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2012-1015

I. PARTIES

A. Address

THIS AGREEMENT FOR HEATING, VENTILATING, AND AIR CONDITIONING SYSTEMS AND ASSOCIATED PLUMBING, ELECTRICAL AND CONTROL SYSTEMS ("HVAC") OPERATIONS AND MAINTENANCE FOR THE HOUSTON AIRPORT SYSTEM ("Agreement") at George Bush Intercontinental Airport/Houston ("IAH"), William P. Hobby Airport ("HOU"), and Ellington Field ("EFD") is made on the date of countersignature by the City Controller ("Effective Date") between the **CITY OF HOUSTON, TEXAS ("City")**, a home rule city, and **COMFORT SYSTEMS USA (SOUTH CENTRAL) ("Contractor")**, a corporation authorized to do 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:

<u>City</u>	<u>Contractor</u>
Director, Houston Airport System or Designee City of Houston P.O. Box 60106 Houston, Texas 77205-01061	Comfort Systems USA (South Central) 9745 Bent Oak Dr. Houston, Texas 77040-2689 Attention: Jody Vowell, President

The Parties agree as follows:

B. Table of Contents

This Agreement consists of the following sections:

TABLE OF CONTENTS

Page No.

I. PARTIES	1
A. Address	1
B. Table of Contents	1
C. Parts Incorporated	4
D. Controlling Parts	4
E. Signatures	5
II. DEFINITIONS	6
III. DUTIES OF CONTRACTOR	9
A. Scope of Services	9
B. Duty to Inspect	9
C. Invoicing	9
D. Payment of Subcontractors	10
E. Personnel of Contractor	10
F. RELEASE	10
G. INDEMNIFICATION	10
H. RELEASE AND INDEMNIFICATION-PATENT, COPYRIGHT, TRADEMARK, AND TRADE SECRET INFRINGEMENT	11
I. INDEMNIFICATION PROCEDURES	12
J. Insurance	12
K. Warranties	15
L. Performance Audit	15
M. Confidentiality	16
N. Use of Work Products	16
O. Licenses and Permits	17
P. Compliance with Laws	17
Q. Compliance with Equal Opportunity Ordinance	17
R. Minority and Women Business Enterprises	17
S. Performance Bond	17
T. Drug Abuse Detection and Deterrence	18
U. Environmental Laws	18
V. Airport Security and Badging	21
W. Conflicts of Interest	21
X. City's Right to Stop Work	21
IV. DUTIES OF CITY	22
A. Payment Terms	22
B. Submitted False Claims, Monetary Penalties	22
C. Taxes	22
D. Method of Payment - Disputed Payments	23
E. Limit of Appropriation	23
F. Changes	24
G. Access to Site	25
H. Exercise of Contract Responsibilities	25

V. TERM AND TERMINATION	25
A. Contract Term	25
B. Renewals	26
C. Termination for Convenience by City	26
D. Termination for Cause by City	26
E. Termination for Cause by Contractor	27
VI. MISCELLANEOUS.....	27
A. Independent Contractor	27
B. Force Majeure.....	27
C. Severability.....	28
D. Entire Agreement	28
E. Written Amendment.....	28
F. Applicable Laws	28
G. Notices.....	29
H. Captions.....	29
I. Non-Waiver	29
J. Inspections and Audits	29
K. Enforcement.....	29
L. Ambiguities	29
M. Survival.....	30
N. Publicity.....	30
O. Parties In Interest	30
P. Successors and Assigns.....	30
Q. Business Structure and Assignments	30
R. Claims By Contractor	30
S. Remedies Cumulative.....	33
T. Contractor Debt.....	33
U. Pay or Play	33
V. Title VI Assurances	34

EXHIBITS

- A. PERFORMANCE/WORK STATEMENT**
- B. FEE SCHEDULE**
- C. EQUAL EMPLOYMENT OPPORTUNITY**
- D. MWBE SUBCONTRACT TERMS**
- E. PERFORMANCE BOND**
- F. DRUG POLICY COMPLIANCE AGREEMENT**
- G. CERTIFICATION OF NO SAFETY IMPACT POSITIONS**

- H. **DRUG POLICY COMPLIANCE DECLARATION**
- I. **EQUIPMENT LIST**
- J. **ANNUAL MAINTENANCE SHUTDOWN PROCEDURES**
- K. **CORROSION TEST**
- L. **IAH GROUND WATER PUMPS**
- M. **INCLUSION/EXCLUSION FORM**
- N. **PROJECT 621 ANTICIPATED IAH EQUIPMENT LIST**

C. Parts Incorporated

All of the above-described sections and exhibits are incorporated into this Agreement.

D. Controlling Parts

If a conflict among the articles and exhibits occurs, the articles control over the exhibits.

E. Signatures

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

ATTEST/SEAL (if a corporation):
WITNESS (if not a corporation):

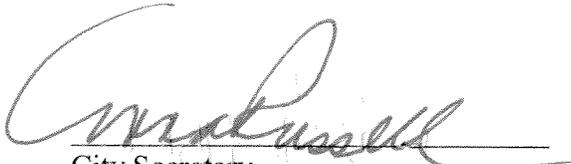
Comfort Systems USA (South Central), Inc
"Contractor"

By: 
Name: Diara Hearen
Title: Executive Assistant
Tax Identification No: 74-2185870

By: 
Name: Jody L. Vowell
Title: President

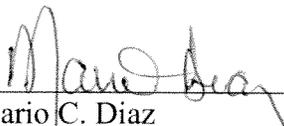
ATTEST/SEAL:

CITY OF HOUSTON, TEXAS
Signed by:


City Secretary

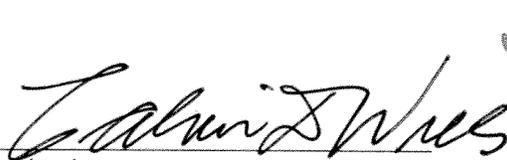

Mayor Madeline D. Parker

APPROVED:


Mario C. Diaz
Director, Houston Airport System

APPROVED:

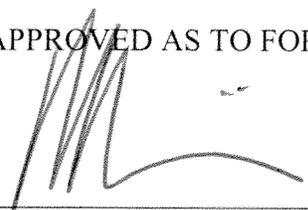
COUNTERSIGNED BY:


Purchasing Agent


City Controller CRB

APPROVED AS TO FORM:

DATE COUNTERSIGNED:


Sr. Assistant City Attorney
L.D. File No. 0041200236001

12-3-12

II. DEFINITIONS

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

"Acceptable" means that services, equipment, or performance, meet or exceed the requirements of this Agreement.

"Acceptance" shall be determined by the Director and occurs when the Director determines that the unit of Work specified under the Agreement is complete and acceptable.

"Acceptable Equivalent" means any equipment, part or product that complies with existing industry standards governing its manufacture or use, and that is a functional equivalent of any equipment, part, product or specification described herein, or, which functionally satisfies an approved, negotiated or specified use made a part hereof.

"Agreement" means the Agreement and written amendments authorized by City Council and Contractor or OSRs/change orders authorized by this Agreement between the City and Contractor whereby Contractor shall provide all specified Work in connection with the Agreement, in the manner provided by the Agreement.

"Air Operations Area (AOA)" means any area of the airport used or intended to be used for the landing, takeoff, or surface maneuvering of aircraft. An air operations area shall include such paved and unpaved areas that are used or intended to be used for unobstructed movement of aircraft in addition to its associated runway, taxi-way or apron.

"Airport(s)" means George Bush Intercontinental Airport/Houston (IAH), William P. Hobby Airport (HOU), and Ellington Airport (EFD).

"ASC" means the Airport Services Complex located at 4500 Will Clayton Parkway at IAH.

"Basic Services" means those services described in the Performance/Work Statement set forth in Exhibit "A."

"Business Days" means all days of a calendar year.

"CFM" means a unit of measure for discharged air in cubic feet per minute.

"City" is defined in the preamble.

"Contractor" is defined in the preamble.

"Core Competency" is defined as providing knowledge, ability, or expertise in specific areas of operations and maintenance of heating, ventilating, air conditioning (HVAC), associated plumbing, electrical, and control systems.

"DDC" means direct digital control for HVAC devices

"Director" means the Director of the Houston Airport System or his designee in writing. The

Agreement designates certain functions to be performed by the Director.

"DX" means direct expansion system that uses refrigerant instead of chilled water.

"Equipment" means all machinery, together with the necessary supplies for upkeep and maintenance, and also all tools and apparatus necessary for the proper and acceptable completion of the specified Work.

"First Class Condition" refers to the quality of systems, parts, equipment and related components and appurtenances including replacements ("elements"). It also refers to the condition of the wear and operation of the elements. When referring to the quality of the elements, First Class Condition means of a quality equal to or better than the elements as originally installed. When referring to the wear and operation of the elements, First Class Condition means a standard that is within the manufacturer's published tolerances for safe, reliable operation, or if no published tolerances, within generally accepted tolerances within the HVAC and equipment maintenance industry.

"Furnish" means to supply and deliver to the appropriate Airport site, ready for unloading, unpacking, assembly, installation, use, etc., as applicable in each instance, except as otherwise defined in greater detail.

"Houston Airport System (HAS)" means the property and facilities of the City of Houston Department of Aviation which include, but are not limited to, George Bush Intercontinental Airport/Houston (IAH), William P. Hobby Airport (HOU), Ellington Airport (EFD), and the Houston Airport System Administration Buildings.

"HVAC SYSTEMS" means heating, ventilating, air conditioning systems and all associated plumbing, electrical, and control systems.

"Maintenance Facilities" means the shop and office facilities the City provides to the Contractor as described in Section 6.6 of Exhibit "A." Such facilities are provided at IAH and HOU.

"Maintenance Service" means Preventive Maintenance (PM), Predictive Maintenance (PdM), Reliability Centered Maintenance (RCM) and Remedial Maintenance (RM).

"Major Equipment" means large mechanical and electrical machinery or apparatus including specifically electric and steam driven chillers, steam condensers, boilers, cooling towers, steam/hot water converters, deaerators, chilled and condenser water pumps within Central Plant systems, and related electrical switchboards and motor control centers, plus major parts of the above including, but not limited to, compressors, speed reducers and increasers, motors, heat exchangers, and related electrical switches and starters. For the purpose of providing Major Equipment Failure Insurance coverage pursuant to the terms of this Agreement, major equipment shall specifically exclude other mechanical and electrical machinery powered by motors of less than 100 horsepower, other heat exchangers and systems components, and appurtenances.

"Manufacturer" means the original manufacturer or producer of a part or component.

"Materials" means any substance specified for use in the accomplishment of the Work.

"Notice to Proceed" means a written communication from the Director to Contractor instructing Contractor to begin performance.

"OEM" means the Original Equipment Manufacturer.

"Other Service Request (OSR)" is the form used to request Other Work/Services within the general scope of this Agreement but not expressly set forth in Exhibit "A."

"Other Work/Services" means those services described in Performance/Statement of Work and Exhibit B – Fee Schedule as Other Work/Services and other services related to operations and maintenance services, other than Basic Services. Such services are only provided by Contractor upon the Director's written request.

"Preventive Maintenance (PM)" is any action performed on a time or run-hour based schedule that is designed to detect, preclude, or mitigate degradation of a component or system with the aim of sustaining or extending its useful life through controlling degradation to an acceptable level. PM includes proper inspections, proper lubrication, belts, filter changes, proper fastening procedures, determined by regularly scheduled work, etc. Preventive maintenance activities should be at least 95% of all planned and scheduled PMs shall be completed within the monthly schedule as described in Section 4.14.4.9.

