seal to prevent liquid from entering the air filled motor housing. The design shall incorporate provisions that prevent moisture from wicking through the cable assembly even in the event the cable jacket has been punctured. All cable shall be type SEOW-A or better and U.L. Listed for the intended submersible service.
- 4.4.2. Units above 1-1/2 HP shall be designed with separate power and control cables to prevent false sensor warnings. The power and control cable entry into the lead connection chamber shall be epoxy encapsulated for positive moisture sealing. For frame size 180 and above, the power and control cables shall be unitized modular assemblies permitting individual repair or replacement. Each modular cable unit shall include a cast iron connector body with flared inlet to protect against cable damage due to bending or flexing at the entry point. Each cable unit shall include both epoxy seal and a Neoprene sealing grommet. A sleeve/spacer shall be provided to isolate the epoxy from the connector body and facilitate easy removal and replacement of the sealing compound. Assembly of cable components and grommet tensioning shall be accomplished by a precision snap-ring connection to prevent cable damage or leakage due to under or over compression. The system shall permit the use of factory supplied epoxy or other commercial sealants for field repair without voiding the rating of explosion proof units. Cable strain relief shall be independent of the epoxy seal. Individual cable units shall be designed to permit repair or rebuilding independent of the motor.
- 4.4.3. Each cap & cable assembly shall include a modular design rail-mounted terminal block system with individual terminal units for connection of each power and control lead. The terminal block system shall utilize standard non-proprietary commercial components.

4.5 MATERIALS OF CONSTRUCTION - MOTOR:

- 4.5.1. The submersible motor enclosure including frame, end brackets, flanges and cap assembly shall be constructed of close-grained cast iron, ASTM A-48, Class 30 or better.
- 4.5.2. The top end bracket shall be fitted with a lifting bail and shall be capable of supporting four (4) times the combined weight of the pump and motor.
- 4.5.3. All mating fits on the motor frame shall have rabbet joints with large overlap as well as o-ring seals to provide for a watertight seal. O-rings shall be Buna-N.
- 4.5.4. The one-piece motor/pump shaft shall be constructed of stainless steel and shall be precision machined to ensure proper tolerances at all contact points. The entire rotating assembly shall be designed with sufficient rigidity and balanced for a minimal shaft deflection at extreme pump operating conditions.
- 4.5.5. The motor rotor shall be of squirrel-cage design and constructed of die cast aluminum, fabricated copper or their respective alloys. The rotor shall have an interference fit to the shaft and the rotating assembly shall be dynamically balanced to ISO 1940, G.6.3. Balance weights, if required, shall be secured to the rotor resistance ring or rotor fins. Machine screws or nuts and bolts used to attach balance weights are specifically prohibited.

4.6 ELECTRICAL:

- 4.6.1. The submersible motors shall successfully operate under power supply variations per NEMA MG1-14.30. Motors shall be NEMA Design B with torque and starting current in accordance with NEMA MG1-12.
- 4.6.2. The submersible motors shall be of an air-filled, high efficiency design and shall be rated for continuous full load operation. The motor construction shall be of explosion proof, TENV-TEXP design and capable of being certified for use in Class 1, Division 1, Groups C & D hazardous locations by Factory Mutual Research Corp. (F.M.). Motors shall be capable of withstanding up to 15 starts per hour and shall have a minimum 1.15 Service Factor at 40° C ambient.
- 4.6.3. Stators shall be solid copper wound and shall be press fitted into the stator housing for true positive alignment and efficient heat transfer. The motor insulation system shall be Class H minimum (*Class F for 140 frame*), utilizing materials and insulation systems evaluated and certified with IEEE 117 classification tests. The entire wound stator assembly shall receive a minimum of two (2) coats of insulating varnish utilizing a dip and bake process.
- 4.6.4. Three (3) normally closed, automatic reset thermostats connected in series shall be embedded in adjoining phases of the stator windings. The thermostats shall be connected to safely shut down the motor upon opening.

4.7 MATERIALS OF CONSTRUCTION - PUMP:

- 4.7.1. The pump casing, impeller, motor housing and stationary base elbow shall be manufactured of close-grained cast iron, ASTM A48, Class 30.
- 4.7.2. The pump casing shall be of the semi-concentric volute design, of one piece construction, having centerline discharge to minimize clogging or flow interference, and to provide the proper weight distribution for use with the Easy-Lift disconnect system.
- 4.7.3. The impeller shall be of a multi-vaned, fully shrouded enclosed design and shall have large passages to provide smooth flow transition and unimpeded passage of large spherical solids. All impellers shall be statically and dynamically balanced to ISO 1940, G.6.3. Solids passing capability of the impeller offered shall be clearly indicated on the manufacturer's performance curve.

4.8 WEARING RINGS:

- 4.8.1. *Impeller* - A replaceable 400 Series stainless steel wear ring shall be provided on the impeller inlet to reduce the effects of abrasive wear and provide the ability to renew the running clearance.
- 4.8.2. *Volute* – The volute suction shall contain a replaceable 400 Series stainless steel wear ring to match the impeller wear ring.
- 4.8.3. All external casting surfaces of the pump/motor coming into contact with the pumped liquid shall have a surface cleanliness equal to that of a SSPC-SP3 process prior to being factory protected by one (1) coat of an environmentally-safe machinery enamel coating with a high solids content.
- 4.8.4. All external hardware including nameplates on the pump/motor shall be 300 Series stainless steel.

4.9 SLIDING GUIDE BRACKET & RAIL SYSTEM:

- 4.9.1. The pump slide bracket shall be of heavy-duty cast iron construction.
- 4.9.2. The base discharge elbow shall meet the slide bracket by method of a three point, wedged engagement that is uniquely designed to match the volute flange to the stationary elbow to eliminate head losses. The discharge elbow shall be designed to carry the full weight of the pump, motor and discharge piping.
- 4.9.3. Guide rail mounting brackets shall be furnished to stabilize the guide rails for installation in deep wet wells. Brackets shall be spaced at proper intervals to provide rigidity and parallelism. The brackets shall be designed to fit exactly into the pipes for which they were designed. Adjustable and/or flexible brackets designed to fit a variety of guide rail pipe sizes shall not be acceptable. Mounting brackets shall be of stainless steel construction.

4.10 WARRANTY:

The supplier shall provide a full one-year warranty on the pump, which includes parts and labor. The warranty work shall be conducted within three working days after receipt of written notice from the City. All shipping charges for warranty work that is required outside of the Houston area will be borne by the supplier.

4.11 LITERATURE:

The supplier shall provide two sets of operation, maintenance and parts manuals for each pump and hydraulic unit at the time of delivery.

4.12 DELIVERY:

Unit(s) as specified above, with delivery ticket and other documents and manuals, if requested shall be delivered to the location (s) as stated on each individual purchase order as expeditiously as possible, but no later than 100 calendar days after receipt of a City of Houston Purchase Order.

4.13 TRAINING:

A minimum of four hours of training shall be conducted by the successful bidder. All training will be conducted at a City of Houston location to be determined at a later date.

5.0 **GROUP IV - ITT A-C:**

This specification covers ITT A-C vertical, non-clog, centrifugal pumps & motors. Pumps shall be ITT Models that shall match existing units dimensionally and allow for mounting on existing bases.

5.01 **Bid Line Item No. 9**

Pump, vertical, rotating assembly, 1180RPM, 850 GPM @ 50' TDH, Size: 8X6X12SC, Model No. NSWV, or City approved equal.

5.0.2 **Bid Line Item No. 10**

Pump, vertical, rotating assembly, 710RPM, 6,330 GPM @ 26' TDH Size: 24X16X20. Model No. NSYV, or City approved equal.

5.0.3 **Bid Line Item No. 11**

Pump, vertical, rotating assembly, 705RPM, 7,465 GPM @ 50' TDH Size: 16X16X20. Model No. NSYV, or City approved equal.

5.1 **PUMP CONSTRUCTION:** Pumps shall be designed to perform satisfactorily with a reasonable service life when operated either continuously or intermittently in typical wastewater services. Pumps shall be mounted on pedestal bases and have fabricated steel motor.

5.1.1 Casing: Casing shall be close-grained cast iron ASTM A48 Class 30 of sufficient strength, weight and metal thickness to insure long life, accurate alignment, and reliable operation.

5.1.2 Volute shall have smooth fluid passages large enough at all points to pass any size solid which can pass through the impeller and provide smooth unobstructed flow.

