



CITY OF HOUSTON

INVITATION TO BID

Issued: *February 10, 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, March 29, 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:

REMOVE EXISTING BAR SCREENS, FURNISH AND INSTALL BAR SCREEN SYSTEMS AND ASSOCIATED EQUIPMENT FOR THE PUBLIC WORKS AND ENGINEERING DEPARTMENT

Invitation to Bid No. S50-C24166

NIGP Code: 890-04

Buyer:

Questions regarding this solicitation should be addressed to Arturo Lopez, Senior Procurement Specialist, at **832-393-8731** or e-mail to arturo.lopez@houstontx.gov.

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.

Prebid Conference:

A Pre-Bid Conference will be held for all Prospective Bidders in the Strategic Purchasing Division, Concourse Level (Basement), Conference Room #1, City Hall, 901 Bagby, at **10:00 a.m. on Wednesday, February 22, 2012**. The site visit will be scheduled at the pre-bid conference.

All Prospective Bidders are urged to be present. It is the bidder's responsibility to ensure that they have secured and thoroughly reviewed all aspects of 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.

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

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:**

- A. OFFER
- B. SCOPE OF WORK/SPECIFICATIONS
- C. GENERAL, SUPPLEMENTARY CONDITIONS AND BOND FORMS

*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 solicitation 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 signature page, which must be signed by a company official authorized to bind the company and a 10% Bid Bond.**

SECTION A



**FORMAL ONE-TIME BID
REMOVE EXISTING BAR SCREENS, FURNISH AND INSTALL BAR SCREEN SYSTEMS AND
ASSOCIATED EQUIPMENT FOR THE PUBLIC WORKS AND ENGINEERING DEPARTMENT
Bid No. S50-C24166
NIGP Code: 890-04**

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

The undersigned hereby offers to provide services necessary to **Remove Existing Bar Screens, Furnish and Install Bar Screen Systems and Associated Equipment at the Northbelt Wastewater Treatment Plant, located at 14506 Smith Street, Humble Texas for the Public Works and Engineering Department, F.O.B.** destination point Houston, Texas, 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 period following the issuance of the first purchase order subject to agreement in writing by the Prime 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
<http://www.houstontx.gov/purchasing/index.html>

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
Affidavit of Ownership
Fair Campaign Ordinance
Statement of Residence
Conflict of Interest Questionnaire
Contractors References
Pay or Play Contract Compliance Acknowledgement Form
10% Bid Bond

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
Formal Instructions for Bid Terms
Drug Forms
Insurance Certificates Over \$50,000.00
OCP Insurance Certificate Over \$100,000.00
Performance, Maintenance and Statutory Payment Bonds
Construction 2012 Engineering Wage Decision
Pay or Play Certification of Agreement to Comply with Program
Pay or Play Form 3 / List of Participating Contractors

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

NOTE:

- 1.) Although it is the intent of the City to award one contract as a result of this invitation to bid, the City reserves the right to award by line item/group.
- 2.) All pre-qualifications for City approved equals, must be submitted to the City's representative by **4:00 PM, Monday, March 12, 2012.**

QUALITY AND WORKMANSHIP:

The bidder must be able to demonstrate upon request that it has performed satisfactorily, services similar to the services specified herein. The bidder will provide records of warranty and repair services performed for others upon request. The City of Houston shall be the sole judge whether the services performed are similar to the scope of services specified herein.

PERMITS:

Successful Contractor shall be responsible for securing any and all permits for proposed work. Any fee charged for these permits should be the responsibility of the Contractor and not the City of Houston.

CITY BUILDING CODES:

All work performed or equipment installed shall be in strict accordance with the City of Houston Building Codes. The Contractor will immediately correct any deficiencies discovered during work or after completion. Failure to correct deficiencies will result in the City having corrections made at the Contractor's expense.

BID BOND:

The Contractor shall be required to provide and submit with the bid a Bid Bond in the amount of 10% of the total amount bid by the Contractor. The Bid Bond shall be in the same form as that distributed by the City, and attached hereto, all duly executed by this Bidder (as "Principal") and by a corporate surety company licensed to do business in the State of Texas, and if the amount of the bond is greater than \$100,000.00 the surety must hold a certificate of authority from the United States Secretary of the Treasury, or a Cashier's or a Certified check in a like amount. Company or personal checks are not acceptable.

PERFORMANCE BOND and PAYMENT BOND:

The successful Contractor(s) shall be required to provide a Performance and Payment Bond in the total amount (100%) of the Contract if the award is in excess of \$25,000.00.

The Performance and/or Payment Bond shall be in the same form as that distributed by the City, and attached hereto, all duly executed by this bidder (as "Principal") and by an incorporated surety company licensed to do business in the State of Texas. If the amount of the bond is greater than \$100,000.00 the surety must hold a certificate of authority from the United States Secretary of the Treasury.

The Contractor(s) shall be required to provide a Performance and/or Payment Bond as outlined above, which will be delivered to the City Purchasing Agent of the City, on or before the tenth (10th) day following the day the bidder receives notice from the City.