"Predictive Maintenance (PdM)" – Predictive Maintenance (PdM) is a carefully planned system of machinery analysis and diagnostics. This includes measurements that detect the onset of system degradation, thereby allowing casual stressors to be eliminated or controlled prior to any significant deterioration in the component physical state. (PdM) provides machinery "health condition: information, which prompts timely, corrective action". The expected result: optimum machine productivity, extended machine life, and reduced repair costs.

"Provide" means furnish and install, complete, and ready for intended use, as applicable in each instance, except as otherwise defined in greater action.

"Reliability Centered Maintenance (RCM)" – The application of PdM and PM data to the preventive maintenance tasks. The process provides statistical method (s) of optimizing PM and PdM programs for the HVAC SYSTEMS in which the Contractor gathers data from the HVAC performance and uses this data for the future maintenance and /or recommended design changes to increase the probability that the HVAC will function in the required manner over their design life-cycle.

"Remedial Maintenance (RM)" means repair of equipment and systems with parts, materials, and labor to restore performance to the designed function in the event of any breakdown or stoppage of equipment or system where the equipment or system is unable to perform its designed function. RM includes repairs and replacement of related components, parts, and appurtenances that have failed, no longer perform reliably, or have worn beyond safe tolerances.

"Repair" means to restore to good or sound working condition.

"Response Time" means the maximum elapsed time in which Contractor must respond to an Emergency Service Request. The maximum elapsed time is measured from Contractor's receipt of an Emergency Service Request to Contractor's arrival at HOU or EFD as described in Sections 3.2.3 and 3.3.1 of Exhibit "A."

"**Routine**" means those services that do not require emergency condition.

"**SCM**" means Supply Chain Management Division located at 18600 Lee Rd., Humble TX. 77338

"**Statement of Work**" (**SOW**) is defined as the performance/work statement described in Exhibit "A."

"**Taxiway**" means the portion of the Air Operations Area of an Airport that has been designated by the HAS for movement of aircraft to and from the Airport's runways and aircraft parking areas.

"**VFD**" means Variable Frequency Drive. A system for controlling the rotational speed of an alternating current (AC) electric motor by controlling the frequency of the electrical power supplied to the motor.

"**Work**" means all services to be provided by the Contractor under this Agreement, specifically, without limitation, Exhibit "A".

III. DUTIES OF CONTRACTOR

A. Scope of Services

In consideration of the payment specified in this Agreement, Contractor shall provide all labor, supervision, parts, equipment, materials, tools, instruments, expendable items, supplies, reports, transportation, insurance, subcontracts, bonds, and incidentals necessary to perform the Basic Services and, if requested, Other Work/Services described in the Performance/Work Statement set forth in Exhibit "A". Contractor shall operate and maintain all the Equipment set forth in Exhibit "I" in a First Class Condition. Also as a part of Basic Services, Contractor shall perform an annual electrical and maintenance shut down as described in Exhibit "J" and test and monitor corrosion rates for the chilled water, condensate, and condenser water as specified in Exhibit "K". Contractor shall not be paid for travel time to and from the job site. Except as provided in Exhibit "A", Contractor shall operate and maintain the HVAC Systems on a 24-hours-per-day, 7-days-per-week, 365 days-per-year basis, including holidays.

B. Duty to Inspect

Contractor represents that it or its agent has inspected all sites affected by this Agreement and that it is not entitled to additional compensation for its failure to accurately account for all of the work required to be performed under this Agreement.

C. Invoicing

Contractor shall submit its invoices on forms approved in advance by the Director. Each invoice must be accompanied by copies of certified time sheets and any other support documents as may be requested by the Director. Each invoice Contractor submits must be in duplicate and each copy must include required support documents. Each invoice must be identified by the Contract name and Contractor number. All invoices are to be delivered or mailed to the following location:

The City of Houston
Houston Airport System

Accounts Payable Section
P.O. Box 60106
Houston, Texas 77205-0106

D. Payment of Subcontractors

Contractor shall make timely payments to all persons and entities supplying labor, materials, services, or equipment for the performance of this Agreement. CONTRACTOR SHALL DEFEND AND INDEMNIFY THE CITY FROM ANY CLAIMS OR LIABILITY ARISING OUT OF CONTRACTOR'S FAILURE TO MAKE THESE PAYMENTS. Contractor shall submit disputes relating to payment of MWBE subcontractors to arbitration in the same manner as any other disputes under the MWBE subcontract.

E. Personnel of Contractor

Contractor shall provide sufficient, fully qualified personnel to meet the performance requirements set forth in Exhibit "A". The Contractor shall designate an on-site Project Manager to act on behalf of Contractor who is authorized to make all decisions regarding the Work hereunder. Such Project Manager and any replacement Project Manager shall have a minimum of ten years project experience on similar HVAC systems. The Director may rely on any decisions made by the Project Manager as being decisions of the Contractor. Such Project Manager shall not be replaced by Contractor during the Term of this Agreement without the prior written permission of Director (subject to all employment laws) and the mutual agreement by the Director and Contractor of a replacement Project Manager who is satisfactory to the Director. Contractor shall replace any of its personnel or subcontractors, including the Project Manager or a subsequent replacement, whose work product is deemed unsatisfactory by the Director.

F. RELEASE

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

G. INDEMNIFICATION

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

- (1) CONTRACTOR'S AND/OR ITS AGENTS, EMPLOYEES, OFFICERS, DIRECTORS, CONTRACTORS, OR SUBCONTRACTORS (COLLECTIVELY IN NUMBERED PARAGRAPHS 1-3, "CONTRACTOR") ACTUAL OR ALLEGED NEGLIGENCE OR INTENTIONAL ACTS OR OMISSIONS;
- (2) THE CITY'S AND CONTRACTOR'S ACTUAL OR ALLEGED CONCURRENT NEGLIGENCE, WHETHER CONTRACTOR IS IMMUNE FROM LIABILITY OR NOT; AND
- (3) THE CITY'S AND CONTRACTOR'S ACTUAL OR ALLEGED STRICT PRODUCTS LIABILITY OR STRICT STATUTORY LIABILITY, WHETHER CONTRACTOR IS IMMUNE FROM LIABILITY OR NOT.

CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD THE CITY HARMLESS DURING THE TERM OF THIS AGREEMENT AND FOR FOUR YEARS AFTER THE AGREEMENT TERMINATES. CONTRACTOR'S INDEMNIFICATION IS LIMITED TO \$1,000,000 PER OCCURRENCE. CONTRACTOR SHALL NOT INDEMNIFY THE CITY FOR THE CITY'S SOLE NEGLIGENCE.

CONTRACTOR SHALL REQUIRE ALL OF ITS SUBCONTRACTORS (AND THEIR SUBCONTRACTORS) TO RELEASE AND INDEMNIFY THE CITY TO THE SAME EXTENT AND IN SUBSTANTIALLY THE SAME FORM AS ITS RELEASE AND INDEMNITY TO THE CITY.

H. RELEASE AND INDEMNIFICATION - PATENT, COPYRIGHT, TRADEMARK, AND TRADE SECRET INFRINGEMENT

CONTRACTOR AGREES TO AND SHALL RELEASE AND DEFEND, INDEMNIFY, AND HOLD HARMLESS THE CITY, ITS AGENTS, EMPLOYEES, OFFICERS, AND LEGAL REPRESENTATIVES (COLLECTIVELY THE "CITY") FROM ALL CLAIMS OR CAUSES OF ACTION BROUGHT AGAINST THE CITY BY ANY PARTY, INCLUDING CONTRACTOR, ALLEGING THAT THE CITY'S USE OF ANY EQUIPMENT, SOFTWARE, PROCESS, OR DOCUMENTS CONTRACTOR FURNISHES DURING THE TERM OF THIS AGREEMENT INFRINGES ON A PATENT, COPYRIGHT, OR TRADEMARK, OR MISAPPROPRIATES A TRADE SECRET. CONTRACTOR SHALL PAY ALL COSTS (INCLUDING, WITHOUT LIMITATION, ATTORNEYS FEES, COURT COSTS, AND ALL OTHER DEFENSE COSTS, AND INTEREST) AND DAMAGES AWARDED.

CONTRACTOR SHALL NOT SETTLE ANY CLAIM ON TERMS WHICH PREVENT THE CITY FROM USING THE EQUIPMENT, SOFTWARE, PROCESS, AND DOCUMENTS WITHOUT THE CITY'S PRIOR WRITTEN CONSENT.

WITHIN 60 DAYS AFTER BEING NOTIFIED OF THE CLAIM, CONTRACTOR SHALL, AT ITS OWN EXPENSE, EITHER (1) OBTAIN FOR THE CITY THE RIGHT TO CONTINUE USING THE EQUIPMENT, SOFTWARE, PROCESS, AND DOCUMENTS OR, (2) IF BOTH PARTIES AGREE, REPLACE OR MODIFY THEM WITH COMPATIBLE AND FUNCTIONALLY EQUIVALENT PRODUCTS. IF NONE OF THESE ALTERNATIVES IS REASONABLY AVAILABLE, THE CITY MAY RETURN THE EQUIPMENT, SOFTWARE, OR DOCUMENTS, OR DISCONTINUE THE PROCESS, AND CONTRACTOR SHALL REFUND THE PURCHASE PRICE.

I. INDEMNIFICATION PROCEDURES

- (1) Notice of Claims. If the City or Contractor 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 estop or prevent the City from later asserting a different basis for indemnification or a different amount of indemnified loss than that indicated in the initial notice. If the City does not provide this notice within the 10 day period, it does not waive any right to indemnification except to the extent that Contractor is prejudiced, suffers loss, or incurs expense because of the delay.

(2) Defense of Claims

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

J. Insurance

Contractor shall maintain in effect certain insurance coverage, which is described as follows:

- (1) Minimum Insurance Requirements. Contractor shall maintain the following insurance coverage in the following amounts:

_____ (Coverage)

Workers' Compensation

_____ (Limit of Liability)

Statutory for Workers' Compensation

Employer's Liability

Bodily Injury by accident \$500,000 (each accident)
Bodily Injury by Disease \$500,000 (policy limit)
Bodily Injury by Disease \$500,000 (each employee)

Commercial General Liability:
Including Broad Form Coverage,
Contractual Liability, Bodily and
Personal Injury, and Completed
Operations

Bodily Injury and Property
Damage, Combined Limits of
\$2,000,000 each Occurrence
and \$4,000,000 aggregate

Automobile Liability Insurance
(for vehicles Contractor
uses in performing under this
Agreement, including Employer's
Non-Owned and Hired Auto
Coverage)

\$1,000,000 combined single limit

Excess Coverage

\$10,000,000 each occurrence/combined aggregate in excess
of limits specified for Employer's Liability, Commercial
General Liability, and Automobile Liability

Defense costs are excluded from the face amount of the policy.
Aggregate Limits are per 12-month policy period
unless otherwise indicated.