5.1.3 A large clean-out opening with removable cover, having its interior surface matching the volute contour, shall be located on the casing at the impeller centerline, to allow access to interior of the impeller.

5.1.4 Casing shall be split perpendicular to the shaft, with removable suction cover and stuffing box cover. Machined fits for these parts shall be accurately aligned and identical so that casing may be installed for either clockwise or counter-clockwise direction of rotation.

5.1.5 Casing shall be arranged so that the impeller may be removed without disturbing either suction or discharge piping.

5.2 **DISCHARGE FLANGE:** Flange shall be ANSI 125-pound flat face. All flanges shall have slotted bolt holes for ease of installation and removal. Each discharge nozzle shall be drilled and tapped with two 1.0" IPS taps, one on either side. One of the taps in the discharge shall serve as a vent.

5.3 **DISCHARGE POSITION:** Pump discharge nozzle orientation shall be tangential, centerline discharge is not acceptable, and shall be capable of rotation to any of eight discharge positions for each direction of rotation.

5.4 **SUCTION COVER:** Pump shall be manufactured with a removable suction cover to allow for access to the impeller. It shall be made of cast iron, ASTM A-48 Class 30. A 1/4" IPS tap shall be provided next to the suction flange. The suction flange shall be ANSI 125-pound flat face. Flange bolt holes shall be slotted for ease of assembly and disassembly. Pump shall be fitted with an increasing suction elbow with 6" connection and shall be provided with a tapped port for seal water return.

5.4.1 A replaceable 11.5%-14% chrome steel wear plate shall be furnished. It shall provide 1/4" minimum wear and shall be installed with its wear surface parallel to the end of the impeller inlet.

- 5.5** **IMPELLER:** Impeller shall be of the single-suction, enclosed type with two vanes, made of ductile Iron. Impellers shall be specially designed with smooth water passages to prevent clogging by stringy or fibrous materials, and shall be capable of passing solids having at least a sphere size of 3". Impeller shall be dynamically balanced. Impeller shall have a tapered bore and shall be keyed and secured to the shaft by an 18-8 Stainless Steel nut locked in place. It shall be readily removable without the use of special tools.
- 5.5.1 A replacement 11.5-14% chrome steel AL@ shaped wear ring shall be provided. Ring shall be mounted on impeller to provide a renewable surface opposite the suction cover wear plate.
- 5.5.2 Pump shall have provisions for adjustment of axial clearance. This adjustment shall be made through the use of shims placed between the frame and outboard bearing housing.
- 5.6** **SHAFT:** Pump shaft shall be high-strength carbon steel, AISI #1045 or 4140, accurately machined, tapered at the impeller end and of sufficient size to transmit full driver output. It shall be protected from the pumped liquid by a shaft sleeve. A seal shall be provided, by a synthetic rubber AO@ ring between the shaft and shaft sleeve to prevent leakage of pumped liquid out and/or air into the pump.
- 5.7** **SHAFT SLEEVE:** Renewable shaft sleeve shall be 316 SS with a Ni-CR-Boron coating to a hardness of 58-63RC(approximately 650 Brinell). The sleeve provided shall extend through the seal housing.
- 5.8** Each pump shall be provided with a Dynamic Seal System.
- 5.9** **SEAL BOX:** The pumps shall be fitted with a single stage Dynamic Seal capable of balancing out positive suction heads. A throttle bushing and sleeve shall be placed in the stuff box cover. Both pieces shall be made of 316 SS with a Ni-CR-Boron coating to a hardness of 58-63RC(approximately 650 Brinell). The Dynamic Seal expeller shall be made of nodular iron, ASTM 536 or 304 Stainless Steel. A pressure relief connection with elbow, fittings, and tubing shall be provided in the seal cover to bleed liquid back to the suction cover of the pump.
- 5.10** **STATIC SEAL:** Dual static seals, provided with a grease cavity between them, shall be installed in the seal cover to provide leakage along the shaft, when the pump is not running. A positive means for adding grease shall be provided in the suction cover. Seals shall contact a 316 SS sleeve with a Ni-CR-Boron coating to a hardness of 58-63RC(approximately 650 Brinell).
- 5.11** **BEARING FRAME AND BEARINGS:**
- 5.11.1 Bearing Frame: Pump bearing frame shall be one-piece rigid cast iron construction. Frame shall be provided with a cast iron bearing housing at the outboard end, and a cast iron end over at the inboard end. Both ends of the frame shall be provided with lip type grease seals and labyrinth type deflectors to prevent the entrance of contaminants. Bearing Frame shall be designed so that complete rotation element, including motor, can be removed from casing without disconnecting piping or coupling.
- 5.11.2 Bearings shall be designed for 50,000 hours minimum life at 50% of B.E.P. Radial inboard bearings shall be roller type suitable for all loads encountered in the service conditions. Outboard bearing arrangement shall consist of one deep groove ball bearing to take the radial loads and one angular contact bearing to take axial loads.
- 5.11.3 Bearing lubrication: Bearings shall be grease lubricated with provisions for addition and relief of grease.
- 5.12** **SUCTION ELBOW:** Each pump shall be provided with a clean-out type cast iron suction elbow with 6" inlet, which is bolted directly to the pump suction flange. The clean-out handhole shall be provided with a removable cover of the largest possible size. The inner surfaces of each handhole cover shall generally conform to the curvature and radius of the suction elbow. A 1/4" tapped hole for gauge connection shall be provided. Also a 2" tapped hole shall be provided in the side of the elbow for use in applying water pressure to unclog the pump in case of blockage.

- 5.13** **COUPLING:** Coupling shall be of the manufacturer's choice and of the flexible type. Coupling hubs shall be secured to the driver and driven shafts by setscrew located over the key.
- 5.14** **DATA PLATE:** All data plates shall be stainless steel suitable attached to the pump. Data plates shall contain the manufacturer's name, pump size and type, serial number, speed, impeller diameter, rated capacity and head, and other pertinent data. A separate nameplate shall identify the frame and bearing numbers.
- 5.15** **PUMP DRIVE:** Direct Connected Pump shall be designed for direct connection to a standard vertical solid shaft, normal thrust, 284HP frame, 25HP, 230/460 Volt, 1800 RPM motor with P base, Class F insulation w/Class B rise, 115 Volt space heater and shall be furnished complete with a suitable cast motor support and flexible coupling. Motor support shall be accurately positioned and bolted to pump frame to insure proper alignment of motor and pump shafts.
- 5.16** **FACTORY TESTING:** Pumps shall be hydrostatically tested in accordance with the Standards of the Hydraulic Institute.
- 5.17** **NOTE:** Supply of pumps other than Flygt, will require supplier to install and wire their protection units at their expense.
- 5.18** **WARRANTY:**
The supplier shall provide a full one-year warranty on the pump, which includes parts and labor. The warranty work shall be conducted within three working days after receipt of written notice from the City. All shipping charges for warranty work that is required outside of the Houston area will be borne by the supplier.
- 5.19** **LITERATURE:**
The supplier shall provide two sets of operation, maintenance and parts manuals for each pump and hydraulic unit at the time of delivery.
- 5.20** **DELIVERY:**
Unit(s) as specified above, with delivery ticket and other documents and manuals, if requested shall be delivered to the location (s) as stated on each individual purchase order as expeditiously as possible, but no later than 100 calendar days after receipt of a City of Houston Purchase Order.
- 5.21** **TRAINING:**
A minimum of four hours of training shall be conducted by the successful bidder. All training will be conducted at a City of Houston location to be determined at a later date.

6.0 GROUP V - KSB:

This specification covers KSB pump rotating assemblies for vertical, non-clog, centrifugal pumps. The **replacement rotating assemblies shall match existing units dimensionally and allow for mounting inside existing casings.**

6.0.1 Bid Line Item No. 12

Pump, submersible, 30 HP, Model No. KRT K100-400/326XNG-D, 460V, 3-Phase w/50' power cable, cast iron casing wear ring and stainless steel impeller wear ring, 4" discharge w/new 5" suction elbow, 275 GPM @ 1,165 RPM, or City approved equal.

6.0.1 Bid Line Item No. 13

Pump, submersible, 60 HP, Model No. Model No. 250-401K Sewatec, 3,039 GPM @ 59.69' TDH, or City approved equal.

