

**SECTION C  
GENERAL TERMS & CONDITIONS**

**THE STATE OF TEXAS**

**BID # S30-L22260**

**ORDINANCE #** 2007-1212

**COUNTY OF HARRIS**

**CONTRACT #4600007782**

**I. PARTIES**

**A. Address**

**THIS AGREEMENT FOR BLOWER REPLACEMENT PARTS AND REPAIR SERVICES FOR PUBLIC WORKS & ENGINEERING DEPARTMENT** ("Agreement") is made on the Countersignature Date between the **CITY OF HOUSTON, TEXAS** ("City"), a municipal corporation and Dresser, Inc. ("Contractor or Vendor"), a corporation doing business in Texas.

The initial addresses of the parties, which one party may change by giving written notice to the other party, are as follows:

**City**

City Purchasing Agent for Director  
of Public Works & Engineering Department  
City of Houston  
P.O. Box 1562  
Houston, Texas 77251

**Contractor**

Dresser, Inc.  
15455 Dallas Parkway, Suite 1100  
Addison, TX 75001  
Phone: 972-361-9800  
Fax: 972-361-9903

The Parties agree as follows:

**B. Table of Contents**

This Agreement consists of the following sections:

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EXHIBITS

- A. DEFINITIONS
- B. SCOPE OF SERVICES
- \* C. EQUAL EMPLOYMENT OPPORTUNITY
- \* D. MWBE SUBCONTRACT TERMS
- \* E. DRUG POLICY COMPLIANCE AGREEMENT
- \* F. CERTIFICATION OF NO SAFETY IMPACT POSITIONS
- \* G. DRUG POLICY COMPLIANCE DECLARATION
- H. FEES AND COSTS

\* Note: These Exhibits shall be inserted into the Contract agreement at the time of Contract execution.

C. Parts Incorporated

The above described sections and exhibits are incorporated into this Agreement.

D. Controlling Parts

If a conflict among the sections or exhibits arises the Exhibits control over the Sections.

E. Definitions

Certain terms used in this Agreement are defined in Exhibit "A".

AS RECEIVED FROM RICHARD MORRIS 16 JULY 2007

F. Signatures

The Parties have executed this Agreement in multiple copies, each of which is an original.

ATTEST/SEAL (if a corporation):

Dresser ~~Roots~~ Inc

WITNESS (if not a corporation):

By: [Signature] 7/25/07  
Name: GLENN HEINRICH  
Title: DIRECTOR, PRODUCT SUPPORT  
DRESSER ROOTS, DRESSER INC.

By: [Signature]  
Name: JOHN S PARKER  
Title:  
Federal Tax ID Number: 75-2795365

ATTEST/SEAL:

[Signature]  
City Secretary

CITY OF HOUSTON, TEXAS

Signed by:

[Signature]  
Mayor

APPROVED:

[Signature]  
City Purchasing Agent

COUNTERSIGNED BY:

[Signature]  
City Controller [Signature]

DATE COUNTERSIGNED:

11-15-07

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

9/19/07  
Date

[Signature]  
Legal Assistant

## II. DUTIES OF CONTRACTOR

### A. Scope of Services

In consideration of the payments specified in this Agreement, Contractor shall provide all labor, material, and supervision necessary to perform the services described in Exhibit "B."

### B. RELEASE

#### RELEASE:

PRIME 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, EXCEPT 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.

### C. INDEMNIFICATION:

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

- (1) PRIME CONTRACTOR/SUPPLIER'S AND /OR AGENTS', EMPLOYEES', OFFICERS', DIRECTORS', CONTRACTORS', OR SUBCONTRACTORS' (COLLECTIVELY, "PRIME CONTRACTOR/SUPPLIER") ACTUAL OR ALLEGED NEGLIGENCE OR INTENTIONAL ACTS OR OMISSIONS.

HOWEVER, IN NO EVENT SHALL PRIME CONTRACTOR/SUPPLIER BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES AND PRIME CONTRACTOR/SUPPLIER DOES NOT INDEMNIFY THE CITY AGAINST CONSEQUENTIAL DAMAGES. PRIME CONTRACTOR/SUPPLIER LIABLY HEREUNDER SHALL IN NO EVENT EXCEED \$500,000. PRIME CONTRACTOR/SUPPLIER SHALL NOT INDEMNIFY THE CITY FOR THE CITY'S SOLE NEGLIGENCE."

### D. INDEMNIFICATION PROCEDURES:

- (1) Notice of Claims. If the City or Prime 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.

This notice does not stop or prevent the City or Prime Contractor/Supplier 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 Prime Contractor/Supplier does not provide this notice within the 10 day period, it does not waive any right to indemnification except to the extent that Prime

Bodily injury by disease \$100,000 (each employee)

All insurance policies must require that it shall give 30 days written notice to the City before they may be canceled. Within the 30 day period, Contractor shall provide other suitable policies in lieu of those about to be canceled, materially changed, or non-renewed so as to maintain in effect the required coverage. If Contractor does not comply with this requirement, the Director, at his or sole discretion, may:

- (1) immediately suspend Contractor from any further performance under this Agreement and begin procedures to terminate for default, or
- (2) purchase the required insurance with City funds and deduct the cost of the premiums from amounts due to Contractor under this Agreement.

**F. Warranties**

Contractor represents and warrants that it shall perform its work in a good and workmanlike manner, meeting the standards of quality. Contractor shall perform all work using trained and skilled persons having substantial experience performing the work required under this Agreement.

With respect to any parts and goods furnished by it, Contractor warrants:

- (1) that all items are free of defects in title, material, and workmanship,
- (2) 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,
- (3) that each replacement item is new in accordance with original equipment manufacturer's specifications, and of a quality at least as good as the quality of the item which it replaces (when the replaced item was new), and
- (4) that no item or its use infringes any patent, copyright, or proprietary right.

**G. Licenses and Permits**

Contractor shall obtain and pay for all licenses, permits, and certificates required by any statute, ordinance, rule, or regulation.

**H. Compliance with Equal Opportunity Ordinance**

Contractor shall comply with the City's Equal Employment Opportunity Ordinance as set out in Exhibit "C."

**I. MWBE Compliance**

Contractor shall comply with the City's Minority and Women Business Enterprise ("MWBE") programs as set

issued, on the first day Contractor begins work under this Agreement.

(3) Contractor also shall file updated designations of safety impact positions with the CCODT if additional safety impact positions are added to Contractor's employee work force.

(4) Contractor shall require that its subcontractors comply with the Executive Order, and Contractor shall secure and maintain the required documents for City inspection.

**K. Environmental Laws**

Contractor shall comply with all rules, regulations, statutes, or orders of the Environmental Protection Agency ("EPA"), the Texas Commission on Environmental Quality ("TCEQ"), and any other governmental agency with the authority to promulgate environmental rules and regulations (Environmental Laws) during the performance or services under this Agreement. Contractor shall promptly reimburse the City for any fines or penalties levied against the City because of Contractor's failure to comply.

Contractor shall not possess, use, generate, release, discharge, store, dispose of, or transport any Hazardous Materials on, under, in, above, to, or from the site except in strict compliance with the Environmental Regulations. "Hazardous Materials" means any substances, materials, or wastes that are or become regulated as hazardous or toxic substances under any applicable federal, state, or local laws, regulations, ordinances, or orders. Contractor shall not deposit oil, gasoline, grease, lubricants or any ignitable or hazardous liquids, materials, or substances in the City's storm sewer system or sanitary sewer system or elsewhere on City Property in violation of the Environmental Laws.

**L. Contractor's Performance**

Contractor shall make citizen satisfaction a priority in providing services under this Agreement. Contractor shall train its employees to be customer service-oriented and to positively and politely interact with citizens when performing contract services. Contractor's employees shall be clean, courteous, efficient, and neat in appearance and committed to offering the highest quality of service to the public. If, in the Director's opinion, Contractor is not interacting in a positive and polite manner with citizens, he or she shall direct Contractor to take all remedial steps to conform to these standards.

**M. Payment of Employees and Subcontractors**

Contractor shall make timely payments in accordance with applicable state and federal law to all persons and entities supplying labor, materials or equipment for the performance of this Agreement including Contractor's

employees.

Failure of Contractor to pay its employees as required by law shall constitute a default under this contract for which the Contractor and its surety shall be liable on Contractor's performance bond if Contractor fails to cure the default as provided under this Agreement.

Contractor shall defend and indemnify the City from any claims or liability arising out of Contractor's failure to pay its subcontractors as required by law. Contractor shall submit disputes relating to payment of M/WBE subcontractors to arbitration in the same manner as any other disputes under the M/WBE subcontract.

### III. DUTIES OF CITY

#### A. Payment Terms

The City shall pay and Contractor shall accept fees at the unit prices provided in Exhibit H for all services rendered and the Deliverables furnished by Contractor. The fees must only be paid from Allocated Funds, as provided below.

Any quantities of services or Deliverables shown in any part of this contract or its exhibits are estimated only and are not any guarantee that the City will not purchase more or less of those services or Deliverables. The City will pay only for the services or Deliverables actually ordered and only at the unit prices set out.

#### B. Taxes

The City is exempt from payment of Federal Excise and Transportation Tax and Texas Limited Sales and Use Tax. Contractor's invoices to the City must not contain assessments of any of these taxes. The Director will furnish the City's exemption certificate and federal tax identification number to Contractor if requested.

#### C. Method of Payment

The City shall pay Contractor on the basis of invoices submitted by Contractor and approved by the Director, showing the specific tasks completed in the preceding month and the corresponding prices. The City shall make payments to Contractor at its address for notices within 30 days of receipt of an approved invoice.

#### D. Method of Payment - Disputed Payments

If the City disputes any items in an invoice Contractor submits for any reason, including lack of supporting documentation, the Director shall temporarily delete the disputed item and pay the remainder of the invoice. The Director shall promptly notify Contractor of the dispute and request remedial action. After the dispute is

settled, Contractor shall include the disputed amount on a subsequent regularly scheduled invoice or on a special invoice for the disputed item only.

**E. Limit of Appropriation**

- (1) The City's duty to pay money to Contractor under this Agreement is limited in its entirety by the provisions of this Section.
- (2) In order to comply with Article II, Sections 19 and 19a of the City's Charter and Article XI, Section 5 of the Texas Constitution, the City has appropriated and allocated the sum of \$1,000,000.00 to pay money due under this Agreement (the "Original Allocation"). The executive and legislative officers of the City, in their discretion, may allocate supplemental funds for this Agreement, but they are not obligated to do so. Therefore, the parties have agreed to the following procedures and remedies:
- (3) The City makes a supplemental allocation by sending a notice signed by the Director and the City Controller to Contractor and where appropriated, approved by motion, or ordinance of City Council in substantially the following form:

**"NOTICE OF SUPPLEMENTAL ALLOCATION OF FUNDS"**

TO: [Name of Contractor]

FROM: City of Houston, Texas (the "City")

DATE: [Date of notice]

SUBJECT: Supplemental allocation of funds for the purpose of the "[title of this Agreement]" between the City and (name of Contractor) countersigned by the City Controller on (Date of Countersignature) (the "Agreement").

I, (name of City Controller), City Controller of the City of Houston, certify that the supplemental sum of \$\_\_\_\_\_, upon the request of the below-signed Director, has been allocated for the purposes of the Agreement out of funds appropriated for this purpose by the City Council of the City of Houston. This supplemental allocation has been charged to such appropriation.

The aggregate of all sums allocated for the purpose of such Agreement, including the Original Allocation, and all supplemental allocations (including this one), as of the date of this notice, is \$\_\_\_\_\_.

SIGNED:

(Signature of the City Controller)

City Controller of the City

REQUESTED:

(Signature of the Director)

Director

- (4) The Original Allocation plus all supplemental allocations are the Allocated Funds. The City shall never be obligated to pay any money under this Agreement in excess of the Allocated Funds. Contractor must assure itself that sufficient allocations have been made to pay for services it provides. If Allocated Funds are exhausted, Contractor's only remedy is suspension or termination of its performance under this Agreement and it has no other remedy in law or in equity against the City and no right to damages of any kind.

**F. Changes**

- (1) At any time during the Agreement Term, the City Purchasing Agent or Director upon written authorization by the City Purchasing Agent may issue a Change Order to increase or decrease the scope of services or change plans and specifications, as he or she may find necessary to accomplish the general purposes of this Agreement. Contractor 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 extra work.
- (2) The City Purchasing Agent or Director upon written authorization by the City Purchasing Agent will issue the Change Order in substantially the following form:

**CHANGE ORDER**

TO: [Name of Contractor]

FROM: City of Houston, Texas (the "City")

DATE: [Date of Notice]

SUBJECT: Change Order under the Agreement between the City and [Name of Contractor] countersigned by the City Controller on [Date of countersignature of the Agreement]

Subject to all terms and conditions of the Agreement, the City requests that Contractor provide the following:

[Here describe the additions to or changes to the equipment or services and the Change Order Charges applicable to each.]

Signed:

[Signature of City Purchasing Agent or Director upon written notice to the City Purchasing Agent]

- (3) The City Purchasing Agent or Director upon written authorization by the City Purchasing Agent may issue more than one Change Order, subject to the following limitations:
  - (a) Council expressly authorizes the City Purchasing Agent or Director upon written authorization by the City Purchasing Agent, to approve a Change Order of up to \$50,000. A Change Order of more than \$50,000 over the approved contract amount must be approved by the City Council.
  - (b) If a Change Order describes items that Contractor is otherwise required to provide under this Agreement, the City is not obligated to pay any additional money to Contractor.
  - (c) The Total of all Change Orders issued under this section may not increase the Original Agreement amount by more than 25%.
- (4) Whenever Contractor receives a Change Order, Contractor shall furnish all material, equipment, and personnel necessary to perform the work described in the Change Order. Contractor shall complete the work within the time prescribed. If no time for completion is prescribed, Contractor shall complete the work within a reasonable time. If the work described in any Change Order causes an unavoidable delay in any other work Contractor is required to perform under this Agreement, Contractor may request a time extension for the completion of the work. The City Purchasing Agent's or Director's decision regarding a time extension is final.
- (5) A product or service provided under a Change Order is subject to inspection, acceptance, or rejection in the same manner as the work described in the Original Agreement, and is subject to the terms and conditions of the Original Agreement as if it had originally been a part of the Agreement.
- (6) Change Orders are subject to the Allocated Funds provisions of this Agreement.