- (2) Form of Policies. Insurance may be in one or more policies of insurance, the form of which is subject to approval by the Director. It is agreed, however, that nothing the Director does or fails to do with regard to insurance policies relieves Contractor from its duties to provide the required coverage and the Director's actions or inactions will never be construed as waiving the City's rights.
- (3) Issuers of Policies. The issuer of any policy (1) shall have a Certificate of Authority to transact insurance business in Texas or (2) shall be an eligible non-admitted insurer in the State of Texas and have a Best's rating of at least B+ and a Best's Financial Size Category of Class VI or better, according to the most current edition Best's Key Rating Guide.
- (4) Insured Parties. Each policy, except those for Workers' Compensation, and Employer's Liability, must name the City (and its officers, agents, and employees) as Additional Insured parties on the original policy and all renewals or replacements. The City's status as additional insured under Contractor's insurance does not extend to instances of sole negligence of the City unmixed with any fault of Contractor.
- (5) Deductibles. Contractor shall be responsible for and pay any claims or losses to the extent of any deductible amounts and waives any claim it may have for the same against the City, its officers, agents, or employees.
- (6) Cancellation. Contractor shall notify the Director in writing 30 days prior to any cancellation or reduction in coverage or limits to Contractor's insurance coverage. Within the 30 day period, Contractor shall provide other suitable policies in lieu of those about to be canceled or nonrenewed so as to maintain in effect the required coverage. If Contractor does not comply with this requirement, the Director, at his or her sole discretion, may:

- (i) immediately suspend Contractor from any further performance under this Agreement and begin procedures to terminate for default, or
 - (ii) purchase the required insurance with City funds and deduct the cost of the premiums from amounts due to Contractor under this Agreement.
- (7) Subrogation. Each policy must contain an endorsement to the effect that the issuer waives any claim or right of subrogation to recover against the City, its officers, agents, or employees.
- (8) Endorsement of Primary Insurance. Each policy, except Workers' Compensation must contain an endorsement that the policy is primary to any other insurance available to the Additional Insured with respect to claims arising under this Agreement.
- (9) Liability for Premium. Contractor is solely responsible for and shall pay all insurance premiums, and the City shall not be obligated to pay any premiums.
- (10) Subcontractors. Contractor shall require all subcontractors to carry insurance naming the City as an additional insured and meeting all of the above requirements except amount. The amount must be commensurate with the amount of the subcontract, but in no case less than \$500,000 per occurrence. Contractor shall provide copies of insurance certificates to the Director.
- (11) Proof of Insurance.
- (a) Prior to commencement of any Work under this Agreement, Contractor shall furnish the Director with Certificates of Insurance, along with an Affidavit from Contractor confirming that the Certificates accurately reflect the insurance coverage maintained. Additionally, Contractor shall furnish the Director with endorsements: (i) Waiver of Transfer rights of Recovery against Others, (ii) Additional Insured, (iii) Business Auto Extension, and (iv) Worker's Compensation Waiver of Transfer of Rights of Recovery against Others. If requested in writing by the Director, Contractor shall furnish the City with certified copies of Contractor's actual insurance policies.
 - (b) Contractor shall continuously and without interruption, maintain in force the required insurance coverages specified in this Section. If Contractor does not comply with this requirement, the Director, at his or her 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.

The City shall never waive or be estopped to assert its right to terminate this Agreement because of its acts or omissions regarding its review of insurance documents.

- (12) Other Insurance. If requested by the Director, Contractor shall furnish adequate evidence of Social Security and Unemployment Compensation Insurance, to the extent applicable to Contractor's operations under this Agreement.

K. Warranties

Contractor warrants that it shall perform all Work in a good and workmanlike manner meeting the standards of quality prevailing in Harris County, Texas, for work of this kind. 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, instruments, equipment, and goods it furnishes, Contractor warrants:

- (1) that all items are free of defects in title, design, 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 OEM'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),
- (4) that no items or their use infringe any patent, copyright, or other proprietary rights. In the event Contractor becomes aware of such an infringement, Contractor will replace the items that are the subject of the infringement with non-infringing items in a timely manner; and
- (5) that for one year from the date of any installation ("Warranty Period"), Contractor shall provide all parts, instruments, equipment, and goods required to complete all PM, RM, RCM, and PdM required under this Agreement at no cost to the City. This warranty is in addition to Contractor's obligation to provide Basic Services, and if requested, Other Work Services under this Agreement. When the manufacturer's warranty period for any parts, instruments, equipment, and goods is greater than 1 year, the longer period prevails.

Contractor shall manage and enforce on the City's behalf all manufacturer warranties issued before the Effective Date of this Agreement, during the Term of this Agreement, and any extensions. Contractor shall not be entitled to any additional compensation for the management and enforcement of these manufacturer warranties. If Contractor does not exhaust all remedies, including litigation, against a manufacturer who fails to honor all or a part of a warranty, it shall not receive additional compensation from the City for the labor and material costs it incurs to repair or replace the item that otherwise would have been under warranty.

Contractor further warrants that the operations and maintenance services performed by it or its subcontractors and the parts will be provided in a manner such that the HVAC Systems meet the performance standards of this Agreement, including without limitation, Section 27.0 in Exhibit "A". If Contractor fails to achieve the warranted performance standards set forth in Section 27.0 in Exhibit "A", payment under this Agreement shall be adjusted downward in accordance with Section 19.2 of Exhibit "A" hereto.

L. Performance Audit

- (1) At any time during the Term of this Agreement or any extensions, the Director, without notice to the Contractor and at HAS' expense, may provide for a third party performance audit. Contractor shall rectify any deficiencies in performance discovered by such audit for which Contractor is

responsible under this Agreement to the Director's satisfaction at no cost to the City within ten (10) days of receipt of a notice of any deficiency. Further, the Contractor shall provide the Director with a written explanation for such deficiency in performance and a plan to prevent future deficiencies within fifteen (15) days of receipt of such notice. Failure of the Contractor to timely rectify the deficiency or provide the written explanation and plan to the Director shall be grounds for termination for cause as provided in Section V.

- (2) At any time during the Term of this Agreement or any extensions, the Director, without notice to the Contractor, may conduct his own inspections of Contractor's work performance, equipment, inventory, logs and Work sites. Contractor shall rectify any deficiencies discovered by such inspection to the Director's satisfaction within ten (10) days of receipt of a notice of any such deficiency at no cost to the City if caused by the Contractor or its subcontractors.

M. Confidentiality

Contractor, its agents, employees, contractors, and subcontractors shall hold all City information, data, and documents (collectively, "the Information") that they receive, prepare, or to which they have access, in strictest confidence. Contractor, its agents, employees, contractors, and subcontractors shall not disclose, disseminate, or use the Information unless the Director authorizes it in writing. Contractor shall establish procedures to ensure confidentiality of the Information and to prevent its unauthorized use and disclosure. Contractor shall obtain written agreements from its agents, employees, contractors, and subcontractors who perform work under this Agreement, which bind them to the terms in this paragraph.

N. Use of Work Products and Ownership; Works for Hire

Any interest of Contractor or its subcontractors in drawings, plans, specifications, studies, reports, memoranda, computations sheets, data, software, or other documents prepared by Contractor or its subcontractors in connection with this Agreement is or shall become property of and shall be transmitted to the City. However, Contractor may retain and use copies for reference and as documentation of its experience and capabilities. City shall have the non-exclusive right to use or permit the use of all such data, software, related documentation, and papers and any ideas or methods represented thereby for the operation and maintenance of the HVAC Systems at any time without additional compensation to the Contractor. All materials to become part of the HVAC Systems including but not limited to, spare parts, equipment, expendables, and consumables inventory shall be and become property of the City upon delivery or upon being specially adapted for use in or as part of the HVAC System whichever occurs first. Contractor shall promptly furnish to City such bills of sale and other instruments as may be required by it, properly executed, acknowledged and delivered, assuring to it title to such materials, free from encumbrances and shall mark or otherwise identify all such materials as property of the City.

Any and all artwork, copy, posters, billboards, photographs, videotapes, audiotapes, systems designs, software, reports, diagrams, surveys, source codes or any other original works of authorship created by Contractor or its subcontractors in connection with the Works performed under this Agreement shall be works for hire as defined under Title 17 of the United States Code, as may be amended, and all copyrights in such works are the property of the City. In the event that it is determined that any works created by Contractor or its subcontractors under this Agreement are not works for hire under U.S. law, Contractor hereby assigns all copyrights to such works to the City. With the approval of the Director, Contractor may retain and use copies of such works for reference and as documentation of its experience and capabilities.

O. Licenses and Permits

Contractor shall obtain, maintain, and pay for all licenses, permits, and certificates including all professional licenses required by this Agreement, any statute, ordinance, rule, or regulation. This requirement includes, without limitation, certification of the on-site technicians. Contractor shall immediately notify the Director of any suspension, revocation, or other detrimental action against required licenses or certifications.

P. Compliance with Laws

Contractor shall comply with all applicable state and federal laws and regulations, including without limitation, the Americans with Disabilities Act of 1990, as amended and OSHA; the City Charter and Code of Ordinances; and HAS' rules and regulations.

Q. Compliance with Equal Opportunity Ordinance

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

R. Minority and Women Business Enterprises

Contractor shall comply with the City's Minority and Women Business Enterprise ("MWBE") programs as set out in Chapter 15, Article V of the City of Houston Code of Ordinances. Contractor shall make good faith efforts to award subcontracts or supply agreements in at least 18% of the value of this Agreement to MWBEs. Contractor acknowledges that it has reviewed the requirements for good faith efforts on file with the City's Office of Business Opportunities ("OBO"), and will comply with them.

Contractor shall require written subcontracts with all MWBE subcontractors and shall submit all disputes with MWBEs to binding arbitration to be conducted in Houston, Texas, if directed to do so by the OBO Director. MWBE subcontracts must contain the terms set out in Exhibit "D".

S. Performance Bond

Contractor shall, within ten (10) days of the date the Director issues the Notice to Proceed to begin performance hereunder, furnish and maintain a performance bond in the amount of 100% of the annual applicable Agreement year conditioned on Contractor's full and timely performance of the Agreement (and payment of subcontractors). Contractor shall maintain the bond throughout the Term and any exercised option years. The bond must be in substantially the form attached as Exhibit "E" and issued by a corporate surety authorized and admitted to write surety bonds in Texas. If the amount of the bond exceeds \$100,000, the surety must be listed on the current list of accepted sureties on federal bonds published by the United States Treasury Department or reinsured for any liability in excess of \$100,000 by a reinsurer listed on the U.S. Treasury list.

In addition to the termination rights set forth in Article V. D of this Agreement, should Contractor fail to provide the Performance Bond within the time set forth above, City shall have the right to withhold and retain any payments due Contractor without interest or penalty of any kind, until such time as an acceptable Performance Bond is provided to the City as required by this Agreement. At such time as a Performance Bond is given to the City, the withheld and retained payments shall be released by the City to Contractor in the next monthly billing cycle, without interest or penalty of any kind imposed upon City.

T. Drug Abuse Detection and Deterrence

(1) It is the policy of the City to achieve a drug-free workforce and workplace. The manufacture, distribution, dispensation, possession, sale, or use of illegal drugs or alcohol by contractors while on City Premises is prohibited. Contractor shall comply with all the requirements and procedures set forth in the Mayor's Drug Abuse Detection and Deterrence Procedures for Contractors, Executive Order No. 1-31 ("Executive Order"), which is incorporated into this Agreement and is on file in the City Secretary's Office.

(2) Before the City signs this Agreement, Contractor shall file with the Contract Compliance Officer for Drug Testing ("CCODT"),

- (a) a copy of its drug-free workplace policy,
- (b) the Drug Policy Compliance Agreement substantially in the form set forth in Exhibit "F," together with a written designation of all safety impact positions and,
- (c) if applicable (e.g. no safety impact positions), the Certification of No Safety Impact Positions, substantially in the form set forth in Exhibit "G."