6.0.2 Bid Line Item No. 14

Pump, submersible, 60 HP, Model No. Model No. 300-400K Sewatec, 3,750 GPM @ 30' TDH, or City approved equal.

6.0.3. Bid Line Item No. 15

Pump, submersible axial flow, 460V, Model No. Model No. Amacan PA4 1000-700/15510UTG1, or City approved equal.

6.1 PUMP CONSTRUCTION:

Pumps shall be designed to perform satisfactorily with a reasonable service life when operated either continuously or intermittently in typical wastewater services.

6.2 CASING:

Existing (do not include). Provide new casing gasket.

6.3 SUCTION COVER WEAR PLATE:

A replaceable 11.5%-14% chrome steel wear plate shall be furnished. It shall provide 1/4" minimum wear and shall be installed with its wear surface parallel to the end of the impeller inlet.

6.4 IMPELLER:

Impeller shall be of the single-suction, enclosed type with two vanes, made of cast Iron. Impellers shall be specially designed with smooth water passages to prevent clogging by stringy or fibrous materials, and shall be capable of passing solids having at least a sphere size of 3". Impeller shall be dynamically balanced. Impeller shall have a tapered bore and shall be keyed and secured to the shaft by an 18-8 Stainless Steel nut locked in place. It shall be readily removable without the use of special tools.

6.5.1. Impeller wear rings: A replacement 11.5-14% chrome steel shaped wear ring shall be provided. Ring shall be mounted on impeller to provide a renewable surface opposite the suction cover wear plate.

6.5.2. Impeller clearance adjustment: Pump shall have provisions for adjustment of axial clearance. This adjustment shall be made through the use of shims placed between the frame and outboard bearing housing.

6.7 SHAFT:

Pump shaft shall be high-strength carbon steel, AISI #1045 or 4140, accurately machined, tapered at the impeller end and of sufficient size to transmit full driver output. It shall be protected from the pumped liquid by a shaft sleeve. A seal shall be provided, by a synthetic rubber O'ring between the shaft and shaft sleeve to prevent leakage of pumped liquid out and/or air into the pump.

6.8 SHAFT SLEEVE:

Renewable shaft sleeve shall be 316 SS with a Ni-CR-Boron coating to a hardness of 58-63RC(approximately 650 Brinell). The sleeve provided shall extend through the seal housing.

6.9 DYNAMIC SEAL SYSTEM:

6.9.1. Seal Box: The pumps shall be fitted with a single stage Dynamic Seal capable of balancing out positive suction heads. A throttle bushing and sleeve shall be placed in the stuff box cover. Both pieces shall be made of 316 SS with a Ni-CR-Boron coating to a hardness of 58-63RC (approximately 650 Brinell). The Dynamic Seal expeller shall be made of nodular iron, ASTM 536 or 304 Stainless Steel. A pressure relief connection with elbow, fittings, and tubing shall be provided in the seal cover to bleed liquid back to the suction cover of the pump.

6.9.2. Static Seal: Dual static seals, provided with a grease cavity between them, shall be installed in the seal cover to provide leakage along the shaft, when the pump is not running. A positive means for adding grease shall be provided in the suction cover. Seals shall contact a 316 SS sleeve with a Ni-CR-Boron coating to a hardness of 58-63RC (approximately 650 Brinell).

6.10 BEARING FRAME AND BEARINGS

6.10.1. Bearing Frame: Pump bearing frame shall be one-piece rigid cast iron construction. Frame shall be provided with a cast iron bearing housing at the outboard end, and a cast iron end over at the inboard end. Both ends of the frame shall be provided with lip type grease seals and labyrinth type deflectors to prevent the entrance of contaminants. Bearing Frame shall be designed so that complete rotation element, including motor, can be removed from casing without disconnecting piping or coupling.

6.10.2. Bearings: Bearings shall be designed for 50,000 hours minimum life at 50% of B.E.P. Radial inboard bearings shall be roller type suitable for all loads encountered in the service conditions. Outboard bearing arrangement shall consist of one deep groove ball bearing to take the radial loads and one angular contact bearing to take axial loads.

6.10.3. Bearing lubrication: Bearings shall be grease lubricated with provisions for addition and relief of grease.

6.11 WARRANTY:

The supplier shall provide a full one-year warranty on the pump, which includes parts and labor. The warranty work shall be conducted within three working days after receipt of written notice from the City. All shipping charges for warranty work that is required outside of the Houston area will be borne by the supplier.

6.12 LITERATURE:

The supplier shall provide two sets of operation, maintenance and parts manuals for each pump and hydraulic unit at the time of delivery.

6.13 DELIVERY:

Unit(s) as specified above, with delivery ticket and other documents and manuals, if requested shall be delivered to the location (s) as stated on each individual purchase order as expeditiously as possible, but no later than 120 calendar days after receipt of a City of Houston Purchase Order.

6.14 TRAINING:

A minimum of four hours of training shall be conducted by the successful bidder. All training will be conducted at a City of Houston location to be determined at a later date.

7.0 GROUP VI - MOYNO 2000:

7.0.1 Bid Line Item No. 16

Pump, sludge, 10HP, 65 GPM @ 278 RPM, Model No. 1G065G1 CDQX3AAA, or City approved equal.

7.0.2 Bid Line Item No. 17

Pump, sludge, 10HP, 65 GPM @ 278 RPM, Model No. 1E03G1 CDQX3AAX, or City approved equal.

7.0.3 Bid Line Item No. 18

Pump, sludge, 10HP, 65 GPM @ 278 RPM, Centennial Model No. 2E012G1 SSF3CAA, suction rotated 90, or City approved equal.

- 7.1 The pumps shall be of the heavy duty, positive displacement, progressing cavity type with a gear joint drive train. The pump shall be cradle-mounted to allow the normally vertical suction port to be rotated to any angle perpendicular to the centerline to facilitate piping connections. (The bearing and suction housings of the pump shall be thick-walled cast iron.) **(For stainless steel pumps: the bearing housing of the pump shall be thick-walled cast iron and the suction housing cast stainless steel.)** All cast parts shall be free of sand holes, blow holes, and other defects. The suction housing shall incorporate two rectangular inspection ports, 180° apart, to permit access to the suction housing interior without disconnecting the piping. The bearings will be integral to the pump and of the grease lubricated, tapered roller type with diverging pressure angles for maximum shaft stability. Close coupled pumps, which do not utilize bearings integral to the pump, will not be accepted. Bearings are to be designed for a minimum B-10 life of 100,000 hours under maximum operating conditions and will not require periodic lubrication. The bearings shall be protected from contaminants by means of a bearing cover plate bolted to the bearing housing. The bearings shall be enclosed in a separate housing, incorporating a bearing spacer and bolted bearing cover, which eliminates the need to shim the bearings. Inferior methods of positioning the bearings, i.e., snap rings, will not be accepted.
- 7.2 The rotor shall be of one-piece construction with integrally machined rotor head. Rotors made in long lengths and cut to size, with welded rotor heads, will not be accepted.
- 7.3 The rotor shall be machined from alloy steel **(or 316 stainless steel)**. The alloy steel shall be ASTM A331-90, grade 4150 cold finish with a yield strength greater than 55,000 psi. The rotor shall be of the single helix design with a 05 hard chrome plate thickness of .010 inches) (or some other high velocity thermal deposition applied coating) coating for maximum abrasion resistance. The stators shall be of the double helix design and chemically bonded to the inside of a carbon steel tube. The Shore A durometer of the (Nitrile) stator shall be 71 + 4. (For unusually abrasive applications, the Shore A durometer of the stator shall be 51 + 4.) The stator shall be machined with grooves to accept a 720° retaining ring. The stator shall be fastened to the suction housing and discharge flange with removable clamp rings to facilitate stator removal. Stators held in place with inferior methods, such as tie rods that are prone to uneven tensioning and stator misalignment, will not be accepted. The replaceable stator gaskets shall be designed to prevent the material being pumped from contacting the stator bonding and tube. Stators manufactured with seals integrally molded to the stator elastomer that can be damaged during handling and installation and are not replaceable, will not be accepted. Stators for the progressing cavity pumps shall be manufactured to size. Stators made in long lengths and cut to size will not be accepted.
- 7.4 **Stator tensioning or adjusting devices, which distort rotor/stator compression and seal lines will not be accepted. The distorted compression reduces rotor life. The distorted seal lines reduce capacity and pressure capabilities of the pumping elements.**