MAINTENANCE BOND:

The Contractor shall furnish a maintenance bond in the total (100%) bid amount in the form required by the City (samples attached). One bond, also referred to as the One Year Maintenance Bond, will be conditioned upon Contractor's repair, replacement or restoration of any work or any portion of the work which is found to be defective or fails

in any way to comply strictly with this contract or the plans and specifications for such work within a period of one (1) year from the date of acceptance of such work by the City Council or after the date that the "CO", or his designee in writing, determines, in a written notice to the Contractor, to be the date upon which the project is both substantially complete and available for the full and beneficial occupancy or use of the City.

SITE INSPECTION:

The City of Houston reserves the right to inspect the bidder's current place of business to evaluate equipment condition and capabilities, staff experience, training and capabilities, and storage capabilities as they relate to the performance of this contract.

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 Procurement of \$100,000 or More for Purchase of Non-Professional Services , Including Construction Services:

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 LOCAL 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 LOCAL BUSINESS THAT MEETS THESE CRITERIA, THE CITY WILL AWARD THE PROCUREMENT TO THE LOWEST RESPONSIBLE BIDDER.

Award of Procurement under \$100,000 Purchase of Non-Professional Services Including Construction Services:

THE CITY WILL AWARD THIS PROCUREMENT TO A "LOCAL 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 LOCAL 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 Non-Professional Services, Including Construction Services:

THE CITY WILL AWARD THIS PROCUREMENT TO A "LOCAL 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 LOCAL 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 LOCAL 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 LOCAL BUSINESS THAT MEETS THESE CRITERIA, THE CITY WILL AWARD THE PROCUREMENT TO THE LOWEST RESPONSIBLE BIDDER.

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.

CONTRACTOR'S QUESTIONNAIRE

In order to receive bid award consideration, the bidder must be able to demonstrate that they are currently providing or have had at least one contract, to **remove, furnish and install bar screen systems** that is similar in size and scope to this contract. **Bidder must have references documenting that it has performed removal, furnishing and installation of bar screen systems.** The reference(s) should be included in the space provided below. Please attach another piece of paper if 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.**

1. Business Name: _____

Business Address: _____

City, State, Zip: _____

Name of Owner/Contact Person: _____

Phone: _____ Fax: _____ Email: _____

No. of Years providing Service to this business: _____

2. Business Name: _____

Business Address: _____

City, State, Zip: _____

Name of Owner/Contact Person: _____

Phone: _____ Fax: _____ Email: _____

No. of Years providing Service to this business: _____

3. Business Name: _____

Business Address: _____

City, State, Zip: _____

Name of Owner/Contact Person: _____

Phone: _____ Fax: _____ Email: _____

No. of Years providing Service to this business: _____

4. Business Name: _____

Business Address: _____

City, State, Zip: _____

Name of Owner/Contact Person: _____

Phone: _____ Fax: _____ Email: _____

No. of Years providing Service to this business: _____

SECTION B
SCOPE OF WORK/SPECIFICATIONS

1.0 Summary of Scope of Work:

1.1 GENERAL

1.1.1 The Contractor shall provide all labor, equipment, tools, supervision, transportation, loading, unloading, insurance, permits, bonds and other services necessary to remove and properly dispose of two bar screen systems from the Northbelt Wastewater Treatment Plant, located at 14506 Smith Street, Humble, TX. The Contractor shall also be required to furnish and install two new bar screen systems and associated equipment connected to the existing control system of the City's SCADA system at the Northbelt Wastewater Treatment Plant, located at 14506 Smith Street, Humble, TX. Any minor structural modification shall be included in the bid if it is needed. The contractor shall be responsible for any engineering design required for structural modifications. The Contractor shall also be required to test, program and insure that all systems are in optimum working condition.

1.1.2 All work shall be completed in strict accordance with federal, state and local regulations, laws and codes. In addition, the Contractor shall be required, at its own expense, to secure approval of the installation drawings/plans from the City of Houston Public Works and Engineering Department Wastewater Operations.

2.0 Specified Equipment, or Equivalent:

2.1 Wherever in the specifications any materials or processes are indicated or specified by patent of 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.

2.2 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.

3.0 Brand Name or Trade Name:

3.1 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.

4.0 Performance Time:

- 4.1 The Contractor shall have **180 calendar days** to order and complete all the work associated with and required by the contract after receipt of the written Notice to Proceed from City.

5.0 Warranty:

- 5.1 The Contractor shall warranty all materials, equipment and workmanship for ***one year***.

TECHNICAL SPECIFICATIONS

1.0 Scope of Work / Equipment, General:

1.1 BAR SCREEN:

Make: Headworks® Mahr™

Model: MS1 Mechanically Cleaned Bar Screen, or City Approved Equal.

1.1.1 The Contractor shall be required to furnish and install bar screens, Headworks® Mahr™, MS1 mechanically cleaned bar screen, or City approved equal at the Northbelt Wastewater Treatment Plant, located at 14506 Smith Street, Humble, TX..