#### IV. TERM AND TERMINATION

**A. Contract Term**

This Agreement is effective on the Countersignature Date and expires three (3) years after the date specified in the Notice to Proceed unless sooner terminated according to the terms of this Agreement.

**B. Notice to Proceed**

Contractor shall begin performance under this Agreement on the date specified in a Notice to Proceed from the City Purchasing Agent.

**C. Renewals**

If sufficient funds are allocated, the City Purchasing Agent, at his or her sole discretion, may make a request to Contractor to renew this Agreement for up to two additional 1-year option periods, upon at least 30 days' written notice before expiration of the initial term, or first option period, as applicable. Any renewal, pursuant to this Section, shall be upon the same terms and conditions of the Agreement.

**D. Time Extensions**

If Department requests an extension of time to complete its performance, then the City Purchasing Agent may, in his or her sole discretion, extend the time so long as the extension does not exceed 90 days. The extension must be in writing but does not require amendment of this Agreement. Contractor is not entitled to damages for delay(s) regardless of the cause of the delay(s).

**E. Termination for Convenience by the City**

The City Purchasing Agent or Director upon written authorization by the City Purchasing Agent may terminate this Agreement at any time by giving 30 days written notice to Contractor. The City's right to terminate this Agreement for convenience is cumulative of all rights and remedies which exist now or in the future.

On receiving the notice, Contractor shall, unless the notice directs otherwise, immediately discontinue all services under this Agreement and cancel all existing orders and subcontracts that are chargeable to this Agreement. As soon as practicable after receiving the termination notice, Contractor shall submit an invoice showing in detail the services performed under this Agreement up to the termination date. The City shall then pay the fees to Contractor for services actually performed, but not already paid for, in the same manner as prescribed in Section III unless the fees exceed the allocated funds remaining under this Agreement.

TERMINATION OF THIS AGREEMENT AND RECEIPT OF PAYMENT FOR SERVICES RENDERED ARE

CONTRACTOR'S ONLY REMEDIES FOR THE CITY'S TERMINATION FOR CONVENIENCE, WHICH DOES NOT CONSTITUTE A DEFAULT OR BREACH OF THIS AGREEMENT. CONTRACTOR WAIVES ANY CLAIM (OTHER THAN ITS CLAIM FOR PAYMENT AS SPECIFIED IN THIS SECTION), IT MAY HAVE NOW OR IN THE FUTURE FOR FINANCIAL LOSSES OR OTHER DAMAGES RESULTING FROM THE CITY'S TERMINATION FOR CONVENIENCE.

**F. Termination for Cause by City**

If Contractor defaults under this Agreement, the City Purchasing Agent or Director upon written authorization by the City Purchasing Agent may either terminate this Agreement or allow Contractor to cure the default as provided below. The City's right to terminate this Agreement for Contractor's default is cumulative of all rights and remedies which exist now or in the future. Default by Contractor occurs if:

- (1) Contractor is in default of one or more of the material duties under this Agreement;
- (2) Contractor becomes insolvent;
- (3) all or a substantial part of Contractor's assets are assigned for the benefit of its creditors; or
- (4) a receiver or trustee is appointed for Contractor.

If a default occurs, the City Purchasing Agent or Director upon written authorization by the City Purchasing Agent may, but is not obligated to, deliver a written notice to Contractor describing the default and the termination date. The City Purchasing Agent or Director upon written authorization by the City Purchasing Agent, at his or her sole option, may extend the termination date to a later date. If the City Purchasing Agent or Director upon written authorization by the City Purchasing Agent allows Contractor to cure the default and Contractor does so to the City Purchasing Agent's or Director's satisfaction before the termination date, then the termination is ineffective. If Contractor does not cure the default before the termination date, then the City Purchasing Agent or Director upon written notice to the City Purchasing Agent may terminate this Agreement on the termination date, at no further obligation of the City.

To effect final termination, the City Purchasing Agent or Director upon written notice to the City Purchasing Agent must notify Contractor in writing. After receiving the notice, Contractor shall, unless the notice directs otherwise, immediately discontinue all services under this Agreement, and promptly cancel all orders or subcontracts chargeable to this Agreement.

**G. Termination for Cause by Contractor**

Contractor may terminate its performance under this Agreement only if the City defaults and fails to cure the default after receiving written notice of it. Default by the City occurs if the City fails to perform one or more of its material duties under this Agreement. If a default occurs and Contractor wishes to terminate the Agreement, then Contractor must deliver a written notice to the Director describing the default and the proposed termination date.

The date must be at least 30 days after the Director receives notice. Contractor, at its sole option, may extend the proposed termination date to a later date. If the City cures the default before the proposed termination date, then the proposed termination is ineffective. If the City does not cure the default before the proposed termination date, then Contractor may terminate its performance under this Agreement on the termination date.

**H. Removal of Contractor Owned Equipment and Materials**

Upon expiration, or termination of this Agreement, Contractor is permitted ten (10) days within which to remove contractor-owned material and equipment from the City's premises. The City shall make such material and equipment readily available to Contractor. The time period may be extended upon approval by the Director. The City reserves the right to deny any extension of time.

**V. MISCELLANEOUS**

**A. Independent Contractor**

Contractor shall perform its obligations under this Agreement as an independent contractor and not as an employee of the City.

**B. Force Majeure**

1. Timely performance by both parties is essential to this Agreement. However, neither party is liable for delays or other failures to perform its obligations under this Agreement to the extent the delay or failure is caused by Force Majeure. Force Majeure means strikes, labor shortages, fires, floods, explosions, and other acts of God, war, terrorist acts, riots, court orders, and the acts of superior governmental or military authority.
2. This relief is not applicable unless the affected party does the following:
  - (a) uses due diligence to remove the Force Majeure as quickly as possible; and

- (b) provides the other party with prompt written notice of the cause and its anticipated effect.
3. The City may perform contract functions itself or contract them out during periods of Force Majeure. Such performance does not constitute a default or breach of this Agreement by the City.
  4. If the Force Majeure continues for more than 30 days, the City Purchasing Agent or Director upon written authorization by the City Purchasing Agent may terminate this Agreement by giving 30 days' written notice to Contractor. This termination is not a default or breach of this Agreement. CONTRACTOR WAIVES ANY CLAIM IT MAY HAVE FOR FINANCIAL LOSSES OR OTHER DAMAGES RESULTING FROM THE TERMINATION EXCEPT FOR AMOUNTS DUE UNDER THE AGREEMENT AT THE TIME OF THE TERMINATION.

**C. Severability**

If any part of this Agreement is for any reason found to be unenforceable, all other parts remain enforceable unless the result materially prejudices either party.

**D. Entire Agreement**

This Agreement merges the prior negotiations and understandings of the Parties and embodies the entire agreement of the Parties. No other agreements, assurances, conditions, covenants (express or implied), or other terms of any kind exist between the Parties regarding this Agreement.

**E. Written Amendment**

Unless otherwise specified elsewhere in this Agreement, this Agreement may be amended only by written instrument executed on behalf of the City (by authority of an ordinance duly adopted by the City Council) and Contractor. The Director is only authorized to perform the functions specifically delegated to him or her in this Agreement.

**F. Applicable Laws**

This Agreement is subject to the laws of the State of Texas, the City Charter and Ordinances, the laws of the federal government of the United States, and all rules and regulations of any regulatory body or officer having jurisdiction.

Venue for any litigation relating to this Agreement is Harris County, Texas.

**G. Notices**

All notices required or permitted by this Agreement must be in writing and are deemed delivered on the earlier of the date actually received or the third day following: (1) deposit in a United States Postal Service post office or receptacle; (2) with proper postage (certified mail, return receipt requested); and (3) addressed to the other party at the address set out in the preamble of this Agreement or at such other address as the receiving party designates by proper notice to the sending party.

**H. Non-Waiver**

If either party fails to require the other to perform a term of this Agreement, that failure does not prevent the party from later enforcing that term and all other terms. If either party waives the other's breach of a term, that waiver does not waive a later breach of this Agreement.

An approval by the Director, or by any other employee or agent of the City, of any part of Contractor's performance does not waive compliance with this Agreement or establish a standard of performance other than that required by this Agreement and by law. The Director is not authorized to vary the terms of this Agreement.

**I. Inspections and Audits**

City representatives may perform, or have performed, (1) audits of Contractor's books and records, and (2) inspections of all places where work is undertaken in connection with this Agreement. Contractor shall keep its books and records available for this purpose for at least 3 years after this Agreement terminates. This provision does not affect the applicable statute of limitations.

**J. Enforcement**

The City Attorney or his or her designee may enforce all legal rights and obligations under this Agreement without further authorization. Contractor shall provide to the City Attorney all documents and records that the City Attorney requests to assist in determining Contractor's compliance with this Agreement, with the exception of those documents made confidential by federal or State law or regulation or by this Agreement.

**K. Ambiguities**

If any term of this Agreement is ambiguous, it shall not be construed for or against any party on the basis that the party did or did not write it.

**L. Survival**

Contractor shall remain obligated to the City under all clauses of this Agreement that expressly extend beyond the expiration or termination of this Agreement.

**M. Parties In Interest**

This Agreement does not bestow any rights upon any third party, but binds and benefits the City and Contractor only.

**N. Successors and Assigns**

This Agreement binds and benefits the Parties and their legal successors and permitted assigns; however, this provision does not alter the restrictions on assignment and disposal of assets set out in the following paragraph. This Agreement does not create any personal liability on the part of any officer or agent of the City.

**O. Business Structure and Assignments**

Contractor shall not assign this Agreement without the City Purchasing Agent's prior written consent. Nothing in this clause, however, prevents the assignment of accounts receivable or the creation of a security interest under Section 9.406 (c) of the Texas Business & Commerce Code. In the case of such an assignment, Contractor shall immediately furnish the City with proof of the assignment and the name, telephone number, and address of the Assignee and a clear identification of the fees to be paid to the Assignee.

Contractor shall not delegate any portion of its performance under this Agreement without the City Purchasing Agent's prior written consent.

**P. Remedies Cumulative**

Unless otherwise specified elsewhere in this Agreement, the rights and remedies contained in this Agreement are not exclusive, but are cumulative of all rights and remedies which exist now or in the future. Neither party may terminate its duties under this Agreement except in accordance with its provisions.

**Q. Contractor Debt**

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 the City Controller in writing. If the City Controller becomes aware that Contractor has incurred a debt, she shall immediately notify contractor in writing. If Contractor does not pay the debt within 30 days of either such notification, the 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 therefor.

## SECTION B

### SCOPE OF SERVICES

#### **B.00 GENERAL REQUIREMENTS AND SCOPE OF SERVICES**

- B.00.01 The Contractor shall furnish all supervision, labor, parts, tools, materials, equipment, supplies, and facilities necessary to provide precision repair services for blowers at various City of Houston Wastewater Operations facilities. If requested by the user department representative (UDR), the Contractor shall demonstrate by means of adequate testing and documentation that the repaired unit has retained its operating efficiency. The cost for this operating efficiency test will be paid by City of Houston.
- B.00.02 The meaning of some specific terms as used in this contract /specification are given in Exhibit A, "Definitions".
- B.00.03 The manufacturer, type, size, and the facility location of the existing blowers of City of Houston's Wastewater Operations are given in the Attachment, "City of Houston Public Works & Engineering Department, Wastewater Operations Aeration Blowers Equipment List."
- B.00.04 The blowers are grouped (see Exhibit A, "Definitions") as Group-RR1, 2, 3 and 4; Group-RS1, 2, 3 and 4; Group-HM1, 2, and 3; and Group-LM1, 2, 3 and 4 to indicate the manufacturer, size, and type of the units.
- B.00.05 This specification covers the general requirements for the repair, overhaul, and testing of the blowers located at City of Houston Wastewater Operations facilities. This includes, but it is not limited to, blowers, blower inlet guide vanes, blow-off valve, integral gearboxes, integral lube pumps, external lube systems, couplings, inlet and outlet silencers, discharge check and isolation valves, inlet filters housing and filters, blower control system, and general mechanical work. In addition, the specification defines minimum acceptable requirements for the repair of the blowers.
- B.00.06 All test equipment required for test results shall be calibrated at least annually against standards traceable to the National Institute of Standards and Technology (NIST) or equivalent standards laboratories. The Contractor shall establish, document, and maintain calibration records for test and measuring equipment used to demonstrate conformance of product to specified requirements.
- B.00.07 The Contractor must be able to furnish copies of current environmental permits and demonstrate compliance with current environmental regulations.
- B.00.08 The Contractor facility shall be subject to inspection to verify that the equipment and personnel deemed necessary to perform the type of repair services required under this contract are in place at the time of inspection.
- B.00.09 Subcontractors to the Contractor, for the performance of work under this contract are subject to the same standards as the Contractor.

