

# BID SOLICITATION



**City of Chattanooga**  
 101 East 11th Street, Suite G13  
 Chattanooga, TN 37402

**BID OPENING DATE AND TIME:**  
 28-DEC-17 at 2:00 PM  
**BID NUMBER: 304971**

**SEALED BIDS**

Mail or submit two (2) signed copies of bid form to this office in the enclosed envelope. Retain one copy for your file.

**BUYER:**  
**PHONE #: (423) 643-7230**  
**DELIVERY REQUIRED:**

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| Item | Class-Item | Quantity | Unit | Unit Price | Total |
|------|------------|----------|------|------------|-------|
|------|------------|----------|------|------------|-------|

Requisition No.: 163091  
 Ordering Dept.: Waste Resources  
 Buyer: Geoffrey Hipp 423-643-7233  
 \*\*\*\*\*

**DESCRIPTION: Flottweg Centrifuge per specifications**  
 \*\*\*\*\*

**ATTACHMENTS:**  
 - Specifications  
 - Iran Divestment act  
 - Affirmative Action Plan  
 - Standard Terms and Conditions:  
 (<http://www.chattanooga.gov/purchasing/standard-terms-and-conditions>)  
 \*\*\*\*\*

**\*\*\* BIDS MUST BE RECEIVED NO LATER THAN \*\*\***  
 \*\*\*\*\* 2:00 PM ON DECEMBER 28, 2017 \*\*\*\*\*  
 \*\*\*\*\*

PLEASE SUBMIT BIDS IN DUPLICATE INDICATING  
 BID NUMBER (304971) ON OUTSIDE PACKAGING  
 ALL ITEMS MUST BE QUOTED F.O.B. DESTINATION, FREIGHT ALLOWED.  
 \*\*\*\*\*

NOTE: All bids received are subject to the terms and conditions contained herein and as listed in the above referenced website. The undersigned Bidder acknowledges having received, reviewed, and agrees to be bound to these terms and conditions, unless specific written exceptions are otherwise stated.

The City of Chattanooga reserves the right to reject any and/or all bids, waive any informalties in the bids received, and to accept any bid which in its opinion may be for the best interest of the city.

The City of Chattanooga will be non-discriminatory in the purchase of all goods and services on the basis of race, color, or national origin.  
 \*\*\*\*\*

**PLEASE PROVIDE US WITH THE FOLLOWING INFORMATION:**  
 Company Name \_\_\_\_\_  
 Address \_\_\_\_\_  
 Phone/Toll-Free No. \_\_\_\_\_  
 Fax No. \_\_\_\_\_  
 E-Mail Address \_\_\_\_\_  
 Contact Person's Name \_\_\_\_\_  
 Estimated Delivery \_\_\_\_\_  
 Minority-Owned Business \_\_\_ Small Business \_\_\_ Veteran \_\_\_  
 Minority Woman Owned Business \_\_\_ Disabled Veteran \_\_\_  
 Women-Owned Business \_\_\_

**NOTE: ALL BIDS RECEIVED ARE SUBJECT TO THE TERMS AND CONDITIONS**

The City is Exempt from all Federal and State Tax.  
 Bids will be received at the above mentioned address.

**ALL BIDS MUST BE SIGNED –** The undersigned offers the above quoted prices under the conditions contained herein.

TERMS OF PAYMENT: \_\_\_\_\_

COMPANY: \_\_\_\_\_

TELEPHONE NUMBER: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

NAME AND TITLE: \_\_\_\_\_

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| Item | Class-Item                          | Quantity | Unit | Unit Price | Total |
|------|-------------------------------------|----------|------|------------|-------|
| 1    | Spare Centrifuge per attached specs | 1        | Each | _____      | _____ |
|      |                                     |          |      |            |       |
|      |                                     |          |      |            |       |
|      |                                     |          |      |            |       |
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COMPANY: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

NAME AND TITLE: \_\_\_\_\_

**SPECIFICATIONS FOR PURCHASE OF  
ONE COMPLETE REPLACEMENT CENTRIFUGE FOR MOCCASIN BEND  
WASTEWATER PLANT  
CHATTANOOGA TENNESSEE  
November 2017**

**GENERAL INFORMATION**

This specification is for the purchase of a complete spare replacement centrifuge for use at the Moccasin Bend Wastewater Treatment Plant, Centrifuge #2 Building. The Plant is located at 455 Moccasin Bend Road, Chattanooga Tennessee, 37405.

**SPECIFICATIONS GENERAL**

The spare replacement centrifuge assembly shall be a brand new Flottweg Z73-4/454 Decanter complete with scroll and gear.

Vendor shall supply one (1) spare unit which must work as a direct replacement of the existing two (2) units .The units shall be identical to units currently installed.

- Vendor shall submit detailed machine shop drawings and data for approval by the City prior to manufacture.
- Submittals for approval shall be electronic
- O&M manuals shall be two (2) hard copies and three (3) in electronic format, .pdf file.