PART 1 - GENERAL:

1.0.1 Description

1.0.1.1 The Contractor shall be required to furnish, install and test mechanically cleaned bar screen equipment.

1.0.2 The System

1.0.2.1 Three bar screen shall remove solids from raw wastewater.

1.0.2.2 The screenings shall be mechanically raised from the bar screen to the dead plate and automatically discharged as specified in this section,

1.0.3 Quality Assurance

1.0.3.1 The Contractor shall be required to furnish materials of high grade and with properties best suited to the working environment.

1.0.3.2 The manufacturer shall be successful in the experience of manufacture, operation, and servicing of equipment of type, size, quality, performance, and reliability equal to that specified. The manufacturer shall submit evidence of experience having supplied at least twenty-five (25) installations of similar type and size in the USA that have been in successful operation for at least five (5) years.

1.0.4 Submittals

1.0.4.1 The manufacturer shall submit a *general arrangement drawing* that illustrates the layout of the equipment, principal dimensions and other related data including descriptive literature, electrical control drawings, catalog cut sheets for individual components and drive motor data.

1.0.4.2 The Contractor shall be required to submit location of the nearest permanent service headquarters of the screen and motor

manufacturer for the screen and motor submitted.

1.0.4.3 The Contractor shall be required to submit three copies of the operating instructions with descriptive literature, including a cross-sectional view of screen and motor combination, which indicates materials of construction, weights, principle dimensions and other important details.

1.0.4.4 The Contractor shall be required to submit evidence of experience in the form of an installation list with contact names and phone numbers.

1.0.5 Delivery, Storage and Handling

1.0.5.1 Shipping

1.0.5.1.1 The Contractor shall be required to ship equipment, material, and spare parts complete except where partial disassembly is required by transportation regulations or for protection of components.

1.0.5.1.2 The Contractor shall be required to pack spare parts in containers bearing labels clearly designating contents and pieces of equipment for which they are intended.

1.0.5.2 Receiving

1.0.5.1.1 The Contractor shall be required to store and safeguard equipment, material, and spare parts.

PART 2 - PRODUCTS

2.0.1 Manufacturers

2.0.1.1 The bar screen shall be a Mahr Bar Screen MSI as manufactured by Headworks Inc. or pre-qualified City approved equal. All pre-qualifications for City approved equals, must be submitted to the City's representative a minimum of 14 days prior to the bid opening. *(See the note on page 3 of 29 for final date)* Any pre-qualifications for City approved equals failing to meet that deadline will not be considered. The pre-qualification package shall include, but not be limited to the following: -

2.0.1.1.1 A complete set of dimensional drawings with descriptive information,

2.0.1.1.2 The process equipment electrical requirements with schematic diagrams.

2.0.1.1.3 The control panel layout diagram for the proposed bar screen with details on related components.

2.0.1.1.4 The detailed list of deviations from the contract documents and specifications.

2.0.2 Bar Screen Materials and Construction

- 2.0.2.1 The bar screen to be mechanically cleaned. The incline of the bar screen shall be 10 degrees from vertical.
- 2.0.2.2 The rakes shall approach the channel invert from the upstream side of screen and rake upward at upstream face with tines between the bars.
- 2.0.2.3 The screen shall be designed to be pulled out of the channel. The rubber side flaps must seal the screen to the channel walls.
- 2.0.2.4 The screenings shall be discharged on the downstream side of screen to an existing belt conveyor.
- 2.0.2.5 The screen frame shall be provided in one piece requiring no field assembly
- 2.0.2.6 The frame work of the bar screen shall be constructed of grade 304 stainless steel and cross sections with a minimum thickness 3/16" [4.7 mm]. Various parts shall be fastened by welding, riveting, or bolting and shall be braced as necessary to insure a rigid structure. The side frames shall be a minimum of 3/16" [4.7 mm] formed to a channel profile. The bottom thickness shall be 5/16" [8 mm]. The frame shall have support beams with U-profile thickness of 3/16" [4.7 mm] on the front above the maximum water line. Also, wrap-around stainless steel stiffeners with a thickness of 3/16" [4.7 mm] formed to a channel profile shall be placed along the screen frame above the maximum design water depth for rigidity. Braces, gussets or stiffeners *will not* be inside the bar screen frame.
- 2.0.2.7 The bolts and nuts shall be of grade 304 stainless steel.
- 2.0.2.8 The anchor bolts shall be 3/4" grade 304 stainless steel furnished by the contractor.
- 2.0.2.9 The screen bars shall be constructed of grade 304 stainless steel. The bar rack shall consist of continuous taper section bars. The dimensions of the bars are: 12mm x 6mm x 50mm (.47" x .23" x 1.97") for bar spacing >3/8" [10mm]. Round or rectangular bars will not be accepted. The bars shall be supported by the framework and be readily removable. The screen bars shall be individually replaceable without any welding or cutting. Welding of screen bars to the framework or into sub-assemblies shall not be allowed. Replacement screen bars shall be available from the screen manufacturer. Bars shall be fastened to a dead plate that extends to the point of discharge and shall extend a minimum of 7.8" (200mm) above the maximum water level. The screen field

shall be accurately constructed to give a clear opening of 0.75 inches between the bars (minimum bar spacing: 3/16" [4.5mm]). There shall be no space wider than the opening between the bars which would permit passage of larger solids through the screen.