- B.00.10 The blowers at City facilities are purchased and installed under City's Master Specifications (latest edition) requiring compliance with the applicable sections of the following standards and codes:
- American National Standard Institute (ANSI)
  - Anti-Friction Bearing Manufacturing Association (AFBMA)
  - Institute of Electrical and Electronic Engineers (IEEE)
  - National Electrical Code (NEC)
  - National Electrical Manufacturers Association (NEMA)
  - American Society of Mechanical engineers (ASME)
- B.00.11 Wherever this document refers to the following codes and standards, then that specific sections of the code/standard shall apply to the repairs being carried out by the Contractor:
- Steel Structures Painting Council (SSPC)
  - Anti-Friction Bearing Manufacturing Association (AFBMA)
  - American Society for Non-Destructive Testing
  - City of Houston Electrical Code
  - American Society for Testing and Materials (ASTM)
- B.00.12 The installed blowers at City facilities and blowers to be purchased in future are manufactured by the following (but not limited to) companies:
- B.00.12.01 Single-Stage Centrifugal Blowers
- Dresser-Roots
  - Turblex
- B.00.12.02 Multi-Stage Centrifugal Blowers
- Dresser-Roots
  - Lamson
  - Hoffman
  - HSI
  - Hi-Bon
- B.00.12.03 Rotary Lobe Positive Displacement Blowers
- Dresser-Roots
- B.00.13 **ALL MARKUPS SHALL BE BASED ON PART VENDOR'S OR SUB-CONTRACTOR'S ACTUAL ORIGINAL INVOICED DOCUMENTS. THE CONTRACTOR SHALL SUBMIT THESE ACTUAL ORIGINAL INVOICES, AS ATTACHMENTS, WITH THE FINAL INVOICE FOR PAYMENT BY CITY FOR THE WORK PERFORMED THE CONTRACTOR.**
- B.00.14 All equipment removed from any City facility shall be documented on a City Equipment Release Form, see Example Exhibit "B".
- B.00.15 At Contractor's repair facility, the Contractor shall disassemble the unit, inspect it and prepare a scope of work to repair and replace parts with **new OEM** parts or *equal*.
- B.00.16 If the Contractor plans to use any part other than an OEM specified part; the

- Contractor shall obtain, in advance of the use of such part, written permission/approval from UDR and/or Contract Technical Representative (CTR).
- B.00.17 The City reserves the rights to pick up all blower parts that are quoted by the Contractor to be replaced. This includes, but is not limited to seals, bearings, impellers, end plates, gears, and other items of a blower unit. Non-repairable units do not need to be reassembled.
- B.00.18 If requested by the CTR, Contractor shall furnish parts needed for maintenance activities of blower units by City personnel. Contractor shall charge the same price for these parts as scheduled in the Bid Forms under "Parts and Material".
- B.00.19 Contractor shall ensure the Equipment Inventory number (EI) tag remains attached to the equipment. Contractor shall notify the CTR if the (EI) tag is damaged or missing.
- B.00.20 Contractor shall install a stainless steel identification tag stamped with the Contractor's Job Number and Repair Date to each blower housing. The tag shall be secured with stainless steel drive pins. The cost of the identification tag shall be included as a part of the base cost of any repair.
- B.00.21 Before disassembly nameplate data shall be verified, all missing or damaged parts shall be identified in writing, recorded, and special items shall be noted on the inspection form.
- B.00.22 Upon receipt of the blowers, the Contractor shall document all information about the conditions of the unit and parts to include digital photographs of blower unit components.
- B.00.23 All illegible or defective nameplates shall be replaced on completion of repair. All original nameplate information, except where changed, shall be stamped on a new stainless or aluminum nameplate. New nameplates shall be permanently attached with mechanical fasteners. The cost of a new nameplate shall be included as a part of the base cost of any repair.
- B.00.24 Delivery tickets and packing slips shall contain quantity, part number, description of commodity delivered, name of department or section and facility name to which the merchandise was delivered, the City of Houston Ordinance Number, Contract number, signature of receiving employee, printed name, employee number, and the authorization release number.
- B.00.25 The repair shop must be able to verify all hours charged for work performed. Where hourly work is performed on behalf of the City, the Contractor (and Sub-Contractors of the Contractor) shall fully document the start of the work, the time spent on the job, and completion of each job. The documentation shall be punch card/time-clock or shop record or any other mutually agreed method. All work will be supported with copies of time cards submitted for verification with the invoice.
- B.00.26 At a later date, the City reserves the right to review all payments made to the Contractor by auditing any and all documents associated with the contract.

Subject to such audit, any overpayments shall be recovered from the Contractor.

- B.00.27 The intent of this contract is for the Contractor to do the repair specifically at the Contractor's facilities. The Contractor shall provide UDR a list of the name(s) and location(s) of ALL shop(s) and subcontractors that will be used for the specified repair work. The Contractor shall obtain written approval for each shop and subcontractor before start of the contract. If the Contractor plans to use any subcontractor not on the list, the Contractor shall obtain written approval from the CTR before subcontracting the work.
- B.00.28 RESERVED
- B.00.29 The repair shop must be able to verify all hours charged for machine work. This will apply to work done by sub-contractors or the contractor. In-house work will be supported with copies of time cards. This verification shall be submitted with the invoice.
- B.00.30 **THE FIELD TIME SHEETS SHOULD BE SIGNED DAILY BY A CITY OF HOUSTON SUPERVISOR AT THE FACILITY LOCATION, IF A CITY SUPERVISOR IS AVAILABLE. ALL TIME SHEETS SHALL BE APPROVED BY THE CTR ON THE LAST WORKING DAY OF EACH WEEK.**
- B.00.31 **THE CITY SHALL BE BILLED ONLY FOR THE HOURS THE CONTRACTOR WORKS ON CITY EQUIPMENT WHETHER AT CITY FACILITY OR AT CONTRACTOR'S FACILITY. LABOR RATE FOR WORK AT A CITY FACILITY SHALL COVER THE TRAVEL EXPENSE OF THE CONTRACTOR. NO ITEMIZED TRAVEL TIME IS ALLOWED.**
- B.00.32 The price of parts and material and cost of a replacement unit supplied for this contract shall be the total **original invoiced cost to the contractor plus contractor's quoted percentage (%) markup** for the item. The Contractor shall submit the supporting documentations with the final invoice.
- B.00.33 The Labor Rates in the Contract Fee Schedule shall apply to all work performed done by the Contractor's personnel. All work performed by subcontractors shall be invoiced, including pricing and separate percentage (%) markup under the line item for subcontractor work.
- B.00.34 RESERVED
- B.00.35 RESERVED
- B.00.36 Wherever OEM documentation such as Operation and Maintenance Manual, etc., specify torque values, the Contractor shall use a torque wrench and adhere to the OEM torque values.
- B.00.37 Paint booth shall not be used for Sandblasting.
- B.00.38 All blowers with peeling paint or rust shall be sandblasted. The cost of sandblasting shall be included as a part of the base cost of any **repair**.
- B.00.39 The Contractor shall be responsible for storage of the blower units and all parts. Any parts lost or damaged while in the possession of the Contractor shall be

- repaired or replaced at Contractor's expense.
- B.00.40 All metal parts shall be checked for structural integrity and cracks, and shall be repaired or replaced as needed.
- B.00.41 All repairs shall be made to bring the to OEM's specifications.
- B.00.42 The enclosed City of Houston "Teardown" reports included in this document shall be used for each repair.
- B.00.43 All metal parts shall be checked for structural integrity and cracks, and shall be repaired or replaced as needed.
- B.00.44 Terminal boxes and auxiliary equipment enclosures shall be made to meet OEM's specifications.
- B.00.45 The Contractor/OEM Distributor/Shop shall use the OEM's latest list price with a discount percentage (plus or minus) applied to the lowest price list column in the price list for the price of parts, materials and replacement units on the contract. The quoted discount percentage is subject to audit by the City of Houston.
- B.00.46 The Contractor shall provide to the City a full set of repair record (including completed teardown sheets, work performed on the unit, and test run results including vibration levels at all bearings of the drive and the blower) upon completion of work, if requested by the CTR. The Contractor shall establish and maintain the repair records for at least three (3) years from the date when the unit passed acceptance inspection and/or test.
- B.00.47 ALL labor to perform teardown inspections, cleaning, disassembly, sand blasting, balancing, reassembly, painting, shop testing, and documenting shall be included as labor/base price for the blower overhaul-repair.
- B.00.48 At a City location, all machinery and equipment that are undergoing maintenance and repair shall be **locked-out/tagged-out (LOTO)** to protect against accidental or inadvertent operation when such operation could cause injury to personnel or damage to equipment. **Authorized personnel only who may include qualified electricians, mechanics, and operators shall carry out LOTO.**
- B.00.49 Contractor shall provide the CTR with monthly written progress reports. These reports may be emailed faxed to CTR.
- B.00.50 The UDR and the Contractor's manager shall meet once a month to review the records of the completed works, works in progress, and any other matter related to this contract. Any discrepancies shall be resolved at the time and all backlogs shall be completed by the tenth of the following month. The UDR shall provide the Contractor with a spreadsheet for tracking the job's cost and progress. The Contractor shall update the spreadsheet to reflect changes in activities by the Contractor and to ensure availability of Funds to perform the work.

**B.01 REPAIR AND REPLACEMENT**

- B.01.01 The Contractor shall inspect, repair, and/or troubleshoot the blowers including accessories (sub-assemblies) of the blowers in lieu of replacement unless the repair cost of the blower and or sub-assemblies exceeds seventy (70) percent of the cost for replacing it with a new item. Generally the seventy (70) percent rule applies, but the City reserves the right to purchase or repair units based on blower economic evaluation and various operational considerations.
- B.01.02 The Contract shall attach quotes/invoices for UDR review when submitting work scope. For all major components such as impellers, shafts, gears, and gear assembly the repair work scope shall include the cost of a new item as well as the estimated cost to repair such item. Every work scope shall include the purchase price of a new blower identical to the one being repaired.
- B.01.03 The CTR must approve in writing, the purchase of a new unit in lieu of repair.
- B.01.04 Replacement blower and accessories shall be same size and type as the existing ones, unless otherwise authorized in writing by CTR.
- B.01.05 If the unit is considered to be "non-repairable", the Contractor shall use the schedule in the Contract Fee Schedule under "Non-Repairable Shop Cost" to invoice for the work performed by the Contractor to include all costs associated with teardown, reports, and diagnostic.
- B.01.06 Contractor shall use the Contract Fee Schedule under "Cost to Replace a Unit..." to invoice the replacement cost.

**B.02 SPECIFIC TASKS AND SCOPE OF WORK**

- B.02.01 Upon request from the UDR or CTR and within ONE working day, the contractor shall inspect the blower at the Wastewater Treatment facility. If repairs can be performed at City facility at the time of inspection, the Contractor shall do the needed repair and release/return the unit to Operation.
- B.02.02 Upon request from the UDR or CTR and within ONE working day, the contractor shall send a crew to perform the field alignment of the blower and the drive of the unit where the City personnel had replaced the drive.
- B.02.03 If the blower can be repaired at City location but additional parts and services are needed, the Contractor shall notify the UDR and prepare a scope of the work within forty-eight (48) hours and submit it to the UDR for approval. The Contractor, upon receipt of approval, shall complete the repair of the blower within five (5) working days and release/return the unit to operation.
- B.02.04 If the blower cannot be repaired at City location, the Contractor shall notify the CTR. Within forty-eight (48) hours, the Contractor shall uncouple the unit from the drive, remove from foundation, and load on Contractor's vehicle, and transport/deliver the unit to contractor's repair facility. The Contractor shall ensure that all openings to pipes, inlet and discharge of dampeners/silences, and filters are blocked to prevent entry of rain, dirt, rodents, birds, and crawling

animals. The covers for the openings shall be made of metal or plywood of sufficient thickness, strength, rigidity, and shall be secured to resist damage by wind and rainstorm.

- B.02.05 The Contractor shall furnish hoist, crane, etc. for loading and unloading of the unit at City facilities and at Contractor's facility.
- B.02.06 Before disassembly of the unit at Contractor's shop, the Contractor shall inspect the unit and document the damaged and missing parts. In addition, the Contractor shall photograph the blower and sub-assemblies, as received. These photographs and any subsequent photographs of the blower and its parts shall be parts of the repair record.
- B.02.07 The Contractor shall chemically and mechanically clean all external surfaces, as required.
- B.02.08 The Contractor shall disassemble blowers and clean all internal parts.
- B.02.09 The Contractor shall inspect all components of the blowers and all critical areas to determine if clearances are within OEM tolerances, and the parts meet manufacturer's specifications. If the manufacturer's data is not available, the tolerances shall be verified with the relevant tables in **industry standards** to assure its conformance.
- B.02.10 If needed, the City will assist the Contractor to obtain the OEM data from the manufacturers.
- B.02.11 The Contractor shall inspect the blowers and its shaft for corrosion, erosion, chipping, and other damages and shall record these observations on the "Teardown" report.
- B.02.12 The Contractor shall inspect the rotor shaft for "roundness/runout" and determine if it is within OEM tolerance. If the manufacturer's data is not available, the tolerances shall be verified with the relevant tables in **industry standards** to assure its conformance.
- B.02.13 The Contractor shall inspect the shaft extensions and keyseats (keyways). Shaft extensions must be smooth, polished, and concentric with shaft center. Shaft extension dimension shall be checked to determine if it is within OEM tolerance. If the manufacturer's data is not available, the tolerances shall be verified with the relevant tables in **industry standards** to assure it conformance.
- B.02.14 Contractor shall inspect each bolt for damaged threads.
- B.02.15 Repair shall include sandblasting, welding and machining as required. Other services required of Contractor shall include Non-Destructive Testing (NDT), chroming and metallizing when required.
- B.02.16 Contractor shall determine what parts are to be machined or replaced with new parts. As a minimum the Contractor shall replace all roller element bearings, and

seals when the original unit was furnished with such items.