Freight to job site shall be included in the bid

**CENTRIFUGE REPLACEMENT SPECIFICATIONS DETAILED**

**PART 1 – GENERAL**

**1.1 SCOPE**

Work described in this section includes furnishing equipment, materials, tools and incidentals required for a complete spare centrifuge to match the existing horizontal decanter centrifuge and function on the existing control system. All equipment shall be installed, adjusted, tested, and placed in operation by the City in accordance with these specifications and the manufacturer's recommendations.

## 1.2 DESIGN REQUIREMENTS

- A. The equipment shall be suitable for exposure to continuous 95 percent relative humidity conditions and for operation in ambient air temperatures from 40 to 110 degrees F.
- B. The sludge to be dewatered will be product of municipal water or wastewater treatment.
- C. The unit shall be capable of continuous operation for 24 hours per day, seven days per week.
- D. The centrifuge shall be optimized for dewatering.

## 1.3 QUALITY ASSURANCE

- A. The manufacturer shall guarantee the parts supplied shall be free from defects in materials and workmanship for a period of twelve (12) months following installation or eighteen (18) months following the delivery. Any defects found within the warranty period shall be repaired or defective components replaced.
- B. The centrifuge manufacturing facility shall be ISO 9001 certified.
- C. The Vendor shall also provide an extended warranty that does not start until 24 months from shipment or when the unit is installed. The vendor shall train the owner's personnel on how and how often the unit is rotated to eliminate bearing issues that will keep the extended warranty in force. The vendor shall supply a skid for the unit to be stored.

## PART 2 - PRODUCTS

### 2.1 GENERAL DESCRIPTION

The spare centrifuge shall fit the existing foundation and be functional with the existing control system. It shall be a solid bowl, horizontal, continuous feed, scroll type unit. The centrifuge equipment shall be designed and built to operate continuously or intermittently. The bowl/scroll design shall utilize the conical section for optimal dewatering of the cake solids. The centrifuge shall be

manufactured by Flottweg. This design was completed around the Flottweg Model Z73 centrifuges and does not require any changes to the layout, controls, piping, etc.

The centrifuge supplier shall be responsible for providing a complete machine including gear box reducer, lubrication system, and 200 HP bowl and 40 HP scroll motors. The equipment shall be installed by the City or by an installing contractor of the City's choice who shall be responsible for off-loading the equipment, providing any temporary storage, and installing the equipment in place when needed. The vendor shall supply a skid for the unit to be stored on. Installation shall include mounting the unit, piping the unit, providing power to the motors, and integration with the existing control system.

The unit shall be completely tested in the manufacturing facility with a standard factory test panel. The equipment shall be shipped in a minimum number of components.

The centrifuge shall fit the existing space. It shall be a solid bowl, horizontal, continuous feed, scroll type unit. The centrifuge equipment shall be designed and built to operate continuously or intermittently. The bowl/scroll design shall utilize the conical section for optimal dewatering of the cake solids. The centrifuge shall be manufactured by Flottweg. The design was completed around the Flottweg centrifuges. The unit shall not require any changes to the existing layout, controls, piping, etc.

The centrifuge supplier shall be responsible for providing a complete assembly. The equipment shall be installed by the City or a contractor of the City when needed. The City shall be responsible for off-loading the equipment, providing any temporary storage, and installing the equipment in place when needed. Installation shall include mounting the unit, piping the unit, providing power to the existing motors.

The unit shall be completely tested in the manufacturing facility with a standard factory test panel. The equipment shall be shipped in a minimum number of components and they shall typically be comprised of the rotating assembly, bearings with pillow blocks, base, cover and main planetary gear drive assembly.

## 2.2 MATERIALS OF CONSTRUCTION

All wetted parts of the centrifuge rotating assembly shall be a minimum of 316 stainless steel, except for the "O" rings, seals, and abrasion-resistant material. "O" rings shall be Buna-N rubber; lip type seals shall be Buna-N. The feed tube shall be constructed of 316 stainless steel.

### 2.3 BOWL

The centrifuge bowl shall be the same size as existing and include a conical beach extension with an angle of 15 degrees.

The bowl shall be manufactured from centrifugal castings of duplex stainless steel. All centrifugal cast material shall be inspected for cracks, shrinkage, porosity, or other defects, by means of a liquid dye penetrant test. The bowl shell shall be designed to operate at a minimum force of 3000 x G. Fabricated or statically cast bowl shells shall not be allowed.

The front and rear bowl hubs shall be precision cast of duplex stainless steel. The pool depth in the bowl shall be adjustable by use of plate dams at the large diameter end of the bowl. Methods using tubes or similar shapes shall not be accepted. The bowl shall include longitudinal stainless steel wear strips spaced evenly around the inside surface of the bowl. The wear strips shall preclude scroll wear on the bowl casting and provide a sludge layer to improve sludge transportation and prevent bowl erosion. Bowls utilizing grooves shall not be acceptable.

The solids shall be conveyed by the scroll rotating at a positive differential speed. The solids shall be discharged from the bowl via a series of rectangular discharge ports. Each port shall be protected by a field replaceable chilled cast iron bushing.