- 7.5 The Drive®** shall consist of a connecting rod that shall be of the rigid, splined design, connecting the gear joints of the drive shaft and eccentrically moving rotor. The connecting rod shall pass through the shaft seal area inside the hollow drive shaft quill so that no eccentric loads are imparted on the shaft seal area. The connecting rod shall be machined of alloy steel **(or 316 stainless steel)**. The alloy steel shall be ASTM 331-90, grade A8620. The connecting rod shall be splined to accept a ball gear. All diameters of the connecting rod are to be concentric to within + .003" TIR. Total angularity of the connecting rod shall not exceed 1.5°. The **Drive** shall also consist of gear joints of the grease lubricated, crowned gear type. The gear joint shall be totally enclosed and protected by a wire reinforced elastomeric seal. Mechanical components of the gear joints shall be designed to operate for 10,000 hours at the **manufacturer's published maximum speeds and pressures**.
- 7.6** The gear joints shall be machined of alloy steel, ASTM 331-90, grade A8620. The ball gear shall have an internal spline machined to American Standard 30° pressure angle involute spline. Stub tooth gears must have a 30° pressure angle. Joints utilized in the progressing cavity pump must have separate components handling the thrust forces and rotational forces. In the gear joint, the ball and ring gears handle rotational forces. The thrust plates handle thrust forces. Pin joints, on the other hand, are subjected to both rotational and thrust forces resulting in reduced wear life.
- 7.7 Light duty universal joint designs, such as flexshafts, cardan joints, and bushed pin joints, with forces concentrated on line contact, will not be accepted.**
- 7.8 The Drive®** shall also consist of a drive shaft that shall be of a hollow shaft quill design minimizing pump length and cantilever forces on the shaft sealing areas of non-hollow (solid) drive shaft designs. The hollow drive shaft shall be of two-piece construction with a removable stub shaft and a one-piece hollow construction through the bearings and shaft seal area. The stub shaft shall permit disassembly of the universal joints without affecting the shaft sealing area. The drive shaft shall be machined from carbon steel, ASTM A519-90, grade MT1020 with a yield strength of 32,000 psi.
- 7.9 Carbon steel (or stainless steel) shafts** shall be coated with hard chrome plating with a nominal chrome plate thickness of .010 inches for maximum abrasion resistance. Progressing cavity designs that do not protect the drive shaft from abrasive wear with chrome plating will not be accepted. **(Option: The quill portion of the shaft shall be equipped with a chrome plated shaft sleeve that can be removed without removing the drive shaft from the pump.)**
- 7.10** The stuffing box shall be equipped with a split packing gland and split Teflon® lantern ring to permit repacking of the pump without removing the bearings or drive shaft components. Fittings will be provided for (grease) (water) lubrication of the packing.
- 7.11 WARRANTY:**
The supplier shall provide a full one-year warranty on the pump, which includes parts and labor. The warranty work shall be conducted within three working days after receipt of written notice from the City. All shipping charges for warranty work that is required outside of the Houston area will be borne by the supplier.
- 7.12 LITERATURE:**
The supplier shall provide two sets of operation, maintenance and parts manuals for each pump and hydraulic unit at the time of delivery.
- 7.14 DELIVERY:**
Unit(s) as specified above, with delivery ticket and other documents and manuals, if requested shall be delivered to the location (s) as stated on each individual purchase order as expeditiously as possible, but no later than 120 calendar days after receipt of a City of Houston Purchase Order.
- 7.15 TRAINING:**
A minimum of four hours of training shall be conducted by the successful bidder. All training will be conducted at a City of Houston location to be determined at a later date.

8.0 GROUP VII - FAIRBANKS MORSE:

8.0.1 Bid Line Item No. 19

8" dry pit pump sewage pump, 40HP @ 1,185 RPM, 2500 GPM @ 40' TDH, Model No. 5414, or City approved equal.

8.0.2 Bid Line Item No. 20

8" dry pit pump sewage pump, 20HP @ 1,200 RPM, 2200 GPM @ 25' TDH, Model No. 5434SMV14, or City approved equal.

8.1 SS impeller and casing wear rings, hardened to 300-350 BHN

8.2 SS Impeller fastener

8.3 Dynamically balanced impeller

8.4 Chesterton 442 Split Seal with silicon carbide vs. silicon carbide faces

8.5 Chesterton SpiralTrac bushing, solids excluder beneath mechanical seal to repel solids

8.6 10" Suction Elbow

8.7 SS Impeller and casing wear rings, hardened to 300-350 BHN

8.8 SS Impeller fastener

8.9 410-484 BHN Hardened Shaft Sleeve

8.10 Dynamically balanced impeller

8.11 Chesterton 442 Split Seal with silicon carbide vs. silicon carbide faces

8.12 Chesterton Spiral Trac bushing, solids excluder beneath mechanical seal to repel solids

8.13 Certified hydraulic performance test at factory

8.14 WARRANTY:

The supplier shall provide a full one-year warranty on the pump, which includes parts and labor. The warranty work shall be conducted within three working days after receipt of written notice from the City. All shipping charges for warranty work that is required outside of the Houston area will be borne by the supplier.

8.15 LITERATURE:

The supplier shall provide two sets of operation, maintenance and parts manuals for each pump and hydraulic unit at the time of delivery.

8.16 DELIVERY:

Unit(s) as specified above, with delivery ticket and other documents and manuals, if requested shall be delivered to the location (s) as stated on each individual purchase order as expeditiously as possible, but no later than 120 calendar days after receipt of a City of Houston Purchase Order.

8.17 TRAINING:

A minimum of four hours of training shall be conducted by the successful bidder. All training will be conducted at a City of Houston location to be determined at a later date.

9.0 GROUP VIII - HYDROMATIC:

9.0.1 Bid Line Item No. 21

Pump, sump, 30HP, 900RPM, 460V, 3PH, 2,320 GPM @ 33 'TDH W/75' electrical cable, Model No. S8LX3000FB, or City approved equal.

9.1 SS 13" impeller

9.2 Oil filled motor

9.3 Connection box w/two epoxy barriers, compression fittings and epoxy encapsulation

9.4 Dual seal system

9.5 SS shaft

9.6 SS Impeller and casing wear rings, hardened to 300-350 BHN

9.7 SS Impeller fastener

9.8 Flame proof joints

9.9 Heavy duty bearings

9.10 Labyrinth joint

9.11 WARRANTY:

The supplier shall provide a full one-year warranty on the pump, which includes parts and labor. The warranty work shall be conducted within three working days after receipt of written notice from the City. All shipping charges for warranty work that is required outside of the Houston area will be borne by the supplier.

9.12 LITERATURE:

The supplier shall provide two sets of operation, maintenance and parts manuals for each pump and hydraulic unit at the time of delivery.

9.13 DELIVERY:

Unit(s) as specified above, with delivery ticket and other documents and manuals, if requested shall be delivered to the location (s) as stated on each individual purchase order as expeditiously as possible, but no later than 120 calendar days after receipt of a City of Houston Purchase Order.

9.14 TRAINING:

A minimum of four hours of training shall be conducted by the successful bidder. All training will be conducted at a City of Houston location to be determined at a later date.

10.0 **GROUP IX - EBARA:**

10.0.1 **Bid Line Item No. 22**

Pump, submersible, 150HP, 10,000 GPM @ 65' TDH, 1,750 RPM, 460V, 3PH, Model No. 900DSZ3, or City approved equal.

10.0.2 **Bid Line Item No. 23**

Pump, submersible, 15HP, 220 GPM, 1,750 RPM @ 78' TDH, 230V, 3PH, Model No. 80DLFMU6112, or City approved equal.

10.0.3 **Bid Line Item No. 24**

Pump, submersible, 15HP, 715 GPM, 1,750 RPM @ 45' TDH, 230V, 3PH, Model No. 100DLMB6112, or City approved equal.

10.0.4 **Bid Line Item No. 25**

Pump, submersible, 25HP, 980 GPM, 1,750 RPM @ 56' TDH, 230V, 3PH, Model No. 100DLFMU6282, or City approved equal.

10.1 Provide FM explosion proof submersible non-clog sewage pumps suitable for continuous duty operation underwater without loss of watertight integrity to a depth of 65 feet. Pump system design shall include a guide rail system be such that the pump will be automatically connected to the discharge piping when lowered into place on the discharge connection. The pump shall be easily removable for inspection or service, requiring no bolts, nuts, or other fasteners to be disconnected, or the need for personnel to enter the wet well. The motor and pump shall be designed, manufactured, and assembled by the same manufacturer.