If Contractor files a written designation of safety impact positions with its Drug Policy Compliance Agreement, it also shall file every six (6) months during the performance of this Agreement or on completion of this Agreement if performance is less than six (6) months, a Drug Policy Compliance Declaration in a form substantially similar to Exhibit "H." Contractor shall submit the Drug Policy Compliance Declaration to the CCODT within thirty (30) days of the expiration of each six (6) month period of performance and within thirty (30) days of completion of this Agreement. The first six (6) month period begins to run on the date the Director issues his Notice to Proceed to begin performance 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.

U. Environmental Laws

(1) Contractor shall comply with all federal, state, and local statutes, ordinances, regulations, rules, policies, codes, or guidelines now or hereafter in effect, as they may be amended from time to time, that govern Hazardous Materials or relate to the protection of human health, safety, or the environment, including but not be limited to:

- (a) the Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. Section 136 et seq.;
- (b) the Safe Drinking Water Act, 44 U.S.C. Section 300(f) et seq.;
- (c) the Oil Pollution Control Act of 1990, 33 U.S.C. Section 270 et seq.;
- (d) the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, 42 U.S.C., Section 9601 et seq., and as amended by the Superfund Amendments and Reauthorization Act of 1986, Pub. Law No. 99-499, 100 Stat. 1613;

- (e) the Toxic Substances Control Act, 15 U.S.C., Section 2601 et seq.;
- (f) the Clean Air Act as amended, 42 U.S.C. 7401 et seq.;
- (g) the Clean Water Act, 33 U.S.C., Section 1251, et seq.;
- (h) the Hazardous Materials Transportation Act, 49 U.S.C., Section 1801 et seq.;
- (i) the Resources Conservation and Recovery Act, 42 U.S.C., Section 6901 et seq.;

and those substances defined as hazardous waste or as hazardous substances under the laws of Texas and/or the United States or in regulations promulgated under these laws (collectively, "Environmental Laws").

(2) Within ten (10) days of receipt of an invoice, Contractor shall reimburse the City for any fines or penalties that may be levied against the City by the Environmental Protection Agency, the Texas Commission on Environmental Quality, or any other governmental agency for Contractor's (or its agents' and employees') failure to comply with the Environmental Laws.

(3) Contractor shall not possess, use, generate, release, discharge, store, dispose of, or transport any Hazardous Materials on, under, in, above, to or from the Airport, or any other areas or facilities subject to this Agreement, except in strict compliance with the Environmental Laws. "Hazardous Materials" include:

- (a) all substances, materials, wastes, pollutants, oils, or governmentally regulated substances or contaminants defined or designated as hazardous, toxic, radioactive, dangerous, or any other similar term in or under any of the Environmental Laws,
- (b) asbestos and asbestos-containing materials, petroleum products including crude oil or any fraction thereof, gasoline, aviation fuel, jet fuel, diesel fuel, lubricating oils and solvents, urea formaldehyde, flammable explosives, PCBs, radioactive materials or waste, or
- (c) any other substance that, because of its quantity, concentration, physical, chemical, or infectious characteristics may cause or threaten a present or potential hazard to human health or the environment when improperly generated, used, stored, handled, treated, discharged, distributed, disposed of, or released.

(4) The Airport is subject to the National Pollution Discharge Elimination System Program ("NPDES"), and the regulations, 40 CFR Part 122, relating to stormwater discharges, for operations at the Airport. Contractor is familiar with these NPDES stormwater regulations, and shall conduct operations in accordance with 40 CFR Part 122, as amended from time to time. Contractor understands that there are significant penalties for submitting false information, including fines and imprisonment for knowing violations.

(5) Close cooperation is necessary to ensure compliance with any NPDES stormwater discharge permit terms and conditions, as well as to ensure safety and to minimize costs. Contractor shall implement Best Management Practices as defined in 40 CFR, Part 122.2, as amended from time to time, if necessary to minimize the exposure of stormwater to significant materials generated, stored, handled, or otherwise used by Contractor as defined in the federal stormwater regulations.

(6) The City's NPDES stormwater discharge permit and any subsequent amendments, extensions, or renewals are incorporated into this Agreement. Contractor shall be bound by all applicable portions of the permit.

(7) Contractor shall implement the NPDES requirements at its sole expense, unless otherwise agreed to in writing between the City and Contractor. Contractor shall meet all deadlines that may be imposed or agreed to by the City and Contractor. Time is of the essence.

(8) If either party asks, the other party shall provide any non-privileged information submitted to a government entity(ies) under applicable NPDES stormwater regulations.

(9) Contractor appoints the City as its agent to negotiate with the appropriate governmental entity(ies) any modifications to the City's permit.

(10) Contractor shall participate in any City organized task force or other work group established to coordinate stormwater activities at the Airport.

(11) The City may enter upon Contractor's Premises at any time for purposes of inspection to ensure that Contractor is complying with this Section and any other provisions in this Agreement without committing a trespass.

(12) The City's remedies with regard to Environmental Requirements are cumulative and survive termination of this Agreement.

(13) WITH NO INTENT TO LIMIT CONTRACTOR'S INDEMNIFICATION TO THE CITY SET FORTH IN SECTION III (F), CONTRACTOR SHALL PROTECT, DEFEND AND INDEMNIFY THE CITY AND ITS OFFICERS, AGENTS, AND EMPLOYEES AGAINST ANY LOSS, COST, CLAIM, DEMAND, PENALTY, FINE, SETTLEMENT, LIABILITY, OR EXPENSE (INCLUDING BUT NOT LIMITED TO REASONABLE ATTORNEYS' AND CONSULTANTS' FEES, COURT COSTS, AND LITIGATION EXPENSES) RELATED TO:

(a) ANY INVESTIGATION, MONITORING, CLEANUP, CONTAINMENT, REMOVAL, STORAGE, OR RESTORATION WORK PERFORMED BY THE CITY OR A THIRD PARTY DUE TO CONTRACTOR'S, ITS EMPLOYEES', OR AGENTS' USE OR PLACEMENT OF HAZARDOUS MATERIALS (OF WHATEVER KIND OR NATURE, KNOWN OR UNKNOWN) ON THE AIRPORT PREMISES, OR ANY OTHER AREAS IMPACTED BY THIS AGREEMENT;

(b) ANY ACTUAL, THREATENED, OR ALLEGED HAZARDOUS MATERIALS CONTAMINATION OF THE AIRPORT PREMISES BY CONTRACTOR, ITS EMPLOYEES, OR AGENTS;

(c) THE DISPOSAL, RELEASE, OR THREATENED RELEASE OF HAZARDOUS MATERIALS BY CONTRACTOR, ITS EMPLOYEES, OR AGENTS AT THE AIRPORT THAT AFFECTS THE SOIL, AIR, WATER, VEGETATION, BUILDINGS, PERSONAL PROPERTY, OR PERSONS;

(d) ANY PERSONAL INJURY, DEATH, OR PROPERTY DAMAGE (REAL OR PERSONAL) ARISING OUT OF OR RELATED TO HAZARDOUS MATERIALS USE BY CONTRACTOR, ITS EMPLOYEES, OR AGENTS AT THE AIRPORT; OR

(e) ANY VIOLATION BY CONTRACTOR, ITS EMPLOYEES, OR AGENTS OF ANY ENVIRONMENTAL LAWS.

THIS INDEMNITY IS NOT APPLICABLE TO LOSSES, CLAIMS, PENALTIES, FINES, SETTLEMENTS, LIABILITIES, AND EXPENSES THAT RESULT FROM CONDITIONS EXISTING ON THE EFFECTIVE DATE OF THIS AGREEMENT.

V. Airport Security and Badging

Contractor shall comply with all HAS, TSA, FAA and any other governmental agency security directives, rules and regulations. The FAA and/or the TSA may assess fines and/or penalties for Contractor's non-compliance with the provisions of 49 CFR 1540 and 1542, as amended from time to time, or by other agencies for noncompliance with laws or regulations applicable to Contractor's operations. Within 10 days of notification in writing, Contractor shall reimburse the City for any fine or penalty assessed against the City because of Contractor's non-compliance with 49 CFR 1540 and 1542 or other applicable laws or regulations.

All on-site personnel of Contractor, including subcontractors, who perform services under this Agreement are required to undergo a fingerprint-based criminal history records check. Fingerprints will be collected at the Airport Badging Office and submitted electronically for investigation. At Contractor's expense, Contractor shall obtain HAS security badges for its personnel performing services on-site, including its subcontractors' personnel. On-site personnel shall wear identification badges at all times while on Airport property. Costs for the fingerprint-based criminal history records checks are reflected in the cost of the badges. Contractor is responsible for the cost of badges, including replacements thereof. Contractor personnel and its subcontractors losing badges will be charged for replacement badges at the then current rate.

W. Conflicts of Interest

If a potential or actual conflict of interests arises between the City's interests and the interests of other clients Contractor represents, Contractor shall immediately notify the City Attorney by fax transmission or e-mail and request consent. The City shall be deemed to consent to the conflict unless the City Attorney sends a written notice that the City declines to consent within 3 business days after the City Attorney receives the notice. If the City does not consent, Contractor shall immediately take steps to resolve the conflict.

X. City's Right to Stop Work

If Contractor fails to perform in accordance with this Agreement, the Director may order Contractor to stop performance, or any portion thereof. City may, after twenty-four (24) hours advance written notice to Contractor by Director, and without prejudice to any other remedy available to City, perform the Work stopped by the Director. In such a case, an appropriate deduction shall be made from the payments then or thereafter due Contractor for the cost of the performance conducted by City, including the cost of additional services made necessary and performed by City for Contractor's failure to perform. If the payments then or thereafter due Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the City within ten days of receiving an invoice therefore.

IV. DUTIES OF CITY

A. Payment Terms

- (1) Subject to all the terms and conditions of this Agreement, the City shall pay to Contractor, and Contractor accepts the fees specified in Exhibit "B," Fee Schedule, paid monthly, based upon invoices submitted to the Director from the Contractor indicating in detail the Work performed by Contractor (and its subcontractors) for the invoiced month. If Other Work/Services are required during the Term, hourly rates and fees will be based on the labor rates set forth in Exhibit "B", subject to Section IV.E below.
- (2) If the City pays Contractor for work performed by any subcontractor or for parts, supplies, equipment, or materials provided by any supplier, and Contractor withholds or has withheld payment to the subcontractor or supplier because of a deficiency in the quality or quantity of that subcontractor's or supplier's work or materials, the City may withhold a corresponding amount from any pending or future payments to Contractor until the next regular payment to Contractor occurring after the City receives reasonable documentation that the deficiency has been remedied.
- (3) All Contractor invoices are subject to approval by the Director and are due and payable on or about thirty (30) days after receipt and approval by the Director. The Director shall have the continuing right to request and receive from Contractor evidence which validates Contractor's invoices. All payments must be made by check made payable to Contractor. The City will not unreasonably delay or withhold payment or approval of any invoice. Neither payments made nor approval of invoices or services by the Director shall be construed as final acceptance or approval of that part of Contractor's services to which such payment or approval relates. Such payments do not relieve Contractor of any of its obligations under this Agreement.