- B.02.17 For units which are being repaired at Contractor's facility, the Contractor shall prepare and submit, within ten (10) working days, to the CTR a scope of the repair work to be carried out on the unit. This good faith estimate shall include a brief description of the work to be performed, itemized cost for new replacement OEM parts, and any additional labor hours beyond what is required and specified in item B.03.07, for the repair of the unit. This work scope shall include the estimated time for delivery of parts and the schedule to complete the work.
- B.02.18 Upon acceptance of cost estimate by the CTR, Contractor shall proceed with repairs. The Contractor shall commence to work on the unit and complete the repair within the allocated time for delivery of such item:
- |                  |   |                 |
|------------------|---|-----------------|
| <b>B.02.17.1</b> | <b>PD Blowers</b>                         | <b>8 weeks</b>  |
| <b>B.02.17.2</b> | <b>Centrifugal Blowers (Multi-Stage)</b>  | <b>8 weeks</b>  |
| <b>B.02.17.3</b> | <b>Centrifugal Blowers (Single-Stage)</b> | <b>12 weeks</b> |
- B.02.19 The Contractor shall notify the CTR immediately if the Contractor cannot complete the job within the contractually agreed time period of item B.02.18. The Contractor shall submit to CTR a detailed explanation for the delay with a new schedule to complete the job.
- B.02.20 At all times during the repair process, Contractor shall maintain City's equipment in a clean and weather protected storage area.
- B.02.21 The shaft assembly shall be checked for total indicated run out (TIR) and recorded on the rotor information sheet. This test shall be carried out on a lathe.
- B.02.22 Shaft seal surface, bearing journals and coupling fit, shall be micrometer checked and recorded on the rotor information sheet.
- B.02.23 End bells and bearing housing critical dimensions shall be micrometer checked and recorded on the mechanical inspection sheet.
- B.02.24 The above measurements shall be submitted to UDR, along with other data sheets, during the teardown inspection.
- B.02.25 Replacement bearings shall have an L<sub>10</sub> rating life in accordance with ANSI/AFBMA equal to or longer than OEM bearing.
- B.02.26 After parts have been repaired, Contractor shall put together the rotating assembly and balance it. The Contractor shall reassemble the blower, test, seal and paint, as required.
- B.02.27 The Contractor shall prepare the surfaces to be painted to white a "metal finish" by blast cleaning to SSPC-SP5.
- B.02.28 Surface of all units shall be primed and finished, in an approved paint booth, using the blower OEM standard painting system:
- The minimum Prime coat thickness shall be 3 mils DFT, dry film thickness (DFT).

- The minimum finish coat thickness shall be 6 mils DFT, dry film thickness (DFT).
- B.02.29 If OEM paint information is not available, the following City of Houston' standard specification for surface coating of pumps and equipment shall be followed:
- The primer and finish coats shall be two-component, rust-inhibitive, polyamide-cured epoxy coating with a recoatable finish,
  - The prime coat shall be Ameron 38P, Tnemec 69, or equal.
  - The finish coat shall be Ameron 38S, Tnemec 69, or equal.
- B.02.30 No deviation from the paint specification is allowed, unless advance written approval for variance to paint specifications was given by the CTR.
- B.02.31 The paint color shall be as the OEM standard for such units unless specifically requested otherwise, in written, by the CTR.
- B.02.32 The Contractor shall return the repaired unit to a City facility, set on foundation, check the leveling of the blower base, couple, precision align the drive / blower / coupling, and reconnect lube piping. The Contractor shall ensure that all shutdown systems/protections are operational before the test run.
- B.02.33 If requested by the UDR, the Contractor shall couple, precision align the drive / blower / coupling of the units which had their drive replaced by the City personnel. The charge for this service will be based on the Stand Labor Rate as quoted in the Contract Fee Schedule.
- B.02.34 The Contractor shall start the unit and check the lube system. The Contractor shall measure/record the vibration of the blower and the drive at DE and ODE in axial, vertical, and horizontal directions.
- B.02.35 The vibration levels shall be as specified by the OEM. If needed, the City will assist the Contractor to obtain the OEM data from the manufacturers.
- B.02.36 The final alignment shall be made at the end of the test run when the blower and the drive have reached their operating temperatures. Alignment shall be adjusted, as required, before placing the unit into permanent service.

**B.03 Blower Inspection and Repair**

- B.03.01 The Contractor shall provide a repair record and report showing the condition of the blower upon receipt, the repair work done, vibration levels, and the final test results.
- B.03.02 During disassembly, the blower components and parts shall be visually inspected to determine and record/report the cause of failure.
- B.03.03 The shaft assembly shall be inspected for wear, scoring, cracks.
- B.03.04 Shaft seal surface, bearing journals and coupling fit, shall be checked with a micrometer and recorded on the rotor information sheet.

- B.03.05 Blowers that are overhauled-repaired at Contractor facility shall be thoroughly cleaned to be free from dirt, grit, grease, oil, and shall be inspected for damage and repairs made to damaged areas.
- B.03.06 Torch heating shall NOT be used for clean up.
- B.03.07 The grit blasting shall be done with approved material.
- B.03.08 **OVERHAUL- REPAIR AT CONTRACTOR'S FACILITY (OVERHAUL-REPAIR):** The following work scopes shall be followed for all shop overhaul-repair of the blowers. All bearings shall be replaced with new OEM specified bearings that have an L<sub>10</sub> rating life as the original OEM or longer in accordance with ANSI/AFBMA. Equivalent bearing may be used if approved by the CTR. The price in the Contract Fee Schedule for **OVERHAUL-REPAIR (SHOP-REPAIR)** of a blower shall include ALL cost of supervision, labor, tools, equipment, supplies to complete the work specified herein for Shop-Repair. The lump sum cost does not include the cost of the bearings, damaged or broken or worn parts (which are reimbursable) if authorized by the UDR.

**B.03.08.1 Multi-Stage Centrifugal Blowers:**

- B.03.08.1.1 Disassemble the blower.
- B.03.08.1.2 Sandblast and clean all parts as needed, and inspect all parts.
- B.03.08.1.2 Clean and de-burr the inlet cover.
- B.03.08.1.3 Clean and de-burr the diaphragm.
- B.03.08.1.4 Clean and de-burr the discharge cover.
- B.03.08.1.5 Clean and de-burr the seal housing and polish bores on faces.
- B.03.08.1.6 Clean and de-burr the bearing housing and hone all faces.
- B.03.08.1.7 NDT check impellers for cracks, balance impellers individually, balance shaft, check mechanical run outs, and balance rotor assembly.
- B.03.08.1.8 Set-up inlet cover, install shaft and 1<sup>st</sup> stage impeller, install diaphragm and check rotor float, check rotor float after each impeller and diaphragm is installed, install discharge cover and check total float, and install seal housing and seal.
- B.03.08.1.9 Paint the assembled unit.

**B.03.08.2 Single-Stage Centrifugal Blowers:**

- B.03.08.2.1 Disassemble the blower.
- B.03.08.2.2 Sandblast and clean the volute, chase all tapped holes and de-burr, and inspect.
- B.03.08.2.3 Clean case and cover, chase all tapped holes and de-burr, and inspect bores and seal fits.
- B.03.08.2.4 Clean and polish all low-speed shafts fits and inspect, de-burr and NDT gear teeth, check mechanical run outs, and balance the low-speed shaft.
- B.03.08.2.5 Clean and polish all high-speed shafts fits and inspect, de-burr and NDT gear teeth, check mechanical run outs, and balance the high-speed shaft.
- B.03.08.2.6 Sandblast the impeller and NDT, and balance the high-

- B.03.08.2.7 speed assembly.  
Clean and de-burr the oil pump housing, upgrade drive bushing and install new adapter shaft.
- B.03.08.2.8 Install high-speed seal and impeller bearing into case, install oil pump into case, install low speed bearing onto shaft, install drive bushing and shaft adapter into oil pump, install low-speed assembly and high-speed shaft into case, install case cover and set thrust on low-speed bearings, install impeller bearing, install impeller, install volute and thrust collar, set end clearance and thrust on high-speed shaft, and test main oil pump
- B.03.08.2.9 Paint the assembled unit.

**B.03.08.3 Positive Displacement Rotary Blowers:**

- B.03.08.3.1 Disassemble the blower.
- B.03.08.3.2 Sandblast and clean headplates, inspect and NDT as needed.
- B.03.08.3.3 Sandblast and clean cylinder, chase all tapped holes and de-bur.
- B.03.08.3.4 Sandblast and clean impellers, install stub shaft bolts, taper pins, check mechanical run out, set up ream and install taper pins, and balance.
- B.03.08.3.5 Sandblast and clean bearing carriers, chase all tapped holes and de-burr, and drill for anti-rotation pin.
- B.03.08.3.6 Clean timing gears, de-burr the teeth and inspect, NDT if needed, check gear rim run out, gear hub run out, and gear backlash.
- B.03.08.3.7 Clean, inspect, and de-burr the gearbox and end cover.
- B.03.08.3.8 NDT check impellers for cracks, balance impellers individually, balance shaft, check mechanical run outs, and balance rotor -assembly.
- B.03.08.3.8 Install gear end headplate to cylinder, install impeller into cylinder, install thrust end headplate to cylinder, install seal into carrier, install carrier into headplate, press in bearing, install lock nuts, set internal clearances, time impeller, install timing gear, install gearbox, end cover, and oil piping, and mechanical test.
- B.03.08.3.9 Paint the assembled unit.

**B.04 RESPONSE TIME**

- B.04.01 Contractor shall be accessible to the City via telephone during **normal business** hours. The Contractor shall be ready to start work on any unit within twenty-four (24) hours of receiving the call for the service.
- B.04.02 Contractor shall be available and accessible to the City via telephone to work **overtime** if requested by the UDR and/or CTR.

- B.04.03 Contractor shall be available and accessible to the City via telephone to work on an **emergency** basis if requested by the CTR.
- B.04.04 Contractor shall start an emergency job immediately, without scheduling delays, and will not be restricted to normal working hours. The CTR shall coordinate the emergency and overtime work.

**B.05 REPAIR TECHNICIANS**

- B.05.01 The repair technicians of the Contractor shall be qualified, properly trained in repair-recondition of blowers of the type and sizes specified for this contract.
- B.05.02 The repair technicians of the Contractor shall have a minimum of three (3) years experience in repair-recondition of blowers of the sizes specified in this contract
- B.05.03 The Contractor shall furnish the resume of the technicians to the City Inspection Team during the Team's visit of the Contractor's facility.
- B.05.04 These requirements shall apply to all of the sub-contractors who work for the Contractor.

**B.06 ACCEPTANCE OF REPAIR**

- B.06.01 The UDR shall inspect the repaired unit before the run test can begin. It is the Contractor's responsibility to ensure communication has been established with the UDR for witnessing of the performance test.
- B.06.02 Vibration measurements shall be taken on the completely assembled unit at the DE and ODE, horizontal, axial, and vertical directions on the bearing housings adjacent to the shaft. The measurements shall be performed and recorded for the drive as well as the blower.
- B.06.04 Vibration measurements shall be expressed as velocity, unfiltered, and recorded on the Repair Data and Final Test Sheets. Acceptable maximum vibration level are as specified by the OEM.
- B.06.33 After the unit is run continuously for at least four hours, the Contractor shall measure/record the vibration at the same spots as the beginning of the test run. Acceptable maximum vibration level are as specified by the OEM.
- B.06.05 If deficiencies are detected, the repair work shall be rejected and the contractor shall make the necessary repairs, adjustments or replacements.
- B.06.06 After corrective actions are made, the unit shall go through a new test run before the blower is accepted.
- B.06.07 The repair record and report covering teardown report, photographs of the condition of the blower, specific measurements, and tests such as balancing of rotating elements, vibration measurements, mechanical measurements and others shall be kept for three years by the Contractor, and shall be furnished to

the City if requested by CTR.

- B.06.09 The City shall NOT make any payment to the Contractor until ALL corrective actions are made and the equipment repair is accepted.

**B.07 SILENCE OF SPECIFICATIONS**

The apparent silence of these specifications as to any detail, or apparent omission from it of a detailed description concerning any point, shall be regarded as meaning that only the best commercial practice is to prevail and that only material and workmanship of the finest quality are to be used. All interpretations of these specifications shall be made on the basis of this statement.

**B.08 LABOR RATE**

The labor rate shall include ALL cost associated for the qualified person to work on and repair City equipment including wages paid, all company benefits, transportation, company profits.

**B.09 PREVENTIVE AND PREDICTIVE MAINTENANCE**

**B.09 PREVENTIVE AND PREDICTIVE MAINTENANCE**

- B.09.00 The Preventive Maintenance (PM) and Predictive Maintenance (PdM) programs will be performed on all blower units in each group either monthly, quarterly, or annually, but not concurrently.
- B.09.00.01 ALL PM and PdM services involving shut down of equipment shall be approved by UDR or CTR and coordinated with the Operations supervisor of the facility. Contractor shall submit request for shutdown two weeks prior to the shut down. Granting of a Shutdown is subject to Operations' conditions at the time.
- B.09.00.02 The Contractor shall complete any scheduled PM and PdM, and Inspection service of any equipment and return such unit to Operations not withstanding the expiration of the Business Hours and/or other conditions unless authorized, in writing, by UDR or CTR.
- B.09.00.03 The Contractor shall have access to the facilities named in this document and to storage areas designated by Operations within the facilities. Access to the facilities shall be limited to 7:30 a.m. to 4:00 p.m. Monday to Friday, except as required or allowed by the UDR and Operations.
- B.09.00.04 The Contractor shall perform un-scheduled corrective, repair, and maintenance services when requested by the UDR. The contractor shall be reimbursed as shown on the below Formal Bid Forms.
- B.09.01 PREVENTIVE MAINTENANCE PROGRAM**

The Preventive Maintenance (PM) program mission is to extend the life of equipment and detect critical wear of equipment and initiate the needed remedial action. PM shall

accomplish this via the performance of a series of tasks at variable frequencies (monthly, quarterly, or annually) before the equipment fails or breaks down.