### 2.4 SCROLL CONVEYOR

The centrifuge shall include a horizontal scroll conveyor equipped with solid full depth helical flights and independently mounted concentrically within the centrifuge bowl. Both the centrifuge bowl and the scroll conveyor shall be independently balanced such that a scroll conveyor can be interchanged with another from the same model centrifuge. The scroll shall utilize a differential speed, which is greater than the bowl speed to convey solids from the cylindrical section to the conical section and out of the bowl with a minimum disturbance to the pool. The edge and the face of the conveyor flights shall be protected by flame-sprayed tungsten carbide plus sintered tungsten carbide tiles in the solids zone.

### 2.5 BEARINGS

The centrifuges shall be designed so that the entire rotating assembly is supported by two main pillow block bearings located outside of the process area. Each main bearing shall be oil lubricated ball or cylindrical roller type bearing. Commercially available bearings shall be used. Bearing temperature monitoring

utilizing PT100 RTD's connected directly to a PLC without transmitters shall be included. Seals shall be NBR. A new air-oil lubrication system shall be included.

## 2.6 DRIVE SYSTEM

The centrifuge shall be equipped with a scroll drive system to provide control of the differential speed between the centrifuge bowl and conveyor. The scroll drive system shall consist of a multi-stage planetary gear that serves as the drive mechanism and gear reduction between the bowl motor and centrifuge scroll. The gears shall be oil lubricated. The gear shall be independently balanced from the centrifuge and interchangeable. The scroll shall be protected from damage due to high torque overload. A thermal overload protection device in the drive motor shall not be considered as providing for sufficient protection for the scroll drive.

The drive system shall include belt drive system with guard. Motors shall be Premium Efficiency TEFC foot mount motors designed for 3/60/480 inlet power supply.

## 2.7 LUBRICATION

The two main pillow block bearings on the centrifuge and the gears shall be oil lubricated via an air-oil system. The scroll bearings shall be sealed and permanently grease lubricated. The City shall provide clean dry air for the lubrication system.

## **PART 3: EXECUTION**

### **3.1 FACTORY TESTING**

Factory testing of the centrifuge shall be performed at the centrifuge manufacturer's facility to demonstrate the absence of mechanical or electrical defects and that the centrifuge operates within the specified limits.

### **3.2 TECHNICAL SERVICES**

Technical Services of the manufacturer's representative shall be supplied on a per diem basis.

### **3.3 VENDOR SHALL NOT BE REQUIRED TO SUPPLY THE FOLLOWING:**

- Controls
- Offloading
- Installation
- Stairs and grating
- Any piping or piping connections not integral to the equipment proposed above.
- Any valves, gauges, or sensors not noted below.
- Anchor bolts
- Field painting
- Concrete work
- Civil design
- Buildings
- Disconnect switches and junction boxes
- Field wiring
- Electrical connections
- Electrical installation and wiring
- Oil and Grease
- Finish painting

### **3.4 SHIPPING AND DELIVERY**

Vendor shall state delivery time in his bid and shall include all shipping costs.

Chapter No. 817 (HB0261/SB0377). "Iran Divestment Act" enacted.  
Vendor Disclosure and Acknowledgement

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not on the list created pursuant to § 12-12-106.

(SIGNED) \_\_\_\_\_

(PRINTED NAME) \_\_\_\_\_

(BUSINESS NAME) \_\_\_\_\_

(DATE) \_\_\_\_\_

For further information, please see website:

[https://www.tn.gov/assets/entities/generalservices/cpo/attachments/List\\_of\\_persons\\_pursuant\\_to\\_Tenn.\\_Code\\_Ann.\\_12-12-106,\\_Iran\\_Divestment\\_Act-July.pdf](https://www.tn.gov/assets/entities/generalservices/cpo/attachments/List_of_persons_pursuant_to_Tenn._Code_Ann._12-12-106,_Iran_Divestment_Act-July.pdf)

## Affirmative Action Plan

The City of Chattanooga is an equal opportunity employer and during the performance of this Contract, the Contractor agrees to abide by the equal opportunity goals of the City of Chattanooga as follows:

1. The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, or handicap. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, national origin, or handicap. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.
2. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, or handicap.
3. The Contractor will send to each labor union or representative of workers with which he/she has a collective bargaining agreement or other contract or understanding, a notice advising said labor union or workers' representatives of the Contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
4. During the term of all construction contracts or subcontracts in excess of \$10,000 to be performed for the City of Chattanooga, the following non-discriminatory hiring practices shall be employed to provide employment opportunities for minorities and women:
  - a. All help wanted ads placed in newspapers or other publications shall contain the phrase "Equal Employment Opportunity Employer".
  - b. Seek and maintain contracts with minority groups and human relations organizations as available.
  - c. Encourage present employees to refer qualified minority group and female applicants for employment opportunities.
  - d. Use only recruitment sources which state in writing that they practice equal opportunity. Advise all recruitment sources that qualified minority group members and women will be sought for consideration for all positions when vacancies occur.

5. Minority statistics are subject to audit by City of Chattanooga staff or other governmental agency.
6. The Contractor agrees to notify the City of Chattanooga of any claim or investigation by State or Federal agencies as to discrimination.

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(Signature of Contractor)

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(Title and Name of Company)

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(Date)