B. Submitted False Claims, Monetary Penalties

Where the Contractor, or any of its subcontractors commit any of the following acts, the Contractor shall be liable to the City for the amount of damages which the City sustains because of the act of the Contractor or its subcontractors. The Contractor or its subcontractors who commits any of the following acts shall also be liable to the City for the costs, including attorney's fees, of any civil action brought to recover any of those penalties or damages. (a) knowingly presents or causes to be presented to the City a false claim or request for payment or approval; (b) knowingly makes, uses or causes to be made or used a false record or statement to get a false claim or invoice paid or approved; (c) conspires to defraud the City by getting a false claim or invoice allowed or paid by the City; (d) knowingly makes, uses, or causes to be made or used as a false record or statement to conceal, avoid, or decrease an obligation to pay or transmit money or property of the City; (e) is a beneficiary of an inadvertent submission of a false claim or invoice to the City, subsequently discovers the falsity of the claim, and fails to disclose the false claim to the City within a reasonable time after discovery of the false claim or invoice.

C. 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.

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 for any purpose 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 \$3,063,258.85 (inclusive of the 10% change order contingency) 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 service release order, or similar form approved by the City Controller, containing the language set out below. When necessary the supplemental allocations shall be approved by motion or ordinance of City Council.

"NOTICE OF SUPPLEMENTAL ALLOCATION OF FUNDS"

By signature below, the City Controller certifies that, upon request of the responsible director, the supplemental sum set out below has been allocated for the purposes of this 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.

\$ _____

- (4) City Council delegates to the Director the authority to approve up to \$27,294,876.77 in supplemental allocations (inclusive of the 10% change order contingency) for this Agreement without returning to Council.
- (5) The Original Allocation plus all supplemental allocations are the Allocated Funds, which include a 10% contingency in the amount of \$2,759,830.51 (inclusive of the 10% change order contingency appropriated as part of the Original Allocation). For purposes of Change Orders in Section IV.F. (3)(c) below, the Original Agreement amount is \$27,598,305.11. 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 Director 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 set forth 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 Director 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 Director]

- (3) The Director may issue more than one Change Order, subject to the following limitations:
 - (a) Council expressly authorizes the Director to approve a Change Order up to \$50,000. A Change Order in excess of \$50,000 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 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 Agreement, and is subject to the terms and conditions of the 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.

G. Access to Site

Subject to FAA, TSA and HAS rules and regulations, Contractor may enter and leave Work sites at all reasonable times without charge. Contractor and its employees and subcontractors may use the common areas and roadways at the Airports where the Work sites are located. This excludes parking for Contractor's personnel and subcontractors and does not extend to any restricted area of the Airport, including without limitation, the AOA, unless the person is properly badged or under HAS escort. Contractor shall repair any damage caused by it or its employees, suppliers or subcontractors as a result of their use of the common areas. The Contractor assumes all liability for any unauthorized incursions into restricted areas at the Airport. Contractor shall keep a record of all keys distributed to its employees and subcontractors.

City personnel and its authorized contractors shall, at all times, have access to the HVAC Systems and the Work. The Contractor shall provide whatever is necessary to facilitate such access, including but not limited to, personnel and equipment. Persons authorized by the City to access the HVAC Systems or Work shall not interfere with or jeopardize the Contractor's responsibility for safely performing Work under this Agreement.

H. Exercise of Contract Responsibilities

The City, in exercising its responsibilities and authorities under the Agreement, does not assume any duties or responsibilities to any subcontractor or supplier, nor does City assume any duty of care to Contractor, its subcontractors or suppliers, except as may be expressly set forth herein or by law. However, City shall be entitled to performance and enforcement of Contractor's obligations under this Agreement intended to facilitate performance of the City's duties.

V. TERM AND TERMINATION

A. Contract Term

This Agreement is effective on the Effective Date and continues for three (3) consecutive years from the date set forth in the Notice to Proceed, unless sooner terminated under this Agreement. Performance begins on the date specified in the Notice to Proceed issued by the Director. Contractor acknowledges that time is of the essence of this Agreement.

B. Renewals

Upon expiration of the initial Term, and as long as the City makes sufficient supplemental allocations, this Agreement will be automatically renewed for two successive one-year terms plus one 90-day term under the same terms and conditions. If the Director elects not to renew this Agreement, the Director shall notify Contractor in writing of non-renewal at least 30 days before the expiration of the then current tem.

C. Termination for Convenience by City

The Director may terminate this Agreement at any time by giving thirty (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 Work 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 IV(A) unless the fees exceed the allocated funds remaining under this Agreement.

TERMINATION OF THIS AGREEMENT AND 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.

D. Termination for Cause by City

If Contractor defaults under this Agreement, the Director 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 fails to perform any of its 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 Director may, but is not obligated to, deliver a written notice to Contractor describing the default and the termination date. The Director, at his or her sole option, may extend the termination date to a later date. If the Director allows Contractor to cure the default and Contractor does so to the 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 Director may terminate this Agreement on the termination date, at no further obligation of the City.

To effect final termination, the Director 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.

If, after termination for failure to fulfill contract obligations, it is determined that Contractor had not so failed, the termination shall be deemed to have been effected for the convenience of the City. In such event, Contractor shall be paid in accordance with the provisions of Section V.C. of the Agreement.

E. 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 thirty (30) days after the Director receives the 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.

VI. MISCELLANEOUS

A. Independent Contractor

Contractor is an independent contractor and shall perform the services provided for in this Agreement in that capacity. The City has no control or supervisory powers over the manner or method of Contractors' performance under this Agreement. All personnel Contractor uses or provides are its employees or subcontractors and not the City's employees, agents, or subcontractors for any purpose whatsoever. Contractor is solely responsible for the compensation of its personnel, including but not limited to: the withholding of income, social security, and other payroll taxes and all worker's compensation benefits coverage.

B. Force Majeure

1. Timely performance by both parties is essential to this Agreement. However, neither party is liable for reasonable delays in performing its obligations under this Agreement to the extent the delay is caused by Force Majeure that directly impacts the City or Contractor. The event of Force Majeure may permit a reasonable delay in performance but does not excuse a party's obligations to complete performance under this Agreement. Force Majeure means: fires, drought, interruption of utility services, epidemics in the City, floods, hurricanes, tornadoes, ice storms and other natural disasters, explosions, war, terrorist acts against the City or Contractor, riots, strikes, court orders, and the acts of superior governmental or military authority, and which the affected party is unable to prevent by the exercise of reasonable diligence. The term does not include any changes in general economic conditions such as inflation, interest rates, economic downturn or other factors of general application; or an event that merely makes performance more difficult, expensive or impractical. Force Majeure does not entitle Contractor to extra Reimbursable Expenses or payment.

2. This relief is not applicable unless the affected party does the following:
 - (a) uses due diligence to remove the effects of the Force Majeure as quickly as possible and to continue performance notwithstanding the Force Majeure; and
 - (b) provides the other party with prompt written notice of the cause and its anticipated effect.
3. The Director will review claims that a Force Majeure that directly impacts the City or Contractor has occurred and render a written decision within 14 days. The decision of the Director is final.
4. The City may perform contract functions itself or contract them out during periods of Force Majeure. Such performance is not a default or breach of this Agreement by the City.
5. If the Force Majeure continues for more than 14 days from the date performance is affected, the Director may terminate this Agreement by giving 7 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 UP TO THE TIME THE WORK IS HALTED DUE TO FORCE MAJEURE.**

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 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 to either party to the Agreement must be in writing and must be delivered by hand, facsimile, United States registered or certified mail, return receipt requested, United States Express Mail, Federal Express, Airborne Express, UPS or any other national overnight express delivery service. The notice must be addressed to the party to whom the notice is given at its address set out in Section I of this Agreement or other address the receiving party has designated previously by proper notice to the sending party. Postage or delivery charges must be paid by the party giving the notice.

H. Captions

Captions contained in this Agreement are for reference only, and, therefore, have no effect in construing this Agreement. The captions are not restrictive of the subject matter of any section in this Agreement.

I. 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.

J. Inspections and Audits

City representatives may perform, or have performed, (1) audits of Contractor's books and records, (2) inspections of all places where Work is undertaken in connection with this Agreement, and (3) all costs and underlying expenses relating to Contractor's performance, including but not limited to, all fees paid to Contractor. Contractor shall keep its books and records available for this purpose for at least 6 years after this Agreement terminates. This provision does not affect the applicable statute of limitations.

K. 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.

L. 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.

M. Survival

Contractor shall remain obligated to the City under all clauses of this Agreement that expressly or by their nature extend beyond the expiration or termination of this Agreement, including but not limited to, the indemnity provisions.

N. Publicity

Contractor shall make no announcement or release of information concerning this Agreement unless the release has been submitted to and approved, in writing, by the Director.

O. Parties In Interest

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

P. 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.

Q. Business Structure and Assignments

Contractor shall not assign this Agreement at law or otherwise or dispose of all or substantially all of its assets without the Director'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 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 Director's written consent.

R. Claims By Contractor

Should it appear to Contractor that the Work to be performed or any of the matters relative to the Agreement are not satisfactorily detailed or explained therein, or should any questions arise as to the meaning or intent of the Agreement, the Contractor shall give written notice to the Director. Contractor shall bear all costs incurred in the giving of such notice. All issues regarding the interpretation of the Agreement shall be referred to the Director for interpretation. The Director shall have the right but not the obligation to affirm or disaffirm the interpretation, which affirmation or disaffirmance shall be final.

Should any dispute arise under this Agreement respecting the true value of any Work performed, of any Work omitted, of any extra Work which the Contractor may be required to perform, time extensions, respecting the size of any payment to the Contractor during the performance of the Agreement, or of compliance with Agreement provisions, said dispute shall be decided by the Director and his decision

shall be final and conclusive. If the Contractor should disagree with the Director's decision, the Contractor's sole and exclusive remedy is to file a claim in accordance with this Section. Notwithstanding and pending the resolution of any claim and assuming the procedures set forth herein for Change Order Work and Other Service Requests Work, if relevant to this section, have been complied with by the Parties, the Contractor shall diligently prosecute the disputed Work to final completion. The provisions of this paragraph survive termination or completion of this Agreement. Contractor shall bear all costs incurred in the preparation and submission of a claim.

"Claim" means a written demand or written assertion by the Contractor seeking, as a matter of right, the payment of money, the adjustment or interpretation of Agreement terms, or other relief arising under or relating to the Agreement. In order to qualify as a "claim", the written demand must state that it is a claim submitted under this Section.

A voucher, invoice, payment application, or other routine or authorized form of request for payment is not a claim under the Agreement. If such request is disputed as to liability or amount, then the disputed portion of the submission may be converted to a claim under the Agreement by submitting a separate claim in compliance with the Agreement claim submission requirements.

The following procedures shall be followed when a claim is asserted by Contractor:

1. Should any clarification or determination, or any other event, in the opinion of the Contractor, exceed the scope of the Agreement, then the Contractor and the Director shall make good faith attempts to resolve any and all such claims and disputes. Before commencing the disputed Work, or within seven (7) days after such demand is made or instruction is given, whichever is earlier, the Contractor must file a written protest with the Director stating clearly and in detail its objection and reasons for contending the Work or interpretation is outside the requirements of the Agreement. If a written protest is not issued within this time period, or if the Contractor proceeds with the Work without first having given the notice required by this paragraph, the Contractor shall waive its rights to further claim on the specific issue.
2. The Director will review the Contractor's timely written protest and provide a decision. If, after receiving the decision, the Contractor disagrees with it or still considers the Work required of it to be outside of the requirements of the Agreement, it shall so notify the Director, in writing, within seven (7) days after receiving the decision, that a formal claim will be issued. Within thirty (30) days of receiving the decision, the Contractor shall submit its claim and all arguments, justification, cost or estimates, schedule analysis, and detailed documentation supporting its position. Failure to furnish notification within seven (7) days and all justifying documentation within thirty (30) days will result in the Contractor waiving its right to the subject claim.
3. Upon receipt of the Contractor's formal claim including all arguments, justification, cost or estimates, schedule analysis, and documentation supporting its position as previously stipulated, the director will review the issue and render a final determination.