10.2 **PUMP CONSTRUCTION:**

All major parts of the pumping unit(s) including casing, impeller, suction cover, motor frame and discharge elbow shall be manufactured from gray cast iron, ASTM A-48 Class 35B. Castings shall have smooth surfaces devoid of blow holes or other casting irregularities. Casing design shall be centerline discharge with a large radius on the cut water to prevent clogging. Units shall be furnished with a discharge elbow and 125 lb. flat face ANSI flange. All exposed bolts and nuts shall be 316 stainless steel. All mating surfaces of major components shall be machined and fitted with NBR O-rings where watertight sealing is required. Machining and fitting shall be such that sealing is accomplished by automatic compression of O-rings in two planes and O-ring contact is made on four surfaces without the requirement of specific torque limits. Internal and external surfaces are prepared to SPPC-VISI-SP-3-63 then coated with a zinc-chromate primer. The external surfaces are then coated with a H.B. Tnemecol 46-465 Coal Tar paint.

10.3 **IMPELLERS:**

The impeller design shall include back pump out vanes to reduce the behind the impeller hub to further reduce the entry of foreign materials into the seal area. Impellers shall be direct connected to the motor shaft with a slip fit, key driven, and secured with an impeller bolt. The design shall include a replaceable casing wear ring at the pump suction to maintain working clearances and hydraulic efficiencies. It shall be dynamically balanced and shall be designed for solids handling with a long thru let without acute turns. The inlet edge of the impeller vanes shall be angled toward the impeller periphery so as to facilitate the release of objects that might otherwise clog the pump. A lip seal shall be located behind the impeller hub to reduce the entry of foreign materials into the mechanical seal area. Impellers shall be direct connected to the motor shaft with a slip fit, key driven, and secured with an impeller bolt. The design shall include a replaceable stainless steel casing wear ring with a Brinnel Hardness of a minimum 300 at the pump suction to maintain working clearances and hydraulic efficiencies.

10.4 MECHANICAL SEALS:

Shall be designed to include a double mechanical seal in a tandem arrangement. Each seal shall be positively driven and act independently with its own spring system. The upper seal operates in an oil bath, while the lower seal is lubricated by the oil from between the shaft and the seal faces, and in contact with the pumpage. The oil filled seal chamber shall be designed to prevent over-filling and include an anti-vortexing vane to insure proper lubrication of both seal faces. Lower face materials shall be Silicon Carbide, upper faces Silicon Carbide, with NBR elastomers, and 304SS hardware. Seal system shall not rely on pumping medium for lubrication.

10.5 MOTOR CONSTRUCTION:

The pump motor shall be FM Explosion Proof, Class 1, Division 1, Groups C, D. The design shall be an air filled induction type with a squirrel cage rotor, shell type design, built to NEMA MG-1, Design B specifications. Stator windings shall be copper, insulated with moisture resistant Class H insulation, rated for 356°F. The stator shall be dipped and baked three times in Class F varnish and heat shrunk fitted into the stator housing. Rotor bars and short circuit rings shall be manufactured of cast aluminum. Motor shaft shall be rotating on two permanently lubricated ball bearings designed for a minimum L-10 life of 100,000 hours. Motor service factor shall be 1.15 and capable of up to 20 starts per hour. The motor shall be designed for continuous duty pumping at a maximum sump temperature of 104°F. Voltage and frequency tolerances shall be a maximum 10 / 5% respectively. Motor over temperature protection shall be provided by miniature thermal protectors embedded in the windings. A dual probe moisture sensing system shall detect the entrance of moisture and provide an alarm. The moisture detection system shall be designed to detect the entrance of moisture in the stator and lower seal housing. The moisture sensing probe leads shall terminate at a conductivity relay located in the control panel, which shall provide an alarm in the event of moisture intrusion. The sensing relay shall be manufactured by Warrick 16M Series. The motor shall be non overloading over the entire specified range of operation and be able to operate at full load intermittently while unsubmerged without damage to the unit. Power cable jacket shall be manufactured of an oil resistant chloroprene rubber material, designed for submerged applications. Cable shall be watertight to a depth of at least 65'. The cable entry system shall comprise of primary, secondary, and tertiary sealing methods. The primary seal shall be achieved by a cylindrical elastomeric grommet compressed between the motor cover and a 316SS washer. Secondary sealing is accomplished with a compressed O-ring made of NBR material. Compression and subsequent sealing shall preclude specific torque requirements. The system shall also include tertiary sealing to prevent leakage into the motor housing due to capillary action through the insulation if the cable is damaged or cut. The cable wires shall be cut, stripped, re-connected with a copper butt end connector, and embedded in epoxy within the cable gland. This provides a dead end for leakage through the cable insulation into the motor junction area. The cable entry system shall be the same for both the power and control cables.

10.6 GUIDE RAIL SYSTEM:

Design shall include two (2) 316SS schedule 40 guide rails sized to mount directly to the quick discharge connector, QDC, at the floor of the wet well and to a guide rail bracket at the top of the wet well below the hatch opening, (refer to project drawings). Intermediate guide brackets are recommended for rail lengths over 20 feet.

10.6.1. Guide rails are not part of the pump package and shall be supplied by others.

10.6.2. The QDC shall be manufactured of cast iron, ASTM A48 Class 35B. It shall be designed to adequately support the guide rails, discharge piping, and pumping unit under both static and dynamic loading conditions with support legs that are suitable for anchoring it to the wet well floor. The face of the inlet QDC flange shall be perpendicular to the floor of the wet well. The discharge flange of the QDC shall conform to ANSI B16.1 Class 125.

10.6.3. The pump design shall include an integral self-aligning sliding bracket. Sealing of the pumping unit to the QDC shall be accomplished by a single, linear, downward motion of the pump. The entire weight of the pump unit shall be guided to and wedged tightly against the inlet flange of the QDC, making metal to metal contact with the pump discharge forming a seal without the use of bolts, gaskets or O-rings.

10.6.4. Lifting chain shall be 316 stainless steel suitable for removing and installing the pump unit.

10.7 WARRANTY:

The supplier shall provide a full one-year warranty on the pump, which includes parts and labor. The warranty work shall be conducted within three working days after receipt of written notice from the City. All shipping charges for warranty work that is required outside of the Houston area will be borne by the supplier.

10.8 LITERATURE:

The supplier shall provide two sets of operation, maintenance and parts manuals for each pump and hydraulic unit at the time of delivery.

10.9 DELIVERY:

Unit(s) as specified above, with delivery ticket and other documents and manuals, if requested shall be delivered to the location (s) as stated on each individual purchase order as expeditiously as possible, but no later than sixty (60) calendar days after receipt of a City of Houston Purchase Order.

10.10 TRAINING:

If requested by the City, a minimum of four hours of training shall be conducted by the successful bidder. All training will be conducted at a City of Houston location to be determined at a later date.

SECTION C

GENERAL TERMS AND CONDITIONS

1.0 COMPETITIVE BIDDING:

- 1.1 It is the intent of the City of Houston to solicit the lowest and best responsible bid or price under competitive conditions. All materials and/or equipment shall be new unless stated otherwise. Prospective bidders are advised that the specifications within this bid invitation are not to be considered restricted to any referenced manufacturer.

2.0 AWARD:

- 2.1 The City reserves the right to consider and make awards of bids on articles of similar nature that will in all respects serve the purpose for which the purchase is being made. The City reserves the right to be the sole judge as to whether such articles will serve the purpose.
- 2.2 Unless otherwise specified, the City reserves the right to accept or reject in whole or in part any bid submitted or to waive any informalities that are in the best interests of the City.

3.0 CONDITIONS PART OF BID:

- 3.1 In the event of any conflict, the terms and provisions incorporated in the bid specifications shall control over the terms and provisions of the General Terms & Conditions for any or all purposes. Otherwise, all the terms and provisions appearing within the General Terms & Conditions shall be given full effect and shall be construed in harmony to the maximum extent by the parties hereto.
- 3.2 The failure of the City to insist, in any one or more instances, upon performance of any of the terms, covenants or conditions of this Contract, General Terms & Conditions or Specifications shall not be construed as a waiver or relinquishment of the future performance of such term, covenant or condition by the City, but the obligation of the Contractor/Supplier with respect to such future performance shall continue in full force and effect.