**B.09.01.01 POSITIVE DISPLACEMENT, CENTRIFUGAL MULTI-STAGE AND CENTRIFUGAL SINGLE STAGE BLOWER PREVENTIVE MAINTENANCE PROGRAMS**

The Contractor shall perform monthly vibration analysis, oil analysis, preventive maintenance, and report results via the following tasks:

**(1) Positive Displacement Blower Vibration Analysis:**

- Measurement at each bearing in the X, Y, and Z directions.
- Report trending
- Identify the problem and Recommend corrective action

**(2) Positive Displacement Blower Oil Analysis:**

- Collect sample of oil from oil reservoir
- Submit oil for testing at a CTR pre-approved laboratory
- Identify problem and Recommend corrective action

**(3) Positive Displacement Blower Preventive Maintenance Tasks:**

- Check the oil in the sump and top off if needed
- Check for hot spots
- Check for increase in vibration and noise
- Record inlet and outlet operating pressure
- Record inlet and outlet operating temperature
- Check oil filter pressure drop
- Record oil pressure and ensure that the pressure is within specified rated values
- Check for oil leaks in the lubrication system and repair if necessary
- Verify that the coupling is properly lubricated
- Final determination that the blower is operating within specified rating limits

**(4) Single-Stage Centrifugal Blower Vibration Analysis:**

- Measurement at each bearing in the X, Y, and Z positions.
- Report trending
- Identify the problem and Recommend corrective action

**(5) Single-Stage Centrifugal Blower Oil Analysis:**

- Collect sample of oil from oil reservoir
- Submit oil for testing at a local reputable laboratory
- Identify problem and Recommend corrective action

**(6) Single-Stage Centrifugal Blower Preventive Maintenance Tasks:**

- Check oil in lube oil sump and top off as needed

- Drain water from lube oil sump before taking oil sample
- Record all pressure readings and report deviations from rated values
- Clean air-to-oil cooler and clean fins as necessary
- Check air filter and replace as necessary
- Check for oil leaks in the lubrication system and repair if necessary
- Replace oil filter every six months or sooner if pressure drop exceeds limits
- Record all temperature readings and report deviations from rated values
- Check alarm and shutdown switches to ensure proper functioning
- Verify that coupling is properly lubricated
- Check accuracy of instrumentation

**(7) Multi-Stage Centrifugal Blower Vibration Analysis:**

- Measurement at each bearing in the X, Y, and Z positions
- Report trending
- Identify the problem and Recommend corrective action

**(8) Multi-Stage Centrifugal Blower Preventive Maintenance Tasks:**

- Record all pressure readings and report deviations from rated values
- Replace air filter every six months or sooner if pressure drop exceeds limits
- Record all temperature readings and report deviations from rated values
- Check alarm and shutdown switches to ensure proper functioning
- Verify that coupling is in good condition

**B.09.02 PREDICTIVE MAINTENANCE PROGRAM**

The Predictive Maintenance (PdM) program mission is to initiate remedies before equipment failures thus extending the life of equipment and preventing critical equipment wear. PdM shall accomplish this via the performance of field inspections (monthly, quarterly, or annually) using high technology diagnostic tools and programs that monitor oil, bearing, and vibration analysis trends in equipment operation.

Monthly testing and reporting shall establish the following priorities that determines the severity

of a PdM problem with a machine and the urgency in which maintenance actions shall take place:

- Priority 1: Severe Problem – Equipment requires immediate maintenance action
- Priority 2: Significant Problem – Equipment requires urgent attention which shall be scheduled as soon as time allows (within less than a month)
- Priority 3: Problem Exists – Equipment requires maintenance action which shall be scheduled at least within three (3) months
- Priority 4: Equipment exhibits potential problems with no change in operation efficiency – Maintenance personnel determines no maintenance action presently warranted – Continue to monitor for changes that indicate problem is becoming severe enough to warrant maintenance action
- Priority 5: Present data reveals no problem – Equipment does not require maintenance action but monitoring shall continue

**B.10 ADDITIONAL SERVICES**

- B.10.01 Prior to commencement of any "Additional Services," Contractor shall submit a written proposal for approval by CTR describing the work to be done and include a good faith estimate of the cost. The proposal shall include as a minimum a list of repairs, sub-contractor(s), and a schedule of the repairs.
- B.10.02 Contractor shall perform "Additional Services" using the unit rates in the Contract Fee Schedule as specified for the type of service provided. If the "Bid Forms" do not cover the work the Contractor shall be paid on the reimbursable cost-plus basis, supported by documentations. Timing of any "Additional Services" shall be mutually agreed upon between the CTR and the Contractor.

**B.11 WARRANTIES**

**B.11.01 Warranty of Services**

a) *Definitions:* "Acceptance" as used in this Contract, means the act of an authorized representative of the City by which the City assumes for itself, approves specific services, as partial or complete performance of the contract.

"Correction" as used in this clause, means the elimination of a defect.

b) Notwithstanding inspection and acceptance by the City or any provision concerning the conclusiveness thereof, the Contractor warrants that all services performed under this contract will, at the time of acceptance, be free from defects in workmanship and conform to the requirements of this contract. The City shall give written notice of any defect or nonconformance to the Contractor within a one-year period from the date of acceptance by the City. This notice shall state either (1) that the Contractor shall correct or re-perform any defective or non-confirming services at no additional cost to the City, or (2) that the City does not require correction or re-performance.

c) If the Contractor is required to correct or re-perform, it shall be at no cost to the City, and any services corrected or re-performed by the Contractor shall be subject to this clause to the same extent as work initially performed. If the Contractor fails or refuses to correct or re-perform, the City may, by contract or otherwise correct or replace with similar services and charge to the Contractor the cost occasioned to the City thereby, or make an equitable adjustment in the contract price.

- B.11.02 Contractor shall observe the highest standards of diligence and care in the performance of repair services and shall meticulously follow the standards and procedures required by the equipment manufacturer.
- B.11.03 The Contractor further warrants that all service and replacement parts it provides shall be in strict compliance with all applicable regulations.
- B.11.04 A minimum full warranty of 12 months is required upon completion of repair services. The warranty period shall begin after satisfactory four-hours test run and the day the City officially accepts the repaired unit.

- B.11.05 During the warranty period ALL related work shall be started by Contractor within twenty-four (24) hours after notification and shall be completed within fifteen (15) days. If the unit undergoing warranty work is out of service more than fifteen (15) days over the twelve (12) month warranty period, the warranty period shall extend by the number of days the unit has been out of service for warranty repair.
- B.11.06 During the warranty period ALL failed units shall be re-repaired at Contractor's expense if failure occurs under normal operating conditions or if the failure is due to faulty parts or negligence of the Contractor.
- B.11.07 It is understood that City must give Contractor free access to equipment for removal and reinstallation. Repair or replacement of such goods or services to meet the warranties shall constitute City's exclusive remedy under this Agreement. THE FOREGOING IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES WHATSOEVER, EXPRESS, IMPLIED AND STATUTORY, INCLUDING WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. The warranty specified herein shall apply to this Agreement, but it is specifically understood that the products sold hereunder are not warranted for operation with erosive or corrosive fluids or those which tend to buildup with the product. No product or part shall be deemed to be defective by reason of failure to resist erosive or corrosive action of any fluid and city shall have no claim whatsoever against Contractor therefore nor for problems resulting from buildup of material within the unit. The foregoing is Contractor's only obligation and City's exclusive remedy for breach of warranty. In no event shall Contractor be liable in contract, in tort, in strict liability or otherwise for any special, indirect, incidental or consequential damages, including, but not limited to, loss of anticipated profits or revenues, loss of use, non-operation or increased expense of operation of equipment, or cost of capita.

## **B.12 INVOICES**

Contractor shall submit invoices for payment in triplicate (one original and two copies) that are on Contractor's company stationary with the original signed by an authorized agent of the company. ALL SUPPORT DOCUMENTS SHALL BE ORIGINAL. The invoice number shall not be duplicated during the term of the contract periods. Each invoice shall include the following information:

- B.12.01 City Contractor Number, City Ordinance Number, City Release Number, and Contractor's Job Number.
- B.12.02 Contractor's Job Number and Contract year shall appear clearly on all time sheets [showing hours worked, break(s) and lunch time], invoices, and suppliers' invoices.
- B.12.03 Contractor's name and address and where the service was performed.
- B.12.04 City equipment EI Number, and City Work Order Number.
- B.12.05 City Facility Number and address where equipment had been prior to repair service.
- B.12.06 City Facility where equipment was installed/delivered after completion of repair.
- B.12.07 Detailed description of services rendered.

- B.12.08 Description of Parts or Components repaired or replaced. Provide Part Numbers, listing before and after discount. If Parts are OEM reconditioned, the costs to recondition Parts must be listed as well as the cost of new OEM replacement Parts.
- B.12.09 Subcontractors' invoices with detailed description of cost of work performed.
- B.12.10 City delivery and pickup tickets.
- B.12.11 Subtotal costs for Parts and Labor hours separately.
- B.12.12 Shop Teardown and Recommended Repair form, Equipment Release Authorization form, Recommended Repair Estimate form, Field Acceptance Tests form and Progress and Status Report form shall be submitted.
- B.12.13 Total invoice costs of the job.

All unit prices for labor and parts shall be easily identified against the quoted contract pricing.

Mail invoices to Accounts Payable:  
City of Houston, Accounts Payable  
P.O. Box 61449  
Houston, Texas 77208-1449.

**B.13 ADDITIONS & DELETIONS:**

The City by written notice from the City Purchasing Agent to the Contractor, at anytime during the term of this contract, may add or delete like or similar equipment and/or services to the list of equipment and/or services to be performed. Any such written notice shall take effect on the date stated in the notice from the City. Equipment and/or services added will be subject to the contract services and charges or rates as an item already specified in the fee schedule. In the event the additional equipment and/or service is not identical to any item already under contract, the charges therefore will then be the Contractor's prevailing charges or rates for the equipment and/or services classified in the fee schedule.

**B.14 Minimum Wage:**

14.01 Contractor shall pay all employees the minimum prevailing wage as established by the U. S. Department of Labor or **\$6.15** per hour, whichever is greater, while working under this Contract.

14.02 If, during the term of this agreement, there is legislation enacted regarding an increase or increases in the minimum wage law, Contractor may submit a request (s) for increase in the Contract Fees to the City Purchasing Agent for consideration, provided such request is accompanied by documentation as requested by the City Purchasing Agent verifying that only Contractor's employees' salaries\* were increased accordingly. The City Purchasing Agent shall consult with the Director before responding to the request.

\*Subject to the minimum wage law but not already at the new minimum wage level.

**B.19.0**

**ESTIMATED QUANTITIES NOT GUARANTEED**

The estimated quantities specified herein are not a guarantee of actual quantities, as the City does not guarantee any particular quantity of blower replacement parts and repair services during the term of this contract. The quantities may vary depending upon the actual needs of the user Department. The quantities specified herein are good faith estimates of usage during the term of this contract. Therefore, the City shall not be liable for any contractual agreements/obligations the Contractor enters into based on the City purchasing/requiring all the quantities specified herein.

**EXHIBIT "A"**

**DEFINITIONS**

As used in this Agreement, the following terms have the meanings set out below:

"Additional Services" shall mean other services to repair systems associated with the submersible pump, not otherwise described in this specification, to bring the equipment to the working conditions agreeable to the Director and Contractor.

"Agreement" means this contract between the Parties, including all exhibits, change orders, and any written amendments authorized by City Council and Contractor.

"Blower Groups" means the blowers for the purpose of this contract are grouped such as to represent the manufacturer and the size of the units (RR for Dresser-Roots Rotary, RS for Dresser-Roots Single-Stage, HM for Hoffman Multi-Stage, and LM for Lamson Multi-Stage). A spreadsheet listing of the existing blowers at the City of Houston Wastewater facilities is included in this document.

<u>Group</u>	<u>Blower Manufacturer: Type of Blower</u>	<u>Size of the drive Horsepower</u>
RR1	Dresser-Roots: Rotary	< 100
RR2	Dresser-Roots: Rotary	100 to <200
RR3	Dresser-Roots: Rotary	200 to <300
RR4	Dresser-Roots: Rotary	300 to 600
RS1	Dresser-Roots: Single-Stage Centrifugal	< 300
RS2	Dresser-Roots: Single-Stage Centrifugal	300 to <500
RS3	Dresser-Roots: Single-Stage Centrifugal	500 to 1000
RS4	Dresser-Roots: Single-Stage Centrifugal	1500
HM1	Hoffman: Multi-Stage Centrifugal	< 300
HM2	Hoffman: Multi-Stage Centrifugal	300 to <500
HM3	Hoffman: Centrifugal	500 to 1000
LM1	Lamson: Multi-Stage Centrifugal	< 100
LM2	Lamson: Multi-Stage Centrifugal	100 to <200
LM3	Lamson: Multi-Stage Centrifugal	200 to <300
LM4	Lamson: Multi-Stage Centrifugal	300 to 500

"City" is defined in the preamble of this Agreement and includes its successors and assigns.

"City of Houston Normal Business Hours" shall mean 8:00 a.m. to 5:00 p.m., Monday to Friday, except on days which are considered City holidays.

"City Purchasing Agent" is defined as the person or duly authorized successor, authorized in writing to act for the City. The term includes, except as otherwise provided in this Contract, the authorized representative of the City Purchasing Agent acting within the limits of delegated authority.

"Contract Administrator" means the representative of the Appropriate Department who is responsible for the administration for the Contract.

“Contract Award Notice” means the official notification substantiated by the Notice to Proceed issued by the City Purchasing Agent to the Contractor.

“Contract Charges” means charges that accrue during a given month as defined in Article III.