2.0.2.10 The dead plate shall be constructed of grade 304 stainless steel plate (thickness shall be 3/16" [4.7 mm]) and shall extend to the point of discharge. The dead plate shall be true and flat such that a close clearance between the raking tines and the plate can be maintained during the cleaning cycle. The back side of the dead plate shall be constructed to guarantee a maximum gap between rake bar and dead plate, leading to the discharge chute without interruption.

2.0.2.11. The raking tines shall have the tooth profile precision cut from a single continuous bar of sufficient thickness and depth to insure adequate stiffness and strength to cope with the specified duty cycle. The rakes shall run in guides on both sides to ensure engagement. The rakes shall clean the bars from the upstream side of the screen. The rakes shall be fabricated from stainless steel grade 304 and the rake material thickness shall be as follows:

- Thickness of rake bar shall be 1/2" (12 mm),
- Reinforcement profile shall be 1/4" (6 mm),
- Side sheets shall be 3/8" (10 mm).

The rake capacity shall be as follows:

- Chain with 125mm pitch:
- Capacity/Rake Bar shall be: 0.108 cu.ft/ft [0.010m³/meter]
- Screen field width (SFW), total screen capacity shall be approx. 10 second cleaning interval (ft³/h) = 0.108 cu.ft x SFW (ft) x 360,
- Total screen capacity shall be approx. 5-second cleaning interval (ft³/h) = 0.108 cu.ft x SFW (ft) x 720.

The rakes shall have a shovel shape to prevent screenings from falling back to the channel. Flat rakes without this feature are not permitted. The rake tines shall penetrate into the screen bar spacing to insure that screenings are completely cleared during each lifting operation. The rake tines shall be mechanically engaged into the screen bars. During each cleaning stroke, the raking tines shall be required to engage into the bottom of the bar screen grids at the channel invert. The drive chains, chain guides, chain sprockets, bearings, and axles shall be fully replaceable without having to remove the screen from the channel.

2.0.2.12. The screenings transported to the top of the bar screen shall be discharged positively by means of a scraper mechanism to the discharge chute. The scraper mechanism shall be fitted with a

compression spring that allows the scraper to return to its resting position smoothly without any shock. The scraper blade shall be constructed of a combination of synthetic materials.

- 2.0.2.13 The drive mechanism for the rakes shall incorporate a solid shaft constructed of stainless steel grade 304.
- 2.0.2.14 The upper sprocket shall be solid and constructed of type grade 304 stainless steel. The upper sprocket shall have a (125 mm or 160 mm) pitch and a tooth width of minimum 27 mm. *Split sprockets are not accepted.*
- 2.0.2.15 The upper bearings shall be a UCFX 4 – bolt flange bearings or approved equal, mounted in the take-up frame assembly. The bearings shall be grease-lubricated. The take up screw shall be an Acme Lead Screw made of 18-8 stainless steel. *Threaded rods are not accepted.*
- 2.0.2.16 The lower sprocket shall be solid and made of type grade 304 stainless steel. The lower sprocket shall have a 125 mm pitch, a tooth width of minimum 27 mm and a bore of 70 mm. *Split sprockets are not accepted.*
- 2.0.2.17 The lower stub shaft shall be machined from a single piece of material. *Welded components are not accepted.*
- 2.0.2.18 The bearings for the lower submerged sprockets shall be constructed of proven self-lubricating polyethylene (PE) material and be maintenance-free. A ceramic collar-type “A” Headworks® Technox Zirconia Diamond Ceramic, or City approved equal shall be bonded onto the stub shaft. Metallic lower bearings, bushings and lower bearings requiring lubrication *are not accepted.*
- 2.0.2.19 The chains shall be heavy-duty roller type with a minimum weight of 7 lbs/ft and constructed of grade 304 stainless steel of high tensile strength and resistance to corrosion. The chain rollers must be constructed of grade 304 stainless steel. The average ultimate strength of the chain shall be a minimum of 31,000 pound-force (137,500 Newtons). The chain pins shall be constructed of grade 304 stainless steel and hardened.
- 2.0.2.20 A required chain guide shall be to securely fixed to the screen frame for the full height of travel and shall not protrude into the flow. The chain guide thickness of material, size, and material of construction shall be L-Profile, 2.65"/1.387"/0.19" (65/35/5mm) and material grade 304 stainless steel. Replaceable wear strips on chain guides located below the water level *shall not be accepted.*
- 2.0.2.21 The drive motor shall be a maximum of 3 HP. The motor shall be an inverter duty rated motor with a 1.0 service factor, rated for continuous duty. The motor shall be controlled by a variable frequency drive (VFD), provided by the contractor and rated for

continuous operation. (*Enclosure shall be rated applicable for the specific installation environment*) The drive unit, including the reduction gearbox, shall be directly shaft-mounted and shall be positioned to facilitate maintenance work. A VFD and a programmable logic controller (PLC), shall be provided by the contractor. The VFD shall be required to have a solid state overload integral. On meeting a blockage, the screen shall be required to re-set automatically if the blockage causing the initial overload condition is cleared; or, should the blockage remain upon the completion of the fourth attempt, the screen shall be required to trip and sound an alarm.