4.0 SILENCE OF SPECIFICATIONS:

- 4.1 The apparent silence of these specifications as to any detail or the apparent omission from them of a detailed description concerning any point shall be regarded as meaning that only the best commercial practice shall prevail and only materials and workmanship of first quality are acceptable. All interpretations of these specifications shall be made upon the basis of this statement.

5.0 SPECIFIED EQUIPMENT, OR EQUIVALENT:

- 5.1 Wherever in the specifications any materials or processes are indicated or specified by patent or proprietary name and/or by name of manufacturer, such specifications shall be deemed to be used for the purpose of facilitating descriptions of the performance, materials and/or processes desired and shall be deemed to be followed by the words, "or equivalent", if not so stated in the specifications herein.
- 5.2 The burden of proof shall rest with the bidder, in the course of a technical evaluation, to prove that the proposed item(s) are equivalent to the performance, materials, processes, or articles specified. DETERMINATION AS TO WHETHER THE ITEM (S) BID IS (ARE) EQUIVALENT TO THOSE SPECIFIED SHALL REST SOLELY WITH THE CITY PURCHASING AGENT AND THE RECEIVING DEPARTMENT.

6.0 BRAND NAME OR TRADE NAME:

6.1 Any manufacturer's names, trade names, brand names, or catalog numbers used in the specifications are for the purpose of describing and establishing the general quality level, design and performance desired. Such references are not intended to limit or restrict bidding by other Contractors/Suppliers, but are intended to approximate the quality design or performance that is desired. Any bid that proposes like quality, design or performance, will be considered. Equivalent products will be considered, provided a complete description and product literature is provided. Unless a specific exception is made, the assumption will be that the item bid is exactly as specified on the Invitation to Bid.

7.0 PATENTS:

7.1 The Contractor/Supplier agrees to indemnify and save harmless the city, its agents, employees, officers, and legal representatives from all suits and actions of every nature and description brought against them or any of them, for or on account of the use of patented appliances, products or processes, and it shall pay all royalties and charges which are legal and equitable. Evidence of such payment or satisfaction shall be submitted, upon request of the City Purchasing Agent, as a necessary requirement in connection with the final estimate for payment in which such patented appliance, products or processes are used.

8.0 TERMINATION OF AGREEMENT:

8.1 By the City for Convenience:

8.1.1 The City Purchasing Agent may terminate this Contract at any time upon 30-calendar days notice in writing to the Contractor/Supplier. Upon receipt of such notice, The Contractor/Supplier shall, unless the notice directs otherwise, discontinue all services in connection with the performance of the contract and shall proceed to cancel promptly all existing orders and contracts insofar as such orders and contracts are chargeable to this Contract. As soon as practicable after the receipt of notice of termination, the Contractor/Supplier shall submit a statement to the appropriate department(s) showing in detail the services performed or items delivered under this Contract to date of termination. The City agrees to compensate the Contractor/Supplier for that portion of the prescribed charges for which the services were actually performed or items delivered under this contract and not previously paid.

8.2 By the City for Default by the Contractor/Supplier:

8.2.1 In the event that the materials and/or services furnished by the Contractor/Supplier do not conform to the standard set forth herein, or if the deliveries and servicing of this contract do not conform to the requirements detailed herein, the City through a written notice from the City Purchasing Agent to the Contractor/Supplier describing such default may as its options:

- (1) Terminate the contract for default and the City shall have no further obligation under the Contract.
- (2) Allow the Contractor/Supplier to cure default within a reasonable time as specified in the notice. The City, at its sole option, may extend the proposed date of termination to a later date. If prior to the proposed date of termination, The Contractor/Supplier cures such default to the City's satisfaction, then the proposed termination shall be ineffective. If The Contractor/Supplier fails to cure such default prior to the propose date of termination, then the City may terminate its performance under this contract as of such date and have no further obligation under the contract.

8.2.2 In the event of failure to deliver any or all of the items or to perform required services, the City may cover its loss by reasonably procuring from another source the items not delivered or the services not performed. The Contractor/Supplier shall be responsible for and shall pay to the City immediately upon demand the difference in price between that offered by the Contractor/Supplier and that which the City was forced to pay for covering The Contractor/Supplier's failure to deliver or perform services.

8.3 By the Contractor/Supplier for Default by City:

8.3.1 Default by the City shall occur if the City fails to perform or observe the terms and conditions of this Contract required to be performed or observed by the City, and the Contractor/Supplier gives notice in writing to the City within 30 calendar days of the act or omission claimed by the Contractor/Supplier to constitute default on the part of the City.

8.3.2 Upon receipt of such notice in writing from the Contractor/Supplier, however, the City shall have 30 calendar days to cure such default. The Contractor/Supplier, at its sole option, may extend the proposed date of termination to a later date.

8.3.3 If City cures such default prior to the proposed date of termination, the proposed termination shall be ineffective. If the City fails to cure such default prior to the proposed date of termination, then the Contractor/Supplier may terminate its performance under this contract as of such date

9.0 SUCCESSORS & ASSIGNS:

9.1 The Contractor/Supplier may not assign this contract or dispose of substantially all of its assets without the written consent of the City Purchasing Agent. The Contractor/Supplier's failure to obtain such consent shall be an event of default, authorizing the City Purchasing Agent to terminate this contract according to its terms.

10. RELEASE:

10.1 THE CONTRACTOR/SUPPLIER AGREES TO AND SHALL RELEASE THE CITY, ITS AGENTS, EMPLOYEES, OFFICERS, AND LEGAL REPRESENTATIVES (COLLECTIVELY THE "CITY") FROM ALL LIABILITY FOR INJURY, DEATH, DAMAGE, OR LOSS TO PERSONS OR PROPERTY SUSTAINED IN CONNECTION WITH OR INCIDENTAL TO PERFORMANCE UNDER THIS AGREEMENT, EVEN IF THE INJURY, DEATH, DAMAGE, OR LOSS IS CAUSED BY THE CITY'S SOLE OR CONCURRENT NEGLIGENCE AND/OR THE CITY'S STRICT PRODUCTS LIABILITY OR STRICT STATUTORY LIABILITY.

11.0 INDEMNIFICATION:

11.1 THE CONTRACTOR/SUPPLIER AGREES TO AND SHALL DEFEND, INDEMNIFY, AND HOLD THE CITY, ITS AGENTS, EMPLOYEES, OFFICERS, AND LEGAL REPRESENTATIVES (COLLECTIVELY THE "CITY") HARMLESS FOR ALL CLAIMS, CAUSES OF ACTION, LIABILITIES, FINES, AND EXPENSES (INCLUDING, WITHOUT LIMITATION, ATTORNEYS' FEES, COURT COSTS, AND ALL OTHER DEFENSE COSTS AND INTEREST) FOR INJURY, DEATH, DAMAGE, OR LOSS TO PERSONS OR PROPERTY SUSTAINED IN CONNECTION WITH OR INCIDENTAL TO PERFORMANCE UNDER THIS AGREEMENT INCLUDING, WITHOUT LIMITATION, THOSE CAUSED BY:

(1) THE CONTRACTOR/SUPPLIER'S AND/OR ITS AGENTS', EMPLOYEES', OFFICERS', DIRECTORS', CONTRACTORS', OR SUBCONTRACTORS' (COLLECTIVELY IN NUMBERED PARAGRAPHS 1-3, "THE CONTRACTOR/SUPPLIER") ACTUAL OR ALLEGED NEGLIGENCE OR INTENTIONAL ACTS OR OMISSIONS;

- (2) THE CITY'S AND THE CONTRACTOR/SUPPLIER'S ACTUAL OR ALLEGED CONCURRENT NEGLIGENCE, WHETHER THE CONTRACTOR/SUPPLIER IS IMMUNE FROM LIABILITY OR NOT; AND
- (3) THE CITY'S AND THE CONTRACTOR/SUPPLIER'S ACTUAL OR ALLEGED STRICT PRODUCTS LIABILITY OR STRICT STATUTORY LIABILITY, WHETHER THE CONTRACTOR/SUPPLIER IS IMMUNE FROM LIABILITY OR NOT.