“Contract Term” is defined in Article IV.

“Contractor” is defined in the preamble of this Agreement and includes its successors and assigns.

“Contractor’s Facility” shall mean place of business of the Contractor where the Contractor performs repairs of equipment and machinery for other entities, specifically where the Contractor plans to repair City of Houston motors of the model and size described in these specifications. The facility shall be equipped with the needed overhead/jib crane(s), lathe(s), drill(s), ovens, pressure washing machine, meggers, coil testers, balancing machine, paint booth, hydraulic press (es), and testing equipment to do the necessary repair/replacement work for the largest motor in the group. The facility shall be clean, free from dirt and dust, to prevent contamination and damage during assembly of the motors and installation of bearings and gears.

“Contractor’s Standard Business Hours” shall mean the daily eight (8) hour period Monday through Friday, which the contractor has established as their normal business day.

“Contract Technical Representative” (CTR) shall mean the representative of the Director of the Appropriate Department assigned to administer the day-to-day activities of the Contract.

“Countersignature Date” means the date this agreement is countersigned by the City Controller.

“Director” means the Director of the Appropriate Department, or the person he or she designates.

“Effective Date” is defined as date contract is countersigned by the City Controller.

“Emergency Labor Rate “(ELR) shall mean the contractor’s charge for labor for unscheduled, immediate, and continuous repair work which shall be carried out until the repair of the unit is completed. UDR must authorize all emergency works.

“Equipment Inventory (EI) Number” shall mean the unique, cradle-to-grave number called Equipment Inventory (EI) Number used by (MMS) to identify each piece of equipment.

“(EI) Tag” shall mean a metallic strip, embossed with the equipment inventory number (EI #), attached to each piece of equipment

“Governing Body” means the Mayor and City Council of the City of Houston.

“Maintenance Management System” (MMS) shall mean a computerized database to manage work order process, and maintains historical data about performance and repair of equipment at the Water Production and Wastewater Operations branches of the Utilities Division, City of Houston.

“Non-repairable Shop Cost” shall mean the cost amount that the contractor can bill the City for the teardown, inspection, testing, and work scope/estimate preparation when the UDR determines that the motor is not to be repaired (Non-Repairable).

“Non-Destructive Testing” (NDT) shall mean inspection to detect cracks and discontinuities by

Magnetic Particle Methods, Penetrant Methods or any other Methods as needed and shall be performed by an NDT Level III Certified Technician. The Certification shall be in accordance to the latest Recommended Practices of the American Society for Non-Destructive Testing.

“Notice to Proceed” means a written communication from the City Purchasing Agent to Contractor instructing Contractor to begin performance.

“Other Repair Methods” shall mean any method of repair other than those prescribed in the Bid Form. These “other repair methods” must be authorized in writing by the equipment manufacturer and be approved by the Director.

“Overhaul and Repair at Contractor’s Facility” (Overhaul-Repair) shall mean that the contractor shall inspect the all components of the blower unit at Contractor’s facility, cleans all parts, measure and record dimensions of components/clearances and bring them to OEM standards. The Contractor shall dynamically balance rotating parts individually and as assembled, re-assemble. After total re-assembly of the blower, the Contractor shall paint all of the external surfaces (excluding the blower shaft).

“Overtime Labor Rate” (OLR) shall mean the contractor’s charge for labor for work performed after contractor’s Standard Business Hours. UDR must authorize all overtime works.

“Parties” mean all the entities set out in the Preamble who are bound by this Agreement.

“Preventive Maintenance (PM)” shall mean a program which mission is to extend the life of equipment and detect critical wear of equipment. PM shall accomplish this via the performance of a series of tasks at variable frequencies (monthly, quarterly, or annually) before the equipment fails or breaks down.

“Predictive Maintenance (PdM)” shall mean a program which mission is to initiate remedies before equipment failures thus extending the life of equipment and preventing critical equipment wear. PdM shall accomplish this via the performance of field inspections (monthly, quarterly, or annually) using high technology diagnostic tools and programs that monitor oil, bearing, and vibration analysis trends in equipment operation. Monthly testing and reporting shall establish the priorities that determine the severity of a PdM problem with a machine and the urgency in which maintenance actions shall take place.

“Repair at City of Houston Facilities” (Field-Repair) shall mean that the contractor shall inspect the blower unit and its accessories at City location, repair, and replace parts to bring the unit t a fail-safe and working condition. The unit shall be put into operation, tested, and all status points recorded including, but not limited to, the vibration in axial, horizontal, vertical planes of the bearings of the drive and the blower.

“Standard Labor Rate “(SLR) shall mean the contractor’s charge for labor during contractor’s Standard Business Hours.

**CITY OF HOUSTON  
PUBLIC WORKS & ENGINEERING DEPARTMENT, WASTEWATER OPERATIONS  
AERATION BLOWERS AT WASTEWATER TREATMENT PLANTS**

**EQUIPMENT LIST**

**BLOWER**

LOCATION	FN	EI #	MANUF.	TYPE	SIZE	CFM	GROUP	MODEL #	SERIAL #	BLR #	EI #	MANUFACTURER	SERIAL #	HP	VOLT	RPM
69TH WWTP	400	58214	Roots Dresser	RotaryLobe	20x26	RR4	RAS WHISPAIR	42893	58215	General Electric	AT8423369	500	2300	590		
69TH WWTP	400	58218	Roots Dresser	RotaryLobe	20x26	RR4	RAS WHISPAIR	42894	58219	General Electric	AT8423370	500	2300	590		
69TH WWTP	400	58222	Roots Dresser	RotaryLobe	20x26	RR4	RAS WHISPAIR	42895	58223	General Electric	AT8423371	500	2300	590		
69TH WWTP	400	58226	Roots Dresser	RotaryLobe	20x26	RR4	RAS WHISPAIR	42896	58227	General Electric	AT8423372	500	2300	590		
69TH WWTP	400	58230	Roots Dresser	RotaryLobe	20x26	RR4	RAS WHISPAIR	42897	58231	General Electric	AT8423373	500	2300	590		
69TH WWTP	400	58234	Roots Dresser	RotaryLobe	20x26	RR4	RAS WHISPAIR	42898	58235	General Electric	AT8423374	500	2300	590		
69TH WWTP	400	58238	Roots Dresser	RotaryLobe	20x26	RR4	RAS WHISPAIR	42899	58239	General Electric	AT8423375	500	2300	590		
69TH WWTP	400	58242	Roots Dresser	RotaryLobe	20x26	RR4	RAS WHISPAIR	42706	58243	General Electric	AT8423376	500	2300	590		
69TH WWTP	400	58157	Lamson	Centrifugal	6	LM1	557-5-2-AD	950379	35150	Reliance		40	460	3560		
69TH WWTP	400	58147	Lamson	Centrifugal	6	LM1	557-5-2-AD	950380	55148	Reliance		40	460	3560		
ALMEDA	006	61950	Roots Dresser	RotaryLobe	20x40	RR4	RAS WHISPAIR	40608	61949	General Electric	DR8409370	460	2300	590		
ALMEDA	006	61952	Roots Dresser	RotaryLobe	20x40	RR4	RAS WHISPAIR	40607	61951	General Electric	DR8409372	460	2300	590		
ALMEDA	006	61956	Roots Dresser	RotaryLobe	20x40	RR4	RAS WHISPAIR	40609	61953	General Electric	DR8409368	460	2300	590		
ALMEDA	006	61957	Roots Dresser	RotaryLobe	20x40	RR4	RAS WHISPAIR	40610	61955	General Electric	DR8409371	460	2300	590		
ALMEDA	006	61960	Roots Dresser	RotaryLobe	20x40	RR4	RAS WHISPAIR	94124J121	61958	General Electric	VKH283001800	450	2300	590		
ALMEDA	006	61960	Roots Dresser	RotaryLobe	20x40	RR4	RAS WHISPAIR	94124J122	61958	General Electric	VKH283001800	450	2300	590		
ALMEDA	006		Roots Dresser	RotaryLobe	20x40	RR4	RAS WHISPAIR	36129								
ALMEDA	006		Roots Dresser	RotaryLobe	10x16	RR1		U47545	82076	Marathon		50	230/460	1145		
ALMEDA	006		Roots Dresser	RotaryLobe	10x16	RR1		28534	82074	Toshiba	80241191	50	230/460	1175		
ALMEDA	006	62127	Lamson	Centrifugal	6x6	LM1	518-0-8-AD	800851	62126	Reliance	P32G-3220-08-Y	50	460	3545		
ALMEDA	006	62125	Lamson	Centrifugal	6x6	LM1	558-8-0-AD	760660	62124	Pacemaker	6117188002	75	460	3660		
Beltway	242		Lamson	Centrifugal		LM2	None	791154		Toshiba	80920327	300	2300/4160	3540		
Beltway	242		Lamson	Centrifugal		LM4	None	791158		Toshiba	F3002VLG3JC	300	2300/4160	3540		
Beltway	242		Hoffman	Centrifugal	24x20	HM2	79104B1	0281066								
Beltway	242		Lamson	Centrifugal		LM4	None	751161		Toshiba	0853035	300	2300/4160			

**MOTOR**

**CITY OF HOUSTON  
PUBLIC WORKS & ENGINEERING DEPARTMENT, WASTEWATER OPERATIONS  
AERATION BLOWERS AT WASTEWATER TREATMENT PLANTS**

**EQUIPMENT LIST**

**BLOWER**

LOCATION	FN	EI #	MANUF.	TYPE	SIZE	CFM	GROUP	MODEL #	SERIAL #	BLR #	EI #	MANUFACTURER	SERIAL #	HP	VOLT	RPM
Beltway	242		Hoffman	Centrifugal	24x20		HM3	79103B1	1081106	4		General Dynamics	6AA8000A1	1000	4160	
Beltway	242		Hoffman	Centrifugal	24x20		HM3	79103B1	1081107	5		General Dynamics	6AA8000A2	1000	4160	
Cedar Bayou	244		Lamson	Centrifugal	12x12		LM3	1216-6-0-AD	840431	2		Reliance	1MOF14185-G3-OK	250	460	
Cedar Bayou	244		Lamson	Centrifugal	12x12		LM3	1216-6-0-AD	840450	3		Reliance	1MOF14185-G1-OK	250	460	
Cedar Bayou	244		Lamson	Centrifugal	12x12		LM3	1216-6-0-AD	840438	1		Sytek/Alsay	1M014185G20K	250	460	
Cedar Bayou	244		Lamson	Centrifugal	12x12		LM2	1216-6-0-AD	790492	4		Reliance	1LA044525E42C	150	460	
Cedar Bayou	244		Lamson	Centrifugal	12x12		LM2	1216-6-0-AD	790495	5		Reliance	1LA044525E42C	150	460	
Chocolate Bayou	039	61689	Roots	RotaryLobe	20x40		RR4	RAS WHISPAIR	38793	2		General Electric	JMB405343	500	2300	590
Chocolate Bayou	039	61687	Roots	RotaryLobe	20x40		RR4	RAS WHISPAIR	38794	1	61686	General Electric	JMB405342	500	2300	590
Chocolate Bayou	039		Roots	RotaryLobe	20x40		RR4	RAS	28557	3		Fairbanks Morse	502549R3	450	2300	593
Clinton Park	040		Roots/Dresser	RotaryLobe	12x20		RR2	RAS WHISPAIR	46842	2		Toshiba	70736957	150	230/460	
Clinton Park	040		Roots/Dresser	RotaryLobe	12x20		RR2	RAS WHISPAIR	46491	3		US Electric	N07M04500299C-01	150	230/460	
Clinton Park	040		Roots/Dresser	RotaryLobe	12x20		RR2	RAS WHISPAIR	46841	1		Toshiba	70737024	150	230/460	
Easthaven	059		Lamson	Centrifugal	8x8		LM2	NONE	870635	3		Reliance	IMLF 37000-C1-PP	150	460	3570
Easthaven	059		Hoffman	Centrifugal	8x8		HM1	38407A	117092	1		General Electric	LM453028	150	460	3560
Easthaven	059		Lamson	Centrifugal	8x8		LM2	NONE	870637	4		Reliance	1MOF26754-C1-PN	150	460	3570
Easthaven	059		Hoffman	Centrifugal	8x8		HM1	74106A4	1284038	2		Reliance				
Forest Cove	487		Lamson	Centrifugal			LM2		800143	4		Reliance	P40618F-64-OE	125	230/460	3545
Forest Cove	487		Lamson	Centrifugal			LM2		800142	3		Siemens Allis	1-5103-19875-3-1	125	230/460	3555
Forest Cove	487		Hoffman	Centrifugal			HM1		96927	1		Teco		60	230/460	3550
Forest Cove	487		Hoffman	Centrifugal			HM1		96928	2		Teco		60	230/460	3550
FWSD #23	083		Roots/Dresser	RotaryLobe	14x20		RR3	RAS WHISPAIR	51243-RP6841			Siemens-Allis	3-5103-LRWW10826	200	460	1785
FWSD #23	083		Roots/Dresser	RotaryLobe	14x20		RR3	RAS WHISPAIR	51241-RP684			Siemens-Allis	3-5103-LR10826-1	200	460	1785
FWSD #23	083		Roots/Dresser	RotaryLobe	10x16		RR2	RAS WHISPAIR	51242	2		Siemens-Allis	1-5103-LR12375-1	100	460	1770
FWSD #23	083		Roots/Dresser	RotaryLobe	14x20		RR3	RAS WHISPAIR	51245	45		Siemens-Allis	7-5103-61075-1-1	200	460	1770

**MOTOR**

**CITY OF HOUSTON  
PUBLIC WORKS & ENGINEERING DEPARTMENT, WASTEWATER OPERATIONS  
AERATION BLOWERS AT WASTEWATER TREATMENT PLANTS**