- 2.0.2.22 The rake mechanism shall be capable of 2 cleaning speeds. Normal speed shall have a ten second cleaning interval and high speed shall have a five second cleaning interval. The screens which do not meet these performance criteria *will not be accepted*.
 - 2.0.2.23 The Contractor shall be required to provide a discharge chute. The thickness shall be 3/16" [4.7 mm] for each screen to divert screenings discharged from the screen to an existing belt conveyor. The discharge chute shall be constructed of grade 304 stainless steel. The panels shall be positioned on both sides to protect from splashing.
 - 2.0.2.24 The covers which are easily removable shall be provided for easy maintenance. The covers shall be constructed of clear impact-resistant polycarbonate material (thickness is 1/4" [6mm]) to allow for visual observation during screen operation. Stainless steel covers *shall not be accepted*.
- 2.0.3 Bar Screen Control Panel
- 2.0.3.1 The bar screen main control panel shall be furnished, completely pre-wired and tested, requiring only wall mounting and connection to the external wiring in the field by an electrical contractor. The control panel shall include all equipment required to control one or more bar screen(s) as specified herein. The panel shall be located in a non-classified area where no corrosive gasses are present.
 - 2.0.3.2 The control panel enclosure shall be sized as required to house equipment and shall be suitable for wall mounting or mounting to strut-type supports. The enclosure shall be rated NEMA _4X 304SS.
 - 2.0.3.3. The Contractor shall be required to provide an individual Danfoss FC200 variable frequency drive (VFD), or City approved equal for each bar screen motor for controlling the bar screen motor horsepower and suitable for use with variable torque loads. The VFD shall include discrete and analog input and outputs as required by the control panel manufacturer. *Bypass starters will be required*.

- 2.0.3.4 The Contractor shall be required to provide a Siemens S7 programable logic controller, (PLC), or City approved equal. The PLC shall be used to control the VFD to operate the screen at two (2) speeds and through the automatic reversing/cleaning shuttle sequence. The PLC shall include discrete and analog inputs and outputs as required.
- 2.0.3.5 The bar screen shall be controlled in synchronization with ultrasonic level sensors.
- 2.0.3.6 The bar screen shall be required to automatically stop and run in reverse for a predetermined time when an overcurrent is detected. The use of clutches, friction disks or similar devices for overload protection *is not acceptable*.
- 2.0.3.7 The control panel shall have a Siemens TP177b operator interface terminal (OIT), or City approved equal to allow a push button adjustment of counter values, timers and level set points without connecting to the PLC. The OIT shall be rated NEMA 4X and provide fault and troubleshooting information.
- 2.0.3.8 The door mounted NEMA 4X indicating lights shall be provided to indicate running and alarm status of the bar screen. The Contractor shall be required to provide legend plates and a door mounted alarm rest push button.
- 2.0.3.9 The Contractor shall be required to provide a separate local operator station rated NEMA 7. The local panel shall include Hand/Off/Automatic and Forward/Off/Reverse 3-position switches and an emergency stop mushroom push-button.

2.0.3 Sequence of Operation - 2-Speed Operation

Main Pane	Local Panel Hand/Off/Auto & Fwd/Off/Rev	Result	Action when blockage occurs	Comments
On	Auto & Any Position	Screen starts in LSP when the rising water differential reaches set level (Level 1).	Screen performs cleaning shuttle up to 4 times. If no success, screen stops and initiates alarm contact.	LSP - Low Speed Mode. Approx. 10-second cleaning interval
On	Auto & Any Position	Screen starts in HSP when the rising water differential reaches set level (Level 2).	Screen performs cleaning shuttle up to 4 times. If no success, screen stops and initiates alarm contact.	HSP - High Speed Mode. Approx. 5-second cleaning interval.

<i>On</i>	<i>Auto & Any Position</i>	Exercise run	Screen performs cleaning shuttle up to 4 times. If no success, screen stops and initiates alarm signal.	X min in LSP, every Y min. (X & Y are Operator adjustable)
<i>On</i>	<i>Manual & Forward</i>	Screen operates forward in LSP.	Screen stops immediately. No cleaning shuttle.	
<i>On</i>	<i>Manual & Reverse</i>	Screen operates in reverse in LSP.	Screen stops immediately. No cleaning shuttle.	
<i>On</i>	<i>E-Stop Engaged</i>	Screen stops immediately.	N/A	
<i>On</i>	<i>Off & Any Position</i>	Screen will not operate.	N/A	
<i>On</i>	<i>Hand & Off</i>	Screen will not operate.	N/A	
<i>Off</i>	<i>Any Position & Any Position</i>	Screen will not operate.	N/A	

2.05 DESIGN DATA

Channel Width	4.0 ft.
Channel Depth	17.0 ft.
Discharge Height above Operating Floor	4.5 ft.
Maximum Water Depth	16.83 ft.
Bar Spacing	0.75 In.
Screen Incline from Vertical	80deg

PART 3 - EXECUTION

3.0.1 Installation

3.0.1.1 The equipment shall be installed by the installing contractor in strict conformance with manufacturer's recommendations.