11.2 THE CONTRACTOR/SUPPLIER SHALL DEFEND, INDEMNIFY, AND HOLD THE CITY HARMLESS DURING THE TERM OF THIS AGREEMENT AND FOR FOUR YEARS AFTER THE AGREEMENT TERMINATES. THE CONTRACTOR/SUPPLIER'S INDEMNIFICATION IS LIMITED TO \$500,000 PER OCCURRENCE. THE CONTRACTOR/SUPPLIER SHALL NOT INDEMNIFY THE CITY FOR THE CITY ' S SOLE NEGLIGENCE.

11.3 **INDEMNIFICATION PROCEDURES:**

11.3.1 Notice of Claims. If the City or The Contractor/Supplier receives notice of any claim or circumstances which could give rise to an indemnified loss, the receiving party shall give written notice to the other party within 10 days. The notice must include the following:

- (a) a description of the indemnification event in reasonable detail,
- (b) the basis on which indemnification may be due, and
- (c) the anticipated amount of the indemnified loss.

11.3.2 This notice does not stop or prevent the City from later asserting a different basis for indemnification or a different amount of indemnified loss than that indicated in the initial notice. If the City does not provide this notice within the 10 day period, it does not waive any right to indemnification except to the extent that The Contractor/Supplier is prejudiced, suffers loss, or incurs expense because of the delay.

11.3.3 Defense of Claims.

- (a) Assumption of Defense. The Contractor/Supplier may assume the defense of the claim at its own expense with counsel chosen by it that is reasonably satisfactory to the City. The Contractor/Supplier shall then control the defense and any negotiations to settle the claim. Within 10 days after receiving written notice of the indemnification request, The Contractor/Supplier must advise the City as to whether or not it will defend the claim. If The Contractor/Supplier does not assume the defense, the City shall assume and control the defense, and all defense expenses constitute an indemnification loss.
- (b) Continued Participation. If The Contractor/Supplier elects to defend the claim, the City may retain separate counsel to participate in (but not control) the defense and to participate in (but not control) any settlement negotiations. The Contractor/Supplier may settle the claim without the consent or agreement of the City, unless it (i) would result in injunctive relief or other equitable remedies or otherwise require the City to comply with restrictions or limitations that adversely affect the City, (ii) would require the City to pay amounts that Contractor does not fund in full, (iii) would not result in the City's full and complete release from all liability to the plaintiffs or claimants who are parties to or otherwise bound by the settlement.

12.0 INSURANCE: (See City of Houston's website for sample certificate)

- 12.1 The Contractor/Supplier shall have insurance coverage as follows:
- Commercial General Liability shall be \$500,000 per occurrence; \$1,000,000 aggregate, per 12-month policy period.
 - Automobile Liability Insurance for autos furnished or used in the course of performance of this Contract. Including Owned, Non-owned, and Hired Auto coverage. (Any Auto coverage may be substituted for Owned, Non-owned and Hired Auto coverage.) If no autos are owned by The Contractor/Supplier, coverage may be limited to Non-owned and Hired Autos. If Owned Auto coverage cannot be purchased by The Contractor/Supplier, Scheduled Auto coverage may be substituted for Owned Auto coverage. EACH AUTO USED IN PERFORMANCE OF THIS CONTRACT MUST BE COVERED IN THE LIMITS SPECIFIED. \$1,000,000 - Combined Single Limit per occurrence; \$1,000,000 aggregate, per 12-month policy period.
 - **Worker's Compensation** including Broad Form All States endorsement shall be in statutory amount.
 - **Employer's Liability:** Bodily Injury/Accident \$100,000; Bodily Injury/Disease \$100,000 (per employee); Bodily Injury/Disease \$100,000 (policy limit).
- 12.2 The issuer of any policy (1) shall have a Certificate of Authority to transact insurance business in Texas or (2) shall be an eligible non-admitted insurer in Texas, and shall have a Best's rating of at least B+, and a Best's Financial Size Category of Class VI or better, according to the most current edition of Best's Key Rating Guide.
- 12.3 All insurance policies required by this Contract shall require on their face that 1) the City of Houston is named as an additional insured; 2) the insurance carrier waives any rights of subrogation against the City; and 3) it shall give thirty (30) days written notice to the City before any policy required by this Contract is cancelled. Within such thirty (30) day period, The Contractor/Supplier covenants that it will provide other suitable policies in lieu of those about to be cancelled so as to maintain in effect the coverage required under the provisions hereof. Failure or refusal of the Contractor/Supplier to obtain and keep in force the above-required insurance coverage shall authorize the City, at its option, to terminate this Contract at once.
- 12.4 **REQUIREMENTS FOR CERTIFICATE OF INSURANCE:**
- 12.4.1 Certificate must not be more than 30 days old.
 - 12.4.2 Name and Address of Producer writing coverage.
 - 12.4.3 Name of each insurance company providing coverage (as listed on company's Certificate of Authority on file with the Texas Department of Insurance, or in Best's Key Rating Guide.)
 - 12.4.4 Name and address of insured (as shown on policy).
 - 12.4.5 Letter in the column must reference the insurer of the policy being described.
 - 12.4.6 Must be a policy number; no binders will be accepted.
 - 12.4.7 Date policy became effective.
 - 12.4.8 Expiration date must be at least **60** days from date of delivery of certificate.
 - 12.4.9 Name and file number of project (Bid Name and Bid Number).
 - 12.4.10 Name of project manager (Buyer).
 - 12.4.11 Signature or facsimile signature of authorized representative of Producer (blue ink preferred).

12.5 Prior to award and/or starting work, The Contractor/Supplier must present a Certificate of Insurance evidencing the insurance coverage specified above. This is a mandatory requirement.

**Forward to Buyer at: City of Houston/Administration & Regulatory Affairs Department
Strategic Purchasing Division
P.O. Box 1562
Houston, Texas 77251-1562**

INSURANCE IS NOT REQUIRED IF ITEM IS DROP-SHIPPED BY MANUFACTURER OR IS DELIVERED BY COMMON CARRIER.

13.0 MINORITY AND WOMEN BUSINESS ENTERPRISES:

- 13.1 These provisions apply to goal-oriented contracts. A goal oriented contract means any contract awarded for the supply of goods or non-professional services of approximately \$100,000.00 for which competitive bids are required by law and which the City Purchasing Agent has determined to have City of Houston Certified MWBE subcontracting potential.
- 13.2 The Contractor/Supplier agrees to comply with the City's Minority and Women Business Enterprise programs as set out in Chapter 15, Article V of the City of Houston Code of Ordinances insofar as such programs apply to this Contract. The Contractor/Supplier further agrees that it will make good faith efforts to award subcontracts or supply agreements in at least **3%** of the value of this Contract to Minority and Women-owned Business Enterprises certified by the City's Affirmative Action Division. In addition, The Contractor/Supplier acknowledges that it has reviewed the requirements for good faith efforts that are on file with the City's Affirmative Action Division, is familiar with such requirements, and will comply with them.
- 13.3 The Contractor/Supplier shall require written subcontracts with all MWBE subcontractors and suppliers, which must contain the terms, set out in the documents attached herein. If The Contractor/Supplier is an individual person (as distinguished from a corporation, partnership, or other legal entity), and the amount of the subcontract is \$50,000 or less, then the subcontract must also be signed by the attorneys of the respective parties.
- 13.4 Refer to the "City of Houston Goal-Oriented Minority and Women Business Enterprises Contract Provisions" attachment, which is incorporated in the specifications herein by this reference for all purposes, for more detailed information on this requirement.

14.0 REJECTIONS:

- 14.1 Articles not in accordance with samples and specifications must be removed by the Contractor/Supplier and at its expense. All disputes concerning quality of supplies delivered under this offer will be determined by the City Purchasing Agent or designated representative.
- 14.2 All articles enumerated in the offer shall be subject to inspection on delivery by an officer designated for the purpose and if found inferior to the quality called for, or not equal in value to the Department's samples, or deficient in weight, measurements, workmanship or otherwise, this fact shall be certified to the City Purchasing Agent who shall have the right to reject the whole or any part of the same.

15.0 INVOICING:

- 15.1 In order to expedite payments all invoices must be submitted in triplicate, itemized as to quantity, part and/or model number, description in the same order and form as in the City of Houston Purchase Order. Variations will only delay payment. In addition, invoices must show the name of the Department, Division or Section to which the merchandise was delivered, and the City of Houston Purchase Order Number.
- 15.2 All delivery tickets must have a description of the item delivered.
- 15.3 Mail invoices to the Accounts Payable Section of the Department and to the address, as noted on individual purchase orders.
- 15.4 Delivery tickets and packing slips will contain the same information as the invoice.
- 15.5 All packing slips and delivery tickets must be signed by the receiving employee with their City Employee Number and must be signed by The Contractor/Supplier's Representative.