The Contractor, under penalty of perjury under the laws of the State of Texas, shall submit with the claim its and its subcontractors' certification that:

- a. The claim is made in good faith;

- b. Supporting data are accurate and complete to the best of the Contractor's knowledge and belief; and
- c. The amount requested accurately reflects the contract adjustment for which the Contractor believes the City is liable.

If a false claim is knowingly submitted, the City will be entitled to civil remedies as set forth in the Texas civil statutes. It may also be considered fraud and the Contractor may be subject to criminal prosecution.

In regard to any claim or portion of a claim for subcontractor Work, the Contractor shall fully review said claim and certify said claim, under penalty of perjury under the laws of the State of Texas, to have been made in good faith.

Failure to furnish certification as required hereinbefore will result in the Contractor waiving its right to the subject claim.

The Contractor shall submit the claim justification in the following format:

1. Cover letter and certification.
2. Summary of claim including:
 - a. Underlying Facts.
 - b. Entitlement.
 - c. Quantum Calculations.
 - d. Contract Provisions Supporting Relief.
3. List of documents relating to claim:
 - a. Specifications.
 - b. Drawings.
 - c. Clarifications/Requests for Information.
 - d. Correspondence.
 - e. Schedules.
 - f. Other.
4. Chronology of Events and Correspondence.
5. Analysis of Claim Merit.
6. Analysis of Claim Cost
7. Attachments: All documents listed in 3. above.

Alternate Dispute Resolution: In the event a disputed claim as described above between the parties cannot be resolved, an appeal shall be made to a committee consisting of a Contractor corporate officer and a City employee designated by the Director. The committee members shall negotiate in good faith to properly assign the disputed cost to or between the party (ies).

If an amicable settlement cannot be reached after twenty (20) days has been allowed for negotiation, either party may request that the issue be decided through mediation in accordance with the procedure set forth in the following Paragraph entitled "Mediation."

Mediation: The Parties agree that any controversy arising out of this Agreement regarding a claim as aforementioned or any interpretation of this Agreement which the parties are not able to resolve

themselves through negotiation shall be submitted to mediation before any other legal action is taken. The parties shall mutually agree upon a third party mediator. The costs and expenses of the mediation shall be borne equally by the parties, subject to approval by the City's governing body and/or City Attorney. Mediation shall take place within two (2) weeks after notification by the aggrieved party of a request for mediation unless extended by the mediator. If the mediation does not result in an agreement acceptable to all sides, any party may take such other further action as it deems advisable under law or equity. In the event any party takes such other action except in the case of an emergency (such as the imminent structural loss of property or injury to person) without first submitting the issue(s) to mediation as required by this clause, that party shall pay the reasonable legal expenses and court costs incurred by the responding party in filing such responsive pleadings as are legally required.

In the event mediation is not successful, the parties may, prior to any legal action, agree upon another method of Alternate Dispute Resolution.

During the course of such negotiations, mediation, or any other Alternate Dispute Resolution process that may be mutually agreed upon, the parties agree that all Work hereunder shall be continued without interruption.

S. 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.

T. 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 FOR ANY PAYMENTS OWED TO CONTRACTOR UNDER THIS AGREEMENT, AND CONTRACTOR WAIVES ANY RECOURSE THEREFOR.

U. Pay or Play

The requirements and terms of the City of Houston Pay or Play program, as set-out in Executive Order 1-7 are incorporated into this Contract by reference. Contractor has reviewed Executive Order 1-7 and shall comply with its terms and conditions. Contractor shall include the foregoing language in its agreements with its subcontractors whose subcontracts have a dollar value of \$200,000 or more. Consultant shall complete and submit to the Director POP-2 Form on or before execution of this Contract.

V. Title VI Assurances

The Contractor shall comply with the applicable non-discrimination provisions required by the United States of America, including but not limited to the provisions of 49 CFR Part 21. These provisions are inclusive of any amendments which may be made to such regulations. Further, the Contractor shall include the summary of the provisions of 49 CFR Part 21, as may be amended, in subcontracts it enters into under this Contract.

EXHIBIT "A"

PERFORMANCE/WORK STATEMENT

1.0 **BACKGROUND**

1.1 The Houston Airport System (HAS) operates the City of Houston's three (3) major airports: George Bush Intercontinental Airport/Houston (IAH), William P. Hobby Airport (HOU), and Ellington Airport (EFD). HAS passenger traffic is approximately 50 million passengers per year. Management of the Airports includes coordination with FAA, air carriers, and other Federal and State agencies to maintain the highest standards of service and safety to Airport patrons. HVAC operations and maintenance serves a vital role in the efficient operation of the Houston Airport System.

2.0 **SCOPE OF WORK**

2.1 General – Operation and Maintenance Requirements

2.1.1 Facilities Included

Contractor shall provide all management, supervision, skilled and unskilled labor, tools, service and maintenance materials, equipment, outside services, replacement equipment and parts, components and appurtenances, instruments, expendables, supplies, training, and insurance as required for Operation and Maintenance to ensure Best-in-Practice Service of all Work described in the Agreement for HVAC installed in the following airport facilities (Best-in-Practice Service as defined in the latest release of the Operations and Maintenance Best Practice manual developed by the U.S. Department of Energy):

2.1.1.1 George Bush Intercontinental Airport/Houston (IAH)

2.1.1.2 William P. Hobby Airport, Houston (HOU)

2.1.1.3 Ellington Airport (EFD)

2.1.2 These three airport facilities hereinafter may also be referred to jointly as Airports. These facilities are under the supervision of HAS for the City of Houston.

2.1.3 IAH includes the Central Plant, Old FAA Tower, Terminals A, B (Pump Room), C, D, Federal Inspection Services (FIS), and Other Remote Facilities not connected to the Central Plant's Primary Cooling and Heating water distribution systems.

2.1.4 HOU includes the Main Terminal, Central Concourse, and Other Remote Buildings/Facilities.

2.1.5 EFD includes the Airport Administration Building # 510, Airfield & Grounds Building, Control Tower, Vault, North Generator, and South Generator.

2.2 Work Included – General

2.2.1 The Work provided by Contractor under the Agreement includes Basic Services and Other Work/Services.

2.2.2 Work to proceed will be initiated by a notice to proceed for each Airport.

3.0 **BASIC SERVICES**

3.1 IAH Basic Services

3.1.1 Contractor shall provide Basic Services specified in the Agreement at IAH twenty-four (24) hours-per-day, seven (7) days per week, 365 days per year, including holidays. Contractor shall provide on-site staffing necessary to provide specified HVAC operation and maintenance services to all specified IAH facilities. Basic Services shall follow the guidelines established in the latest release of the Operations & Maintenance Best Practices manual developed by the U.S. Department of Energy.

3.1.2 Basic Services monthly payments for IAH will include:

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 3.1.2.1 Central Plant, Old FAA Tower, Terminals A, B, C, D, FIS, and Other Remote Facilities:
 - 3.1.2.1.1 Operation, Preventive Maintenance (PM), Predictive Maintenance (PdM), Remedial Maintenance (RM), and Reliability Centered Maintenance (RCM) for all HVAC.
 - 3.1.2.1.2 Maintain and operate Utilivisor Energy Monitoring System (UEMS), including all software, hardware, and upgrades.
- 3.1.3 The monthly lump sum payments for Basic Services encompass all overtime, after-hours labor, additional staffing, and emergency labor required to meet the Airports HVAC performance standards and Duties of Contractor detailed in the Agreement.
- 3.2 HOU Basic Services
 - 3.2.1 Contractor shall provide Basic Services specified in the Agreement at HOU 18-hours-per-day between the hours of 5:00 a.m. to 11:00 p.m., (7) days-per-week, 365 days per year, including holidays. Contractor shall provide on-site staffing necessary to provide specified HVAC operation and maintenance services to all specified HOU facilities.
 - 3.2.2 Basic Services monthly payments for HOU will include:
 - 3.2.2.1 Central Plant, Main Terminal, Central Concourse, and Other Remote Facilities:
 - 3.2.2.1.1 Operation, Preventive Maintenance (PM), Predictive Maintenance (PdM), Remedial Maintenance (RM), and Reliability Centered Maintenance (RCM) for all HVAC.
 - 3.2.3 At HOU Contractor shall provide emergency after-hour service between the hours of 11:00 p.m. and 5:00 a.m. within 1 hour of notification at the labor rates specified in Exhibit B, Fee Schedule, for Other Work/Services.
- 3.3 EFD Basic Services
 - 3.3.1 Contractor shall provide Basic Services specified in the Agreement as required at EFD, 16 hours-per day between the hours of 6:00 a.m. to 10:00 p.m., seven (7) days-per-week, 365 days per year, including holidays. At EFD, Contractor shall provide emergency after-hour service between the hours of 10:00 p.m. and 6:00 a.m. within 2 hours of notification at the labor rates specified in Exhibit B, Fee Schedule, for Other Work/Services
 - 3.3.2 Basic Services monthly payments for EFD will include:
 - 3.3.2.1 # 510 Building, A&G Building, Control Tower, Vault, North and South Generators.
 - 3.3.2.1.1 Preventive Maintenance (PM), Predictive Maintenance (PdM) and Reliability Centered Maintenance (RCM) for all HVAC.
- 3.4 All Airports IAH, HOU & EFD:
 - 3.4.1 Projects, Tips, and Job Order Contract (JOC) Oversight
 - 3.4.1.1 Contractor shall assist IAH, HOU, and EFD as requested, each time there is a Capital Project, Tenant Improvement Project, or a Job Order Contract (JOC), Contractor shall observe in a non-supervisory capacity, all work relating to HVAC. Contractor shall conduct routine walk-through from time to time and report back to the Airport any work that is not compliant to applicable codes or in the Contractor's opinion not in the best interest of the Airport. At completion of project, the Contractor shall do a final walk-through with project Contractor's representative and notify the Director in writing of any deficiencies.
 - 3.4.2 Repairs and/or replacement of HVAC equipment or parts due to Contractor's failure to perform proper preventive maintenance will be the responsibility of the Contractor at no cost to HAS.