3.0.2 Response Time

3.0.2.1 The Contractor shall respond within 12 hours to any call that relates to the working of the equipment and provide customer

support to immediately address any issues with the equipment and warranty.

PART 4 - FIELD QUALITY CONTROL

4.0.1 Functional Test

- 4.0.1.1 After the bar screens and associated equipment have been completely installed and working under the direction of the manufacturer, the Contractor shall be required to conduct field tests necessary to demonstrate that operation conforms to these specifications. The Contractor shall be required to provide water or wastewater, labor, equipment, and incidentals required to complete field tests.
- 4.0.2.1 The Contractor shall be required to demonstrate with a final acceptance test that these specifications have been met by the equipment as installed. As a minimum, the Contractor shall be required to perform the following tests:
 - 4.0.2.1.1 That the units have been properly installed and are in correct alignment.
 - 4.0.2.1.2 That the units operate without overheating or overloading any parts and without objectionable vibration.
 - 4.0.2.1.3 That there are no mechanical defects in any of the parts.
 - 4.0.2.1.4 That the controls perform satisfactorily.
- 4.0.3 If the bar screen's performance does not comply with specifications, the Contractor shall be required to take corrective measures or remove and replace bar screens with bar screens which meet the performance criteria specified.
- 4.0.4 Start-Up. Beneficial use of the bar screens will not occur until after the start-up activities have been performed and accepted by the City Engineer. The start-up activities include the following:
 - 4.0.4.1 Receipt and acceptance by the City Engineer of draft Operation and Maintenance manuals, including the wiring and ladder diagrams.
 - 4.0.4.2 Installation inspection by the City operating, electrical and instrumentation staff followed by any corrective measures required by the Contractor.

- 4.0.4.3 Satisfactory operation of the bar screens for seven consecutive days under the City's control. If malfunctions or other operational problems halt the 7-day test period, the Contractor shall make appropriate corrections and restart the 7-day test period.
- 4.0.4.4 The Contractor shall be required to provide the services of a factory-trained technician for a period of 2 hours to train the City's operating and maintenance personnel. The training session shall be scheduled and coordinated by the Contractor.
- 4.0.5 Acceptance. After the start-up operation has been successfully completed, the City will accept the bar screens when the final operation and maintenance manuals have been received, reviewed, and accepted by the City. The Contractor shall be required to include ladder logic diagrams and wiring and termination diagrams for both power and instrumentation systems.

END OF SECTION

SECTION C

CITY OF HOUSTON 2012 ENGINEERING WAGE DECISION

A PDF version of the 2012 Engineering Wage Decision
can be viewed on the following web Link

<https://purchasing.houstontx.gov/buyer/BidDocumentManager.aspx?id=C24166>

GENERAL CONDITIONS

A PDF version of the General Conditions can be viewed on the following web link:

<https://purchasing.houstontx.gov/buyer/BidDocumentManager.aspx?id=C24166>

Document 00800

SUPPLEMENTARY CONDITIONS

The following Paragraphs amend and supplement the 2005 edition of General Conditions. Unaltered portions of General Conditions remain in effect.

ARTICLE 3 - THE CONTRACTOR

3.5 *LABOR: Insert the following Paragraph 3.5.3.1.1.*

3.5.3.1.1 Contractor shall make good faith efforts to comply with the City ordinances regarding Minority and Women Business Enterprises (MWBE) and Persons with Disabilities Business Enterprises (PDBE) participation goals which are as follows:

- .1 the MWBE goal is 0 percent, and
- .2 the PDBE goal is 0 percent.

3.28 **CONTRACTOR DEBT**

3.28.1 **IF CONTRACTOR, AT ANY TIME DURING THE TERM OF THIS AGREEMENT, INCURS A DEBT, AS THE WORD IS DEFINED IN SECTION 15-122 OF THE HOUSTON CITY CODE OF ORDINANCES, IT SHALL IMMEDIATELY NOTIFY CITY CONTROLLER IN WRITING. IF CITY CONTROLLER BECOMES AWARE THAT CONTRACTOR HAS INCURRED A DEBT, IT SHALL IMMEDIATELY NOTIFY CONTRACTOR IN WRITING. IF CONTRACTOR DOES NOT PAY THE DEBT WITHIN 30 DAYS OF EITHER SUCH NOTIFICATION, CITY CONTROLLER MAY DEDUCT FUNDS IN AN AMOUNT EQUAL TO THE DEBT FROM ANY PAYMENTS OWED TO CONTRACTOR UNDER THIS AGREEMENT, AND CONTRACTOR WAIVES ANY RECOURSE THEREFORE.**

ARTICLE 8 - TIME

- 8.1 *PROGRESS AND COMPLETION: Delete Paragraph 8.1.6. and replace with the following 8.1.6.*
- 8.1.6.1 Contractor shall credit the City by Change Order for inspection services for overtime work or work performed on Sundays or Legal Holidays. The amount Contractor credits the City will be **\$50.00 per hour** per inspector for inspection services.