16.0 TAXES:

16.1 The City is exempt from the Federal Excise and Transportation Tax, and the limited Sales and Use Tax. Unless the Bid Form or Specifications specifically indicate otherwise, the bid price must be net exclusive of above-mentioned taxes. A Contractor/Supplier desiring refunds of, or exemptions from, taxes paid on merchandise accepted by the City, must submit the proper forms, and the City Purchasing Agent, if satisfied as to the facts, may approve or issue the necessary certificates.

17.0 PAYMENT:

17.1 Payment is due thirty (30) days after the City has approved the invoice or after the City has accepted the equipment and all required documents, whichever occurs later. Invoices received that do not agree with the provisions set forth herein shall be returned for correction and will result in payment being delayed.

17.2 PAYMENT OF SUBCONTRACTORS:

17.2.1 The Contractor/Supplier shall make time payments to all persons and entities supplying labor, materials or equipment for the performance of this Contract. The Contractor/Supplier agrees to protect, defend, and indemnify the City from any claims or liability arising out of The Contractor/Supplier's failure to make such payments. (Disputes relating to payment of MWBE subcontractors shall be submitted to arbitration in the same manner as any other disputes under the MWBE subcontract. Failure of the Contractor/ Supplier to comply with the decisions of the arbitrator may be deemed, at the sole discretion of the City, a material breach leading to termination of this Contract.)

18.0 INSPECTIONS AND AUDITS:

18.1 The City reserves all rights to review all payments made to The Contractor/Suppliers by auditing at a later date. Subject to such audit, any overpayments may be recovered from the Contractor/Supplier.

18.2 City representatives may have the right to perform, or have performed, (1) audits of The Contractor/Supplier's books and records, and (2) inspections of all places where work is undertaken in connection with this Agreement. The Contractor/Supplier shall keep its books and records available for this purpose for at least four years after this Agreement terminates. This provision does not affect the applicable statute of limitations.

18.3 City representatives have the right to examine the books of all subcontractors and/or suppliers supplying goods and/or services under the contract insofar as those books and records relate to performance under the prime contract.

19.0 CITY OF HOUSTON FAIR CAMPAIGN ORDINANCE:

19.1 The City of Houston Fair Campaign Ordinance makes it unlawful for a Contractor/Supplier to offer any contribution to a candidate for City elective office (including elected officers and officers-elect). All respondents to this invitation to bid must comply with Houston Code of Ordinances Chapter 18 as amended relating to the contribution and solicitation of funds for election campaigns. Provisions of this ordinance are provided in part in the paragraphs that follow. Complete copies may be obtained from the office of the City Secretary.

19.2 Candidates for city office may neither solicit nor receive contributions except during a period commencing 270 calendar days prior to an election date for which a person is a candidate for such office and ending 90 calendar days after the election date, including run off elections if such candidate is on the ballot.

19.3 Further, it shall be unlawful either for any person who submits a bid or proposal to contribute or offer any contribution to a candidate or for any candidate to solicit or accept any contribution from such person for a period commencing at the time of posting of the City Council Meeting Agenda including an item for the award of the Contract and ending upon the 30th day after the award of the

Contract by City Council.

- 19.4 For the purposes of this Ordinance, a **Contract** is defined as each Contract having a value in excess of \$30,000 that is let by the City for professional services, personal services, or other goods or services of any other nature whether the Contract is awarded on a negotiated basis, request for proposal basis, competitive proposal basis or formal sealed competitive bids. The term **Contractor/Supplier** includes proprietors of proprietorships, partners having an equity interest of 10% or more of partnerships, (including limited liability partnerships and companies), all officers and directors of corporations (including limited liability corporations), and all holders of 10% or more of the outstanding shares of corporations.
- 19.5 **A STATEMENT DISCLOSING THE NAMES AND BUSINESS ADDRESSES EACH OF THOSE PERSONS WILL BE REQUIRED TO BE SUBMITTED WITH EACH BID OR PROPOSAL FOR A CITY CONTRACT.** Completion of the attached form entitled "**Contractor Submission List**" will satisfy this requirement. Failure to provide this information may be just cause for rejection of your bid or proposal.

20.0 CITY OF HOUSTON CONTRACTOR/SUPPLIER OWNERSHIP DISCLOSURE ORDINANCE:

- 20.1 City Council requires knowledge of the identities of the owners of entities seeking to contract with the City in order to review their indebtedness to the City and other qualifying governmental entities prior to entering into contracts. Therefore, all respondents to this invitation to bid must comply with Houston Code of Ordinances Chapter 15, as amended (Sections 15-122 through 15-126) relating to the disclosure of owners of entities bidding on, proposing for or receiving City contracts. Provisions of this ordinance are provided in part in the paragraphs that follow. Complete copies may be obtained from the office of the City Secretary.
- 20.2 Contracting entity means a sole proprietorship, corporation, non-profit corporation, partnership, joint venture, limited liability company, or other entity that seeks to enter into a contract requiring approval by the Council but excluding governmental entities.
- 20.3 A contracting entity must submit at the time of its bid or proposal, an affidavit listing the full names and the business and residence addresses of all persons owning 5% or more of a contracting entity or, where a contracting entity is a non-profit corporation, the full names and the business and residence addresses of all officers of the non-profit corporation.
- 20.4 Completion of the "**Affidavit of Ownership or Control**", included herein, and submitted with the Official Bid or Proposal Form will satisfy this requirement. Failure to provide this information with your bid or proposal may be just cause for rejection of your bid or proposal.

21.0 CHANGE ORDERS:

- 21.1 At any time during the Agreement Term, the City Purchasing Agent, or designated representative, may issue a change order to increase or decrease the scope of services, or change plans and specifications, as may be necessary to accomplish the general purposes of this Agreement. The Contractor/Supplier shall furnish the services or deliverables in the change order in accordance with the requirements of this Agreement plus any special provisions, specifications, or special instructions issued to execute the additional work.
- 21.2 The Contractor/Supplier shall not make any changes to the specifications or drawings contained herein without written authorization from the City Purchasing Agent or designated representative. The City may refuse to accept all or part of the work performed or equipment/supplies delivered if changes are made to the specifications or drawings without the written authorization of the City Purchasing Agent or designated representative. The City shall not be responsible for costs incurred by the Contractor/Supplier on unauthorized change orders.
- 21.3 Documentation acceptable to the City Purchasing Agent as evidence of the Contractor/Supplier's change(s) shall reference the City's bid specification by section(s) and page number(s). A letter

with supporting documentation of the requested change(s) shall be submitted to the City Purchasing Agent, and the City Purchasing Agent must approve any requested changes PRIOR TO ANY CHANGES BEING PERFORMED. The face of the envelope containing this letter shall clearly state, "CHANGE ORDER REQUEST" and THE NUMBER OF THE BID INVITATION AND THE NUMBER(S) OF THE PURCHASE ORDER(S) referenced. Failure to provide clear and concise evidence as stated above and in the format requested will result in denial until The Contractor/Supplier complies with these provisions. Documentation shall be mailed to:

City Purchasing Agent
City of Houston, Administration & Regulatory Affairs Department
Strategic Purchasing Division
P. O. Box 1562
Houston, TX 77251-1562

21.4 The City Purchasing Agent, or designated representative, may issue change orders, subject to the following limitations:

21.4.1 City Council expressly authorizes the City Purchasing Agent to approve change orders of **\$50,000** or less. A change order of more than **\$50,000** over the approved contract amount must be approved by City Council.

21.4.2 The total of all change orders issued under this section may not increase the Original Agreement amount by more than 25%.

21.4.3 For any items described in a change order that the Contractor/Supplier is otherwise required to provide under the Original Agreement, the City shall not pay additional money to the Contractor/Supplier.

22.0 INTERLOCAL AGREEMENTS:

Under the same terms and conditions hereunder, the Contract may be expanded to other government entities through inter-local agreements between the City of Houston and the respective government entity that encompass all or part of the products/services provided under this contract. Separate contracts will be drawn to reflect the needs of each participating entity.