EXHIBIT "A"

PERFORMANCE/WORK STATEMENT

- 3.4.3 Contractor shall bear all costs associated with any repairs or replacement required as the result of Contractor's negligence or deliberate act.
- 3.5 Other Work/Services to be provided by Contractor under the Agreement includes other related required work that is beyond the scope of Basic Services.
- 3.6 Not less than one hundred eighty (180) days prior to the commencement of each Operating Year, Contractor shall submit a capital improvement plan to the Director. The plan will indicate the estimated capital cost and installation cost for each recommended capital improvement for the next 5 years in terms of improved performance (estimated cost per year savings) or enhanced reliability. An analysis of the best available emissions technology designed to further reduce the Airports' emissions shall also be provided. The Director agrees to approve or disapprove each recommended improvement not less than thirty (30) days prior to the commencement of said Operating Year.
- 4.0 DUTIES OF CONTRACTOR - BASIC SERVICES**
- 4.1 *Division of Responsibility*
- 4.1.1 Contractor shall make all routine operation and maintenance decisions. Changes in operation and maintenance philosophy, schedules, and the existing preventive maintenance program must be mutually agreed to in writing by the Director and the Contractor.
- 4.1.2 The Director reserves the right to make final decisions related to HVAC operation and maintenance. If the Director chooses to override the Contractor's decisions, the Director shall inform Contractor in writing.
- 4.2 *Direct Digital Control System IAH, HOU & EFD*
- 4.2.1 Contractor shall operate, maintain, and repair direct digital control systems (BACnet, Alerton, etc.) where applicable at all three Airports.
- 4.2.2 Contractor shall be responsible for the preventive, predictive, reliability-centered, and remedial maintenance services of the Building Automation System (BAS) system CPU/executive controllers, hardware and software to include system software upgrades within current generation software revision levels. Contractor shall perform preventive predictive, reliability-centered, and remedial maintenance services of all ancillary components such as input-output devices, unitary controllers, and sensors.
- 4.2.3 Contractor shall maximize the use of the BAS to minimize the consumption of energy and to ensure environmental conditions are appropriate as required herein for the various space and areas within the Airport's facilities. Contractor shall use the BAS for building operational strategies, monitoring, and diagnostics. Contractor shall ensure all components – software and hardware – of the BAS are fully operational and the system is maintained in first class condition and in accordance with the manufacturer's requirements.
- 4.2.4 Fully qualified and certified technicians with experience on the same or similar type systems shall perform all preventive and repair maintenance on the BAS systems. All maintenance on the BAS must be accomplished in accordance with the original equipment manufacturers (OEM) specifications and recommendations as documented in the BAS Operations Manual and attendant notices and amendments. Daily operation of the system must be in accordance with the OEM operations manual and controls strategies. Routine daily operational checks and tests of the system must be performed by personnel who are trained on the operation of the system and any anomalies or malfunctions as a result of the checks/tests or experienced during normal operation must be addressed immediately. Daily operational tests and checks must be documented.
- 4.2.5 The BAS shall utilize data trending and storage capabilities to log key performance variables to summarize energy efficiency and operational performance. Performance variables shall be trended on 5 minute intervals to provide adequate granularity of data for energy use and operational trend analysis. Recommended performance variable BAS points to be trended include but are not limited to:

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 4.2.5.1 Primary energy meters (Electric, Natural Gas, Steam, Water, or other services; consumption or volume on all meters, interval demand on electric meters).
- 4.2.5.2 Energy sub-meters (Electric, Natural Gas, Water, Heating Btu, Cooling Btu, Steam, or other services; consumption or volume on all meters, interval demand on electric meters) dedicated to specific systems, building segments, plants or equipment.
- 4.2.5.3 Chilled water supply and return temperatures (equipment and/or system specific)
- 4.2.5.4 Chilled water supply flow rate (equipment and/or system specific)
- 4.2.5.5 Chiller power (kilowatts, equipment and/or system specific)
- 4.2.5.6 Chiller plant distribution loop differential pressure (system)
- 4.2.5.7 Chiller load (Tons, equipment and/or system specific, calculated or provided by chiller control panel)
- 4.2.5.8 Chiller efficiency (kW/Ton, calculated or provided by chiller control panel)
- 4.2.5.9 Hot water, chilled water, condenser water, steam control valve positions (Trend can be on 15 minute interval)
- 4.2.5.10 Hot water supply and return temperatures (equipment and/or system specific)
- 4.2.5.11 Hot water supply flow rate (equipment and/or system specific)
- 4.2.5.12 Steam flow rate (heating and/or cooling equipment and/or system specific)
- 4.2.5.13 Primary, secondary, tertiary heating and/or cooling pump motor operating status (ON/OFF, start/stop)
- 4.2.5.14 Primary, secondary, tertiary heating and/or cooling pump motor VSD feedback (Hz, % speed, or kilowatts)
- 4.2.5.15 AHU heating and cooling valve positions (Trend can be on 15 minute interval)
- 4.2.5.16 AHU damper positions (Trend can be on 15 minute interval)
- 4.2.5.17 Outside air temperature
- 4.2.5.18 Outside air humidity
- 4.2.5.19 Zone air temperatures
- 4.2.5.20 Zone air humidity
- 4.2.5.21 Occupancy sensors (ON/OFF, Occ/Unocc)
- 4.2.5.22 Boiler load
- 4.2.5.23 Boiler efficiency
- 4.2.5.24 Condensate return flow
- 4.2.5.25 Makeup water to heating, cooling, and condenser water systems.
- 4.2.6 Points currently not measured shall be included, with associated costs for implementation, as part of Annual Capital Improvement Plan

EXHIBIT "A"

PERFORMANCE/WORK STATEMENT

- 4.2.7 BAS database maintenance shall be performed by the Contractor on a monthly basis or more frequently as necessary to ensure that trended data storage will not compromise the computer, BAS software or system performance. Trend data files shall be archived using writable compact disk, external hard drives or tape backup system.
- 4.2.8 Contractor shall request any training or instruction from the BAS vendor to efficiently extract data from the BAS in electronic format for use in common spreadsheet or database software applications such as Microsoft Excel. Development of pre-formatted templates used for summarizing and periodic reporting of energy use and operational trends is the responsibility of the Contractor.
- 4.2.9 Energy and operational summaries and calculations developed either in the BAS or software templates are the responsibility of the Contractor. Energy and operational data should be compiled in a manner so data retrieved from the BAS or field measured data can be assessed relative to predetermined energy and operational efficiency goals as established by the City and/or Contractor.
- 4.2.10 Utility rates used to quantify the value of energy use should be consistent with current utility service rate tariffs or at a rate mutually agreed to by the City and Contractor for evaluating energy and operational cost savings.
- 4.2.11 The senior building controls technician or the next highest supervisor shall be responsible for the day-to-day review of these logs.
- 4.2.12 The BAS systems are included in Contractor's Reliability Centered Maintenance methodology. The BAS preventive and repair maintenance plan must be incorporated into and administered through the MMS.
- 4.3 Water Treatment Program IAH, HOU & EFD
- 4.3.1 Contractor shall provide the water treatment program specified in the HAS HVAC Water Treatment Manual, Volumes I, II and III, which are incorporated herein by reference. Contractor shall make necessary adjustments for minor differences between the Airports water treatment programs.
- 4.3.2 Based on Contractor's submittal of its Water Treatment Program, the Director and Contractor shall establish a mutually agreed-upon testing schedule. Schedules are required for daily, weekly and monthly testing. Each test or function must be assigned a standard or acceptable range with acceptable maximum or minimum, plus (+) or minus (-) deviation, based on accepted industry standards for equipment, chemicals, etc., utilized in the Water Treatment Program. These tests and task schedules, once established, may be changed only upon agreement by both parties and must be supported by appropriate documentation such as published bulletins from equipment manufacturers, chemical companies, etc. that have evidence to support such recommended changes in the industry standards (Refer to Exhibit K, Corrosion Test Requirements).
- 4.4 Preventive Maintenance IAH, HOU & EFD
- 4.4.1 As a part of Basic Services throughout the term of the Agreement, Contractor shall perform preventive/predictive maintenance (MMS driven schedule of planned maintenance actions) on HVAC in accordance with OEM equipment manufacturer's instructions and in accordance with the best preventive maintenance industry practices for the prevention of equipment breakdowns and failures. Contractor shall develop a PM schedule so as to complete PM's on equipment within the manufactures recommendations. The PM Schedule is to be provided to the Director within 60 days after the commencement of each operating year. Changes from the previous year shall be clearly indicated. Failure to provide this and all additional PM reports will result in the application of liquidated damages in accordance with Section 19 of this Contract
- 4.4.2 The proper implementation of PM and PdM is to be utilized to ensure productive remedial maintenance, reduction of system down time, and effective cost control of system components by the timely planned replacement of components. Conditions to be addressed include, but are not limited to:
- 4.4.2.1 Hot calls.
- 4.4.2.2 High humidity.

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 4.4.2.3 Poor calibration.
- 4.4.2.4 Faulty operators.
- 4.4.2.5 Dirty filters.
- 4.4.2.6 Worn belts.
- 4.4.2.7 Dirty coils.
- 4.4.2.8 Duct leaks to include replacement of duct installation.
- 4.4.2.9 Water imbalances.
- 4.4.2.10 Stuck valves.
- 4.4.2.11 Equip. shutdown.
- 4.4.2.12 Loose wiring.
- 4.4.2.13 Valve leaks.
- 4.4.2.14 Pipe rust.
- 4.4.2.15 Excess noise.
- 4.4.2.16 Cold calls.
- 4.4.2.17 Poor control.
- 4.4.2.18 Control air losses.
- 4.4.2.19 Stuck dampers.
- 4.4.2.20 No belts.
- 4.4.2.21 Loose belts.
- 4.4.2.22 Dirty fans/vents.
- 4.4.2.23 Air imbalances.
- 4.4.2.24 Poor heat transfer.
- 4.4.2.25 Plugged strainers.
- 4.4.2.26 Equipment failure.
- 4.4.2.27 False trips.
- 4.4.2.28 Fitting leaks.
- 4.4.2.29 Damaged insulation.
- 4.4.2.30 Excess vibration.
- 4.4.2.31 Degraded Painting.
- 4.4.2.32 Exercise isolation valves on a sixth month interval.
- 4.4.2.33 Register cleaning. Contractor shall create a cleaning schedule for all terminals and out buildings. One complete cleaning per year. To include all supply grills, return grills, and vents. Work will be scheduled at mutually agreed time.
- 4.4.2.34 Contractor is required to certify annually all backflow preventers in all mechanical rooms. To include, but not limited to approximately thirty (30) various sizes ranging from ¾ in. to 6 in. IAH - 2 ea at the Central Plant, 4 ea. Terminal A, 4 ea at Terminal B, 4 ea at Terminal C, and 4 ea at Terminal D. Ellington Airport – 3 ea. and HOU – 6 ea.
- 4.4.2.35 Thoroughly clean all Mechanical Equipment Rooms (MER's) in all facilities throughout the Agreement. This includes floors, walls, mechanical and electrical equipment housings, panels, ductwork, piping, etc. Approximately 141 MER rooms for various sizes.