**EQUIPMENT LIST**

BLOWER										MOTOR									
LOCATION	FN	EI #	MANUF.	TYPE	SIZE	CFM	GROUP	MODEL #	SERIAL #	BLR #	EI #	MANUFACTURER	SERIAL #	HP	VOLT	RPM			
FWSD #23	083		Roots/Dresser	RotaryLobe	14x20		RR3	RAS WHISPAIR	51240-RP683			Siemens-Allis	3-3103-LR10826-1	200	460	1785			
FWSD #23	083		Roots/Dresser	RotaryLobe	14x20		RR3	RAS WHISPAIR	51244	1		Siemens-Allis	7-5103-62160-1-1	200	460	1770			
Greenridge	240	61743	Hoffman	Centrifugal	14x12		HM1	75105A1	0875028	1	61742	General Electric	CM122024	200	460	3555			
Greenridge	240		Hoffman	Centrifugal	14x12		HM1	25105A1	0875027	2	61744	General Electric	CM122025	200	460	3555			
Greenridge	240	61638	Lamson	Centrifugal	12x12		LM3	NNP	791652	3		Spartan	6M33842001	200	460	3565			
Gulfmeadows *	097		Roots	RotaryLobe	12x20		RR2	VJ RAS WHISPAIR	33334	2		Allis-Chalmers	1-5103-26294-1-2	125	440	1775			
Gulfmeadows *	097		Roots	RotaryLobe	12x20		RR2	VJ RAS WHISPAIR	33331	1		Toshiba	50344385	125	230/460	1760			
Gulfmeadows *	097		Hoffman	Centrifugal	8x8		HM1	NNP	1284045	3		Reliance	05MAH04629A1ZK	125	460	3570			
Homestead	107		Lamson	Centrifugal	14x12		LM4	1405-1-0-0-4-0-0-AD	871026	2		Siemens-Allis	7-5141-61212-1-1	300	460	3560			
Homestead	107	61909	Hoffman	Centrifugal	12x12		HM1	75106A1	274144	1	61910	Allis Chalmers	51-326-615	150	460	3550			
Homestead	107	61909	Hoffman	Centrifugal	12x12		HM1	75106A1	274144	3	61910	Allis Chalmers	51-326-615	150	460	3550			
Hunterwood	482		Lamson	Centrifugal			LM1	518-0-8-AD	790407	1		Pacemaker		40	230/460				
Hunterwood	482		Lamson	Centrifugal			LM1	518-0-8-AD	790408	2		Pacemaker		40	230/460				
Imperial Valley	268		Lamson	Centrifugal	8x8		LM2	857-5-2-AD	811763	3		Reliance	1MQFQ2075-62-WG	125	460				
Imperial Valley	268		Lamson	Centrifugal	8x8		LM2	857-5-2-AD	811789	1		Pacemaker	59646	125	460	3560			
Imperial Valley	268		Lamson	Centrifugal	8x8		LM2	857-5-2-AD	811790	2		Reliance	1HOF02075	125	460	3545			
Imperial Valley	268		Lamson	Centrifugal	6x6		LM1	4207A	1074090	7		C.R.N.	J1225307	50	460	3550			
Imperial Valley	268		Lamson	Centrifugal	8x8		LM2	857-5-2-AD	811760	4		Reliance	1MQFQ2075-G1-WG	125	460	3545			
Imperial Valley	268		Lamson	Centrifugal	6x6		LM1	4207A	67477	8		C.R.N.	J1225308	50	230/460	3550			
Imperial Valley	268		Lamson	Centrifugal	6x6		LM1	4207A	1074089	6		C.R.N.	J1225302	50	460	3550			
Imperial Valley	268		Lamson	Centrifugal	8x8		LM2	857-5-2-AD	811791	5		Reliance	1MQF02075-65-WG	125	460	3545			
Int. Airport	238		Roots	Centrifugal	24x24		RR4	IGC-V	HV-312	4		US Electric	R04P1900026R-1EW	350	4160	3575			
Int. Airport	238		Roots	Centrifugal	24x24		RR4	IGC-V	HV-314	3		US Electric	R05P1900017R-1EW	500	4160	1785			
Int. Airport	238		Roots	Centrifugal	24x24		RR4	IGC-V	HV-315	1		US Electric	R05P1900017R-3EW	500	4160	1785			
Int. Airport	238		Roots	Centrifugal	24x24		RR4	NO BLOWER	HV-313	2		US Electric	R05P1900017R-2EW	500	4160	1785			

CITY OF HOUSTON  
PUBLIC WORKS & ENGINEERING DEPARTMENT, WASTEWATER OPERATIONS  
AERATION BLOWERS AT WASTEWATER TREATMENT PLANTS

EQUIPMENT LIST

**BLOWER**

**MOTOR**

LOCATION	FN	EI #	MANUF.	TYPE	SIZE	CFM	GROUP	MODEL #	SERIAL #	BLR #	EI #	MANUFACTURER	SERIAL #	HP	VOLT	RPM
Keegans	250		Roots	RotaryLobe	14x24		RR4	O.F.R.	46770	811		Siemens-Allis	1-5112-52249-1-2	400	4160	1190/710
Keegans	250		Roots	Centrifugal	20		RS3	IGC-V	HV-276	304		Siemens-Allis	1-5115-52248-2-2	800	4160	1780
Keegans	250		Lamson	Centrifugal			LM1	X AIR	740199	2		US Motor	A942AW11W0273R0 34F	25	230/460	3520
Keegans	250		Roots	RotaryLobe	14x24		RR4	RAS WHISPAIR	46767	801		Siemens-Allis	1-5112-52249-2-3	400	4160	1185
Keegans	250		Roots	Centrifugal	16		RS2	IGC-V	HV-280	311		Siemens-Allis	1-5112-52248-1-1	400	4160	3570
Keegans	250		Roots	Centrifugal	20		RS3	IGC-V	HV-275	305		Siemens-Allis	1-5115-52248-2-4	800	4160	1780
Keegans	250		Roots	RotaryLobe	14x24		RR4	RAS WHISPAIR	46769	803		Siemens-Allis	1-5112-52249-2-1	400	4160	1185
Keegans	250		Roots	RotaryLobe	14x24		RR4	RAS WHISPAIR	46771	812		Siemens-Allis	1-5112-52249-1-1	400	4160	1190/710
Keegans	250		Roots	RotaryLobe	14x24		RR4	RAS WHISPAIR	46766	802		Siemens-Allis	1-5112-52249-2-4	400	4160	1185
Keegans	250		Roots	Centrifugal	20		RS3	IGC-V	HV-277	302		Siemens-Allis	1-5115-52248-2-3	800	4160	1780
Keegans	250		Lamson	Centrifugal			LM1	X AIR	740208	1		Baldor	1289C	25	230/460	3525
Keegans	250		Roots	Centrifugal	20		RS3	IGC-V	HV-274	301		Siemens-Allis	1-5115-52248-2-5	800	4160	1780
Keegans	250		Roots	Centrifugal	16		RS2	IGC-V	HV-279	312		Siemens-Allis	1-5112-52248-1-2	400	4160	
Keegans	250		Roots	RotaryLobe	14x24		RR4	RAS WHISPAIR	46768	804		Siemens-Allis	1-5112-52249-2-2	400	4160	1185
Keegans	250		Roots	Centrifugal	20		RS3	IGC-V	HV-278	303		Siemens-Allis	1-5115-52248-2-1	800	4160	1780
M.U.D # 123 *	223	101004	Lamson	Centrifugal	10x8		LM1	NONE	810855	4	101003	US Motors	R-8010-02-122-M	60	230/460	3535
M.U.D # 123 *	223	101008	Lamson	Centrifugal	10x8		LM2	NONE	790930	1	101007	Lincoln	2114529	100	230/460	3525
M.U.D # 123 *	223	101006	Hoffman	Centrifugal	10x8		HM1	74108A1	0677120	2	101005	Lincoln	1757976	100	230/460	3525
M.U.D # 123 *	223	101010	Lamson	Centrifugal	10x8		LM1	NONE	810854	3	101009	US Motors	R-0010-02-131-M	60	480	3535
M.U.D #048	451		Lamson	Centrifugal	8x8		LM2	816-5-1-AD	821273	1		Baldor	591-C	125	460	3550
M.U.D #048	451		Lamson	Centrifugal	8x8		LM2	816-5-0-1-0-0-AD	950269	2		Baldor	1090CW	125	460	3550
M.U.D #058	452		Lamson	Centrifugal	6x12		LM1	558-6-2-AD	850023	1		Reliance	1MOF16613-G1-XK	60	460	3550
M.U.D #058	452		Lamson	Centrifugal	6x12		LM1	558-6-2-AD	841331	2		Reliance	1MOF16613-G3-XK	60	460	3550
M.U.D #058	452		Lamson	Centrifugal	6x12		LM1	558-6-2-AD	841348	3		Reliance	1MOF16613-G1-XK	60	460	3550

**CITY OF HOUSTON  
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AERATION BLOWERS AT WASTEWATER TREATMENT PLANTS**

**EQUIPMENT LIST**

**BLOWER**

**MOTOR**

LOCATION	FN	EI #	MANUF.	TYPE	SIZE	CFM	GROUP	MODEL #	SERIAL #	BLR #	EI #	MANUFACTURER	SERIAL #	HP	VOLT	RPM
M.U.D #203	243		Hoffman	Centrifugal	10x12		HM1	74106A3	581031	2		US Electric	R-7043-01-146S	100	460	3555
M.U.D #203	243		Hoffman	Centrifugal	10x12		HM1	74106A3	581032	1		US Electric	9106279-273	100	460	3525
M.U.D #203	243		Hoffman	Centrifugal	10x12		HM1	74106A3	0581033	3		US Electric	9106279-273	100	460	3525
Metro	397		Lamson	Centrifugal	6x8		LM1	607-6-1-AD	781045	1		Pacemaker	CNRNP	75		
Metro	397		Lamson	Centrifugal	14"		LM4	1406-0-0-6-0-0-AD	821032	6	missing	Reliance	IMAF29045-G1-JUN	300	460	3565
Metro	397		Lamson	Centrifugal	12x14		LM3	1256-5-1-AD	821246	3		Reliance	IMLF8276-G1-YH	250	460	3550
Metro	397		Lamson	Centrifugal	6x8		LM1	607-6-1-AD	781044	2		Pacemaker	C.R.P.	75	460	3555
Metro	397		Lamson	Centrifugal	14x14		LM4	1406-0-0-6-0-0-AD	871048	5		Reliance	IMAF29045-G2-JUN	300	460	3565
Metro	397		Lamson	Centrifugal	12x14		LM3	1256-5-1-AD	821247	4		Reliance	IMLF8276-G2-YH	250	460	3550
Northbelt	252		Roots	Centrifugal	20x8		RS3	ICG-V	HV-395	1		Toshiba	AC42475-4	500	4160	1775
Northbelt	252		Roots	Centrifugal	20x8		RS3	ICG-V	HV-394	2		Toshiba	AC42475-5	500	4160	1775
Northbelt	252		Roots	Centrifugal	12x8		RS1	ICG-V	HV-391	5		Toshiba	AC42475-1	250	4160	3565
Northbelt	252		Roots	Centrifugal	20x8		RS3	ICG-V	HV-393	3		Toshiba	AC42475-3	500	4160	1775
Northbelt	252		Roots	Centrifugal	12x8		RS1	ICG-V	HV-392	4		Toshiba	AC42475-2	250	4160	3565
Northborough	285		Lamson	Centrifugal	14x16		LM1	1405-4-1-AD	84245	3		Marathon	19-029881/11	75	460	3670
Northborough	285		Lamson	Centrifugal	8x10		LM2	816-6-0-AD	780117	2		Pacemaker	8123243G02	125	460	3565
Northborough	285		Lamson	Centrifugal	8x14		LM2	816-6-0-AD	780119	1		Alsay Texas	8123243G02	125	460	3565
Northborough	285		Lamson	Centrifugal	14x16		LM1	1405-4-1-AD	800149	4		Marathon	19-03611-83-01	75	460	3570
Northeast	146		Roots/Dresser	Centrifugal	16x16		RS2	IGC-V	HV-272	1		Siemens-Allis	1-5110-52250-1-3	400	2300	3560
Northeast	146		Roots/Dresser	Centrifugal	16x16		RS2	IGC-V	HV-273	2		Siemens-Allis	1-5110-52250-1-2	400	2300	3560
Northeast	146		Roots/Dresser	Centrifugal	16x16		RS2	IGC-V	HV-271	3		Siemens-Allis	1-5110-52250-1-1	400	2300	3560
Northgate	270		Lamson	Centrifugal	12x18		LM3	1256-6-0-AD	850222	6		Marathon	09174230-318	250	460	3570
Northgate	270		Lamson	Centrifugal	12x18		LM2	1216-0-6-AD	791654	5		US Electric	F230-50-VOIT304R0334	150	460	3555
Northgate	270		Lamson	Centrifugal	12x18		LM3	1255-6-0-AD	791444	4		Marathon	09160380-973	250	460	3570
Northgate	270		Lamson	Centrifugal	12x18		LM2	1216-0-6-AD	731878	3		C.N.R.P.	UD767360	150	230/460	3560

**CITY OF HOUSTON  
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AERATION BLOWERS AT WASTEWATER TREATMENT PLANTS**