ARTICLE 9 - PAYMENTS AND COMPLETION

- 9.1 *UNIT PRICE WORK: Delete Section 9.1 in its entirety and insert the following Section 9.1.*
- 9.1 References to Unit Prices in individual Specification sections are not applicable to the Contract. Include payment for portions of the Work required by these sections in the Stipulated Price for the Contract.
- 9.12 **LIQUIDATED DAMAGES: Insert the following Paragraph 9.12.1.1.**
- 9.12.1.1 **The amount of liquidated damages provided in General Conditions Paragraph 9.12.1 payable by Contractor or Surety for each and every day of delay beyond Contract Time, are \$500.00 per day.**

ARTICLE 11 - INSURANCE AND BONDS

- 11.2 *INSURANCE TO BE PROVIDED BY CONTRACTOR: Delete Paragraph 11.2.8. and replace with the following 11.2.8.*
- 11.2.1.4 Contractor shall provide Owners and Contractor's Protective Liability Insurance only if the contractor's bid price is equal to or greater than \$100,000.00.
- 11.2.8 *Endorsement of Primary Insurance:* Each policy except Workers' Compensation Insurance must contain an endorsement that the policy is primary insurance to any other insurance available to additional insured with respect to claims arising under the Contract.

ONE-YEAR MAINTENANCE BOND

THAT WE, _____, as Principal, hereinafter called Contractor, and the other subscriber hereto, _____, as Surety, do hereby acknowledge ourselves to be held and firmly bound to the City of Houston, a municipal corporation, in the sum of \$_____, for the payment of which sum well and truly to be made to the City of Houston and its successors, the said Contractor and Surety do bind themselves, their heirs, executors, administrators, successors, jointly and severally.

THE CONDITIONS OF THIS OBLIGATION ARE SUCH THAT:

WHEREAS, the Contractor has on or about this day executed a Contract in writing with the City of Houston for _____, all of such work to be done as set out in full in said Contract documents therein referred to and adopted by the City Council, all of which are made a part of this instrument as fully and completely as if set out in full herein.

NOW THEREFORE, if the said Contractor shall comply with the provisions of Paragraph 11.5.1 of the General Conditions, and correct work not in accordance with the Contract documents discovered within the established one-year period, then this obligation shall become null and void, and shall be of no further force and effect; otherwise, the same is to remain in full force and effect.

Notices required or permitted hereunder shall be in writing and shall be deemed delivered when actually received or, if earlier, on the third day following deposit in a United States Postal Service post office or receptacle, with proper postage affixed (certified mail, return receipt requested), addressed to the respective other party at the address prescribed in the Contract documents, or at such other address as the receiving party may hereafter prescribe by written notice to the sending party.

IN WITNESS THEREOF, the said Contractor and Surety have signed and sealed this instrument on the respective dates written below their signatures and have attached current Power of Attorney.

WITNESS: (if not a corporation)

Name of Contractor _____

By: _____
Name:
Title:

By: _____
Name:
Title:
Date:

ATTEST/SURETY WITNESS:

(SEAL)

Full Name of Surety

Address of Surety for Notice

Telephone Number of Surety

By: _____
Name:
Title:
Date:

By: _____
Name:
Title: Attorney-in-Fact
Date:

This Ordinance or Contract has been reviewed as to form by the undersigned legal assistant and have been found to meet established Legal Department criteria. The Legal Department has not reviewed the content of these documents.

Legal Assistant

Date

PERFORMANCE BOND

THAT WE, _____, as Principal, (the "Contractor"), and the other subscriber hereto, _____, as Surety, do hereby acknowledge ourselves to be held and firmly bound to the City of Houston (the "City"), a municipal corporation, in the penal sum of \$_____ for the payment of which sum, well and truly to be made to the City, its successors and assigns, Contractor and Surety do bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally.

THE CONDITIONS OF THIS OBLIGATION ARE SUCH THAT:

WHEREAS, the Contractor has on or about this day executed a Contract in writing with the City for _____, _____, all of such work to be done as set out in full in said Contract documents therein referred to and adopted by the City Council, all of which are made a part of this instrument as fully and completely as if set out in full herein.

NOW THEREFORE, if the said Contractor shall faithfully and strictly perform the Contract in all its terms, provisions, and stipulations in accordance with its true meaning and effect, and in accordance with the Contract documents referred to therein and shall comply strictly with each and every provision of the Contract and with this Bond, then this obligation shall become null and void and shall have no further force and effect; otherwise the same is to remain in full force and effect. Should the Contractor fail to faithfully and strictly perform the Contract in all its terms, including but not limited to the indemnifications thereunder, the Surety shall be liable for all damages, losses, expenses and liabilities that the City may suffer in consequence thereof, as more fully set forth herein.

It is further understood and agreed that the Surety does hereby relieve the City or its representatives from the exercise of any diligence whatever in securing compliance on the part of the Contractor with the terms of the Contract, and the Surety agrees that it shall be bound to take notice of and shall be held to have knowledge of all acts or omissions of the Contractor in all matters pertaining to the Contract. The Surety understands and agrees that the provision in the Contract that the City will retain certain amounts due the Contractor until the expiration of 30 days from the acceptance of the Work is intended for the City's benefit, and the City will have the right to pay or withhold such retained amounts or any other amount owing under the Contract without changing or affecting the liability of the Surety hereon in any degree.

It is further expressly agreed by Surety that the City or its representatives are at liberty at any time, without notice to the Surety, to make any change in the Contract documents and in the Work to be done hereunder, as provided in the Contract, and in the terms and conditions thereof, or to make any change in, addition to, or deduction from the Work to be done hereunder; and that such changes, if made, shall not in any way vitiate the obligation in this Bond and undertaking or release the Surety there from.

It is further expressly agreed and understood that the Contractor and Surety will fully indemnify and save harmless the City from any liability, loss, cost, expense, or damage arising

out of Contractor's performance of the Contract.

If the City gives Surety notice of Contractor's default, Surety shall, within 45 days, take one of the following actions:

1. Arrange for Contractor, with consent of the City, to perform and complete the Contract; or
2. Take over and assume completion of the Contract itself, through its agents or through independent contractors, and become entitled to the payment of the balance of the Contract Price.

If the Surety fails to take either of the actions set out above, it shall be deemed to have waived its right to perform and complete the Contract and receive payment of the balance of the Contract Price and the City shall be entitled to enforce any remedies available at law, including but not limited to completing the Contract itself and recovering any cost in excess of the Original Contract Price from the Surety.

This Bond and all obligations created hereunder shall be performable in Harris County, Texas. This Bond is given in compliance with the provisions of Chapter 2253, Texas Government Code, as amended, which is incorporated herein by this reference.

Notices required or permitted hereunder shall be in writing and shall be deemed delivered when actually received or, if earlier, on the third day following deposit in a United States Postal Service post office or receptacle, with proper postage affixed (certified mail, return receipt requested), addressed to the respective other Party at the address prescribed in the Contract documents, or at such other address as the receiving party may hereafter prescribe by written notice to the sending party.

EXECUTED in multiple originals this _____ day of _____, 20_____.

ATTEST/SEAL: (if a corporation)

WITNESS: (if not corporation)

(Name of Principal)

(Address of Principal)

By: _____

Name:

Title:

Date:

By: _____

Name:

Title:

Date:

ATTEST/SEAL

SURETY WITNESS:

(Name of Surety)

(Address of Surety)

By: _____

Name:

Title:

Date:

By: _____

Name:

Title:

Date:

REVIEWED:

This Bond has been reviewed as to form by the undersigned Paralegal and has been found to meet established Legal Department criteria.

Date

Paralegal

STATUTORY PAYMENT BOND

THAT WE, _____, as Principal, hereinafter called Contractor and the other subscriber hereto, _____, as Surety, do hereby acknowledge ourselves to be held and firmly bound unto the City of Houston, a municipal corporation, in the sum of \$_____ for the payment of which sum, well and truly to be made to the City of Houston, and its successors, the said Contractor and Surety do bind themselves, their heirs, executors, administrators, successors, jointly and severally.

THE CONDITIONS OF THIS OBLIGATION ARE SUCH THAT:

WHEREAS, the Contractor has on or about this day executed a contract in writing with the City of Houston for _____, all of such work to be done as set out in full in said Contract documents therein referred to and adopted by the City Council, all of which are made a part of this instrument as fully and completely as if set out in full herein;

NOW, THEREFORE, if the said Contractor shall pay all claimants supplying labor and materials to him or a Subcontractor in the prosecution of the Work provided for in the Contract, then, this obligation shall be void; otherwise the same is to remain in full force and effect;

PROVIDED HOWEVER, that this Bond is executed pursuant to the provisions of Chapter 2253, Texas Government Code, as amended, and all liabilities on this Bond shall be determined in accordance with the provisions of said Article to the same extent as if it were copied at length herein.

IN WITNESS THEREOF, the said Contractor and Surety have signed and sealed this instrument on the respective dates written below their signatures and have attached current Power of Attorney.

I

ATTEST, SEAL: (if a corporation)

WITNESS: (if not a corporation)

Name of Contractor

By: _____

Name:

Title:

By: _____

Name:

Title:

Date:

ATTEST/SURETY WITNESS:

(SEAL)

Full Name of Surety

Address of Surety for Notice

Telephone Number of Surety

By: _____

Name:

Title:

Date:

By: _____

Name:

Title: Attorney-in-Fact

Date:

This Ordinance or Contract has been reviewed as to form by the undersigned legal assistant and have been found to meet established Legal Department criteria. The Legal Department has not reviewed the content of these documents.

Legal Assistant

Date