EXHIBIT "A"

PERFORMANCE/WORK STATEMENT

- 4.4.2.36 Replenishing all Charcoal/Potassium Permanente every 15 months regardless of HP rating. Approximately 2,725 cells of various sizes. Date will be decided by the Director. *Exclude EFD.*
- 4.4.2.37 Install an anti-bacteria agent in the drain pans of all air handlers. (Replenish the substance as needed).
- 4.4.2.38 Drain and clean cooling towers annually of silt deposits etc. - Exclude EFD.
- 4.4.2.39 Inspect condensers on chillers annually and brush and clean tubes - Exclude EFD.
- 4.4.2.40 All Ultra violet lighting bulbs are to be changed out once per year in March or more frequently if required. Exclude EFD. (Approximately 279 bulbs).
- 4.4.3 Contractor shall apply the same type paint system that currently exists on floors, walls, equipment, piping systems, accessories etc. in accordance with paint manufacturer's recommendations. All unpainted mechanical room floors must be painted or sealed with industrial floor sealant. Contractor shall provide documentation as requested by the Director upon completion.
- 4.4.4 At HAS, all mechanical room floors, equipment, and piping systems, which are currently painted, must be maintained. The only wall areas to be maintained with respect to painting are located in the cooling tower and in the central plant.
- 4.4.5 The following paint systems are recommended by HAS, however; Contractor must obtain the Director's approval of the painting system to be applied prior to performing the Work.
- 4.4.5.1 Concrete Floors
- 4.4.5.1.1 Epoxy – Benjamin Moore (M36/M39) Hi-Build Gloss Coating or City approved equal.
- 4.4.5.1.2 Oil/Alkyd – Benjamin Moore (C112) Alkyd Porch & floor Enamel, or City approved equal.
- 4.4.5.2 Walls
- 4.4.5.2.1 Latex – Benjamin Moore (276) Latex Semi-Gloss Enamel or City approved equal.
- 4.4.5.2.2 Oil/Alkyd – Benjamin Moore (271) Alkyd Semi-Gloss Enamel or City approved equal.
- 4.4.5.3 Metal
- 4.4.5.3.1 Benjamin Moore (M29) Acrylic Semi-Gloss or City approved equal.
- 4.5 Parts/Materials
- 4.5.1 *Furnished Parts IAH, HOU & EFD*
- 4.5.1.1 \$25,000.00 Threshold - Contractor shall provide all replacement parts as per SOW equipment/appurtenances identified in Exhibits "I" and "L" that cost \$25,000.00 or less. Such cost will not take into account Contractor's labor cost, rather just the actual cost of the parts which must be documented to the satisfaction of the Director. By way of example, if a compressor requires replacement, Contractor shall not be responsible for the cost, assuming that the cost of such compressor is over \$25,000.00 and the replacement is not due to Contractor's negligence. However, if only the fan motor of the compressor requires replacement and assuming the cost of the fan motor is \$25,000.00 or less, it shall be replaced at Contractor's sole cost. In other words, the Contractor will not be able to represent that the compressor is the part if only the fan motor requires replacement. Any dispute regarding the \$25,000.00 threshold shall be resolved at the sole discretion of the Director whose decision shall be final.
- 4.5.1.2 Contractor-Furnished Parts - Contractor shall continually restock its parts inventory throughout the term to levels that will ensure compliance with the performance requirements of this Agreement. All such parts shall be new OEM/ASHRAE approved. Where new OEM/ASHRAE parts are not available, Contractor may provide rebuilt OEM

EXHIBIT "A"

PERFORMANCE/WORK STATEMENT

parts or use new parts of another manufacturer upon the prior written approval of the Director. In either case, parts must be equal or better in quality and performance than OEM/ASHRAE parts and must be free of all defects.

- 4.5.1.2.1 Contractor's responsibility is to provide equipment that, at a minimum, meets the latest edition of ASHRAE Standard 90.1. At least two options of further enhanced efficiencies shall be presented to HAS. At the Director's discretion, HAS shall be responsible for the cost premium associated with the purchase of the higher efficiency equipment. Also at the Director's discretion, the Contractor shall be allowed to absorb all or part of the cost premium and receive a portion of the savings generated by installing such equipment through a shared savings approach. Refer to Section 33 of the Agreement for further guidance on the shared savings process.
- 4.5.1.3 Disposal or Used Parts - As a part of Basic Services, Contractor shall dispose of all worn/defective scrap parts and waste or hazardous materials resulting from the work under the Agreement at Contractor's expense. Handling, transport, and disposal of worn/defective scrap parts and waste or hazardous materials must be done in such a manner as to ensure the highest level of safety to the environment and to public health and in compliance with all applicable laws and governmental regulations. Contractor shall assume full responsibility and liability for and act prudently in all aspects of handling, transport, and disposal of any hazardous materials, securing all licenses and permits required by law and ensuring that any disposal facilities to which any scrap, waste, or hazardous materials may be moved are in full compliance with federal, state, and local laws and regulations. Worn or defective parts must not be stored on Airport premises. Contractor shall notify the Director when these parts are to be removed from HAS property. Used parts at each Airport at the commencement of the Term of this Agreement are the property of HAS and shall remain at each Airport unless Contractor is instructed otherwise by HAS.
- 4.5.1.4 Airport Parts Inventory - If the existing Contractor has an existing replacement parts inventory, and the incumbent HVAC Contractor is willing to sell all or a part of such inventory, then any arrangements by Contractor to purchase such inventory shall be solely the responsibility of Contractor and HAS shall have no obligations with respect to such purchase. If Contractor does arrange to make such purchase, then upon receipt of the Notice to Proceed, the Contractor shall immediately make arrangements to take possession of the incumbent HVAC Contractor's replacement parts inventory. Contractor shall be responsible for knowledge of condition, usability and inventory accuracy of parts purchased from the existing Contractor. Any relocation or storage costs associated with this inventory will be the Contractor's responsibility. This inventory shall become the full responsibility of the Contractor as to its use and disposition. At the end of the Agreement Term, all inventory as referenced shall have been used or remain the property of the Contractor.
- 4.5.1.5 Parts Storage - The spare parts inventory is the responsibility of Contractor. Contractor shall have limited area within the Central Plants to store equipment and supplies. HAS will provide rooms IAO.0801.M and IAO.0407 in the baggage level of the FIS building. Contractor shall maintain a parts log and submit monthly to Director.
- 4.6 Tools, Instruments, and Equipment IAH, HOU & EFD
- 4.6.1 As a part of Basic Services, the Contractor shall provide all supplies, materials, equipment, instruments, and tools required for the Work at Contractor's expense. Materials and equipment shall be of the type and quality used in large-scale airport operations and shall meet the requirements specified herein. The Contractor shall provide a list of the proposed equipment, including test/calibration/diagnostic equipment, tools, and supplies etc., as part of the Agreement.
- 4.6.2 Contractor shall have available "on-site" at all times, test/calibration equipment such as, electronic flow meters, hood vents etc. required to perform testing specified in the Agreement.
- 4.6.3 Contractor shall provide lifts to service and maintain VAV boxes, exhaust systems, etc.
- 4.6.4 Contractor must keep two (2) lifts on-site, size appropriate as per SOW, 24/7 at IAH and one (1) lift on-site 24/7 at HOU. Contractor must provide transport of lifts around airport complex within two (2) hours as needed.
- 4.6.5 Contractor equipment brought into the facilities must not exceed the engineered floor load capacities of the facilities. It is the Contractor's responsibility to provide properly sized/rated equipment to perform all services specified.

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 4.6.6 All Contractor-furnished tools, equipment and instruments must be removed by Contractor at the termination or expiration of the Agreement.
- 4.7 Perform Annual Shutdown IAH & HOU
- 4.7.1 As part of Basic Services and at Contractor's expense, the Contractor shall perform an annual electrical and maintenance shutdown as specified in the Agreement and detailed in Exhibit J.
- 4.7.2 During the period between January 1st to February 28th of each year, Contractor shall schedule an annual electrical and mechanical maintenance shutdown for repair or replacement of equipment which cannot be serviced with the systems in operation and to perform certain unscheduled maintenance work within limited time. Contractor shall provide all management, planning, scheduling, logistics, and quality control.
- 4.7.3 Contractor shall also schedule and pay outside utility companies that may have to be involved in the shutdown. Annual shutdown will be at Contractor's expense including, but not limited to, spot coolers, trailer mounted DX units with generators capable of handling loads in IDF/MDF rooms, badged professional guards, electricity, gas, water, sewage, etc. Airline leased areas, HAS and FIS locations. Six months prior to shutdown, Contractor shall prepare and present to HAS for the Director's approval, an Activity Planning Program identifying the time schedule/procedures for shutdown planning. Such time schedule must include start times for preparation of (1) a shutdown procedures guideline; (2) work orders for each work item to be accomplished; (3) planning sheets showing individual tasks, tools, manpower and materials required to complete a work item; (4) a maintenance priority list; (5) a shutdown materials list and manpower schedule; (6) a job plan with a related critical path network, and; (7) shutdown, work, and startup schedules.
- 4.7.4 At least two weeks prior to shutdown, Contractor shall deliver to Director the shutdown, work, and startup schedules. Following this activity, Contractor shall schedule a mock shutdown with the shutdown team to work out any last minute problems and ensure smooth execution of the entire shutdown program. Any preliminary work that can be done prior to shutdown must be accomplished in order to expedite the shutdown work.
- 4.7.5 At IAH, Contractor shall have a minimum of 25 spot coolers ranging in size from 1.5 thru 5 tons in various MDF/IDF rooms in the Airport. Contractor is responsible to provide badged personnel to secure doors and verify that all persons entering have current Airport badges and security clearance. (Approximately 20 individuals).
- 4.7.6 Upon completion of the shutdown, work, and startup, Contractor shall schedule a debriefing meeting with HAS to review planning, execution and startup procedures, safety, expediting, manpower utilization, and work scheduling.
- 4.7.7 The minimum annual maintenance shutdown procedures are detailed in Exhibit J.
- 4.8 Perform Corrosion Tests IAH, HOU & EFD
- 4.8.1 As a part of Basic Services, Contractor shall test and monitor corrosion rates for the steam, heating water, and chilled water, condensate and condenser water systems and report findings as specified in the Agreement and detailed in Exhibit J. Failure to provide this and other Basic Service Test Reports upon completion of the associated task will result in the application of liquidated damages in accordance with Section 19 of this Agreement.
- 4.9 Other Basic Services Tests - IAH, HOU & EFD
- 4.9.1 Other test shall include, but not be limited to, the following test:
- 4.9.1.1 Hydro Static – perform hydro static on tubes once every 3 years on each boiler.
- 4.9.1.2 Eddy Current - perform Eddy Current Test on an alternating basis, on two (2) chillers per year, per Airport.
- 4.9.1.3 Oil/Refrigerant Analysis – perform oil/refrigerant analysis, quarterly, on all chillers.

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 4.9.1.4 Charcoal Filters - test charcoal filters quarterly and submit the results to the Director.
- 4.9.1.5 VFD's - calibrated and repaired as needed, regardless of horsepower rating yearly by a Certified VFD technician.
- 4.10 Cooling Tower Cleaning IAH & HOU
- 4.10.1 As a part of Basic Services, Contractor shall provide its approach and methodology for operating and maintaining the cooling towers at IAH and HOU. Cooling towers must be cleaned once per year.
- 4.10.2 During cooling tower scheduled cleanings, Contractor shall ensure that all water and/or sediment discharged from the tower into storm or sanitary drains is in compliance with all state and federal EPA and/or TCEQ regulations controlling such discharges and any subsequent changes to these regulations that may occur during the Agreement Term. Contractor shall keep the Director informed of such changes and the effect on the effective operation of the tower(s) involved.
- 4.10.3 As part of Basic Services, Contractor shall, at its expense, remove and dispose of all sediment and materials from the cooling towers and cooling tower filtration systems, whether by approved discharge into existing sanitary sewage drains or physical removal and disposal off site at approved dumping locations. Approved as specified above means approved by the EPA and, if applicable, the TCEQ. All permits associated with the removal, discharge/disposal is at Contractor's expense.
- 4.10.4 Failure of Contractor to fully comply with those regulations established by the EPA and TCEQ for disposal of specified materials that result in fines or penalties to the City shall be reimbursed to City by Contractor within 30 days of receipt of an invoice from the City for such fines or penalties.
- 4.10.5 Harmful Organisms - test for the presence of potentially harmful organisms in accordance with local, state or federal agencies