**EQUIPMENT LIST**

**BLOWER**

**MOTOR**

LOCATION	FN	EI #	MANUF.	TYPE	SIZE	CFM	GROUP	MODEL #	SERIAL #	BLR #	EI #	MANUFACTURER	SERIAL #	HP	VOLT	RPM
Northwest	145		Roots	RotaryLobe	20x42		RR4	RAS WHISPAIR	46207	7		Siemens-Allis	1-5115-51174-1-1	600	2300	712
Northwest	145		Roots	RotaryLobe	20x40		RR4	RAS-J	33069	5		General Electric	DR8409413	450	2300	590
Northwest	145		Roots	RotaryLobe	20x42		RR4	RAS WHISPAIR	46206	6		Siemens-Allis	1-5115-51174-1-3	600	2300	712
Northwest	145		Roots	RotaryLobe	20x40		RR4	RAS WHISPAIR	LR97-644	4		General Electric	DR8409412	450	2300	590
Northwest	145		Roots	RotaryLobe	20x40		RR4	RAS WHISPAIR	40611	Spare						
Northwest	145		Roots	RotaryLobe	20x40		RR4	RAS WHISPAIR	40613	3		General Electric	DR8409411	450	2300	590
Northwest	145		Roots	RotaryLobe	20x40		RR4	2042-JV	46208	8		Siemens-Allis	1-5115-51174-1-2	600	2300	
Park Ten	245		Roots/Dresser	RotaryLobe	14x25		RR3	RAS WHISPAIR	46348	3		Siemens-Allis	1-5139-51384-1-1	200	460	1760/890
Park Ten	245		Roots/Dresser	RotaryLobe	10x21		RR2	RAS WHISPAIR	41633	2		General Electric	AT052040	100	460	885
Park Ten	245		Roots/Dresser	RotaryLobe	10x21		RR2	RAS WHISPAIR	46909	1		General Electric	AT052041	100	460	885
Park Ten	245		Roots/Dresser	RotaryLobe	14x25		RR3	RAS WHISPAIR	46347	4		Siemens-Allis	1-5139-51384-1-2	200	460	1760/890
Sagemont	171		Lamson	Centrifugal	6x6		LM1	518-1-3-AD	800929	1		Reliance	N.P.N.R.	50	230/460	3545
Sagemont	171		Hoffman	Centrifugal	6x6		HM1	4207A	0778060	2		General Electric	5K326BL115	50	230/460	3555
Sagemont	171		Hoffman	Centrifugal	12x12		HM1	75106A1	0376105	1		Sterling	U4244507	200	230/460	3566
Sagemont	171		Hoffman	Centrifugal	12x12		HM1	75106A1	0376106	3		Sterling	U4244506	200	230/460	3566
Sagemont	171		Hoffman	Centrifugal	6x6		HM1	38307BI	127326	4		US Electric	P4183852	60	230/460	3540
Sagemont	171		Hoffman	Centrifugal	6x6		HM1	38307BI N.P.N.R.	6735	5		Toshiba	92308121	60	230/460	3540
Sagemont	171		Hoffman	Centrifugal	12x12		HM1	75106A1	0376104	4		Sterling	U4244508	200	230/460	3566
Sagemont	171		Hoffman	Centrifugal	12x12		HM1	75106A1 N.N.P.	61560	2		Sterling	U4244505	200	230/460	3566
Sagemont	171		Hoffman	Centrifugal	6x6		HM1	38308	117130	3		Toshiba	92308121	60	230/460	3530
SIMS BAYOU	183	59916	Roots Dresser	RotaryLobe	20x40		RR4	RAS WHISPAIR	38894	4	59908	Westinghouse	IS-71P512	450	2300	585
SIMS BAYOU	183	59917	Roots Dresser	RotaryLobe	20x40		RR4	RAS WHISPAIR	44368	5	59909	Westinghouse	IS-71P513	450	2300	585
SIMS BAYOU	183	59918	Roots Dresser	RotaryLobe	20x40		RR4	RAS WHISPAIR	34616	6	59910	General Dynamic	60101832A2	500	2300	590
SIMS BAYOU	183	59919	Roots Dresser	RotaryLobe	20x40		RR4	RAS WHISPAIR	34615	7	59911	General Dynamic	60101832A1	500	2300	590
SIMS BAYOU	183	59920	Roots Dresser	RotaryLobe	14x31		RR4	RAS WHISPAIR	38637	8	59912	Toshiba Corp	51147998M	300	2300	885

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**EQUIPMENT LIST**

**BLOWER**

**MOTOR**

LOCATION	FN	EI #	MANUF.	TYPE	SIZE	CFM	GROUP	MODEL #	SERIAL #	BLR #	EI #	MANUFACTURER	SERIAL #	HP	VOLT	RPM
SIMS BAYOU	183	59921	Roots Dresser	RotaryLobe	20x40		RR4	RAS WHISPAIR	46402	9	59913	Toshiba Corp	51147999M	500	2300	592
SIMS BAYOU	183	59922	Roots Dresser	RotaryLobe	20x40		RR4	RAS WHISPAIR	46404	10	59914	Toshiba Corp	51148000M	500	2300	592
SIMS BAYOU	183	59923	Roots Dresser	RotaryLobe	20x40		RR4	RAS WHISPAIR	46403	11	59915	Toshiba Corp	51148001M	500	2300	592
Southeast	189		Roots	RotaryLobe	12x20		RS1	RAS WHISPAIR		5		General Electric	CH172032	125	460	1780
Southeast	189		Roots	RotaryLobe	12x20		RR2	RAS WHISPAIR	46707	11		Premium Efficiency	P08N2400328R-6	125	460	1780
Southeast	189		Roots	RotaryLobe	12x20		RR2	RAS WHISPAIR	46702	6		General Electric	AHC82054	125	460	1780
Southeast	189		Roots	RotaryLobe	12x20		RR2	JV RAS		2		Westinghouse	7304	125	460	1775
Southeast	189		Roots	RotaryLobe	12x20		RR2	RAS WHISPAIR	46701	8		General Electric	AH-065020	125	460	1780
Southeast	189		Roots	RotaryLobe	12x20		RR2	JV RAS		3		Fairbanks Morse	502957R1	125	460	1760
Southeast	189		Roots	RotaryLobe	12x20		RR2	WHISPAIR	46712	3		Westinghouse	7304	125	460	1775
Southeast	189		Roots	RotaryLobe	12x20		RR2	RAS WHISPAIR	46706	7		Fairbanks Morse	503021R1	125	460	1760
Southeast	189		Roots	RotaryLobe	12x20		RR2	RAS WHISPAIR	46709	1		Premium Efficiency	P08N2400328R-3	125	460	1780
Southeast	189		Roots	RotaryLobe	12x20		RR2	RAS WHISPAIR	46705	12		Premium Efficiency	P08N2400328R-5	125	460	1780
Southeast	189		Roots	RotaryLobe	12x20		RR2	RAS WHISPAIR	46704	10		Premium Efficiency	P08N2400328R-1	125	460	1780
Southeast	189		Roots	RotaryLobe	12x20		RR2	JV RAS		4		Premium Efficiency	P08N2400328R-4	125	460	1780
Southeast	189		Roots	RotaryLobe	12x20		RR2	WHISPAIR	46711	4		General Electric	60100196A2	300	2300	590
SOUTHWEST	190		Roots Dresser	RotaryLobe	19x23		RR4	19x23	38837	3	59520	General Electric	60100196A3	300	2300	590
SOUTHWEST	190		Roots Dresser	RotaryLobe	19x23		RR4	19x23	29432	4	59623	General Electric	60100196A1	300	2300	590
SOUTHWEST	190		Roots Dresser	RotaryLobe	19x23		RR4	19x23 RAS	29433	5	59626	General Electric	60100196A1	300	2300	590
SOUTHWEST	190	57541	Roots Dresser	RotaryLobe	20x40		RR4	20x40 RAS	32739	6	57537	Louis Allis Co	269301080030M7	450	2300	590
SOUTHWEST	190	57540	Roots Dresser	RotaryLobe	20x40		RR4	20x40 RAS	32741	7	5736	Louis Allis Co		450	2300	590
SOUTHWEST	190	57539	Roots Dresser	RotaryLobe	20x40		RR4	20x40 RAS	32740	8	57535	Louis Allis Co	269301080020M7	450	2300	590
SOUTHWEST	190		Roots Dresser	RotaryLobe	20x40		RR4	20x40 RAS	32738	9	57534	Louis Allis Co	26931080040M70	450	2300	590
Tidwell Timbers	498		Lamson	Centrifugal			LM1	558-7-1-AD	881348	1		High Efficiency	8810052C	60	230/460	3535
Tidwell Timbers	498		Lamson	Centrifugal			LM1	558-7-1-AD	881360	2		High Efficiency	91606131	60	230/460	3535
TURKEY	201	61701	Roots	Centrifugal	16		RS2	IGC-V	HV-153	2	59697	Siemens-Allis	1-5141-50362-1-3	400	4160	3575

**CITY OF HOUSTON  
PUBLIC WORKS & ENGINEERING DEPARTMENT, WASTEWATER OPERATIONS  
AERATION BLOWERS AT WASTEWATER TREATMENT PLANTS**

**EQUIPMENT LIST**

**BLOWER**

**MOTOR**

LOCATION	FN	EI #	MANUF.	TYPE	SIZE	CFM	GROUP	MODEL #	SERIAL #	BLR #	EI #	MANUFACTURER	SERIAL #	HP	VOLT	RPM
W.C.I.D. #076			Lamson	Centrifugal			LM2	857-0-0-7-0-0-AD	960081	2		High Efficiency	95703164	100	230/460	3540
W.C.I.D. #076			Lamson	Centrifugal			LM2	857-0-0-7-0-0-AD	960082	1		High Efficiency	96X03052	100	230/460	3540
W.C.I.D. #111	279	61909	Hoffman	Centrifugal	12x12		HM1	75106A1	274144	4	61910	Allis Chalmers	51-326-615	150	460	3550
W.C.I.D. #111	279	51483	Roots	Centrifugal	16		RS2	IGC-V	HV-348	4 307	51420	Westinghouse	5102AA1	350	4160	3576
W.C.I.D. #111	279	61901	Roots	Centrifugal	20		RS3	IGC-V	HV-351	2 302	51480	Westinghouse	5102BA2	700	4160	1780
W.C.I.D. #111	279	61902	Roots	Centrifugal	20		RS3	IGC-V	HV-350	1 301	51479	Westinghouse	5102BA1	700	4160	1780
W.C.I.D. #111	279	61904	Hoffman	Centrifugal	12x12		HM1	75106A1	274145	1	61903	Allis Chalmers	51-326-615	150	460	3550
W.C.I.D. #111	279	61906	Hoffman	Centrifugal	12x12		HM1	75106A1	274142	2	61905	Allis Chalmers	51-326-615	150	460	3550
W.C.I.D. #111	279	51487	Roots	Centrifugal	16		RS2	IGC-V	HV-349	3 306	51433	Westinghouse	5102AA2	350	4160	3576
W.C.I.D. #111	279	61908	Hoffman	Centrifugal	12x12		HM1	75106A1	274143	3	61907	Allis Chalmers	51-326-615	150	460	3550
West District	237		Roots Dresser	RotaryLobe	18X27		RR3	RAS WHISPAIR	31228	1		General Dynamics	60100744A1	250	440	590
West District	237		Roots Dresser	RotaryLobe	18X27		RR3	RAS WHISPAIR	31229	2		General Dynamics	60100744A2	250	440	590
West District	237		Roots Dresser	RotaryLobe	18X30		RR4	RAS WHISPAIR	46072	3		General Dynamics	8428291	345	4160	590
West District	237		Roots Dresser	RotaryLobe	18X30		RR4	RAS WHISPAIR	46073	4		General Dynamics	8428292	345	4160	590
West District	237		Roots Dresser	RotaryLobe	20X40		RR4	RAS WHISPAIR	34658	5		General Dynamics	60101867A2	500	4160	590
West District	237		Roots Dresser	RotaryLobe	20X40		RR4	RAS WHISPAIR	34659	6		General Dynamics	60101867A1	500	4160	590
West District	237		Roots Dresser	RotaryLobe	20X40		RR4	RAS WHISPAIR	46070	7		General Electric	HY8428294	575	4160	590
West District	237		Roots Dresser	RotaryLobe	20X40		RR4	RAS WHISPAIR	46069	8		General Electric	HY8428296	575	4160	590
West District	237		Roots Dresser	RotaryLobe	20X40		RR4	RAS WHISPAIR	46068	9		General Electric	HY8428295	575	4160	590
West District	237		Roots Dresser	RotaryLobe	20X40		RR4	RAS WHISPAIR	46071	10		General Electric	HY8428297	575	4160	590
Westway	398		Lamson	Centrifugal	8X8		LM2	658-0-0-4-AD	P001417	1		Toshiba		100	450	3555
Westway	398		Lamson	Centrifugal	8X8		LM2	658-0-0-4-AD	P001418	2		Toshiba		100	460	3555
Westway	398		Lamson	Centrifugal	8X8		LM2	658-0-0-4-AD	P001419	3		Toshiba		100	460	3555
White Oak	274		Lamson	Centrifugal	14x14		LM3	SPGR	851430	3		Teco Induction	DA000396-1	250	460	3580
White Oak	274		Lamson	Centrifugal	14x14		LM3	SPGR	880723	1		Siemens	1LAD4492SE42C	250	460	3570

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**MOTOR**

LOCATION	FN	EI #	MANUF.	TYPE	SIZE	CFM	GROUP	MODEL #	SERIAL #	BLR #	EI #	MANUFACTURER	SERIAL #	HP	VOLT	RPM
White Oak	274		Lamson	Centrifugal	14x14		LM3	SPGR	851414	2		Lifeline Tee II	1144687	250	460	3560
Willow Brook	469		Lamson	Centrifugal	12X12		LM2	1256-00-2-4-4D	960349	1		Co-Master		150	460	3555
Willow Brook	469		Lamson	Centrifugal	12X12		LM2	1256-00-2-4-4D	960351	2		Co-Master		150	460	3555
Willow Brook	469		Lamson	Centrifugal	12X12		LM2	1256-00-2-4-4D	960350	3		Co-Master		150	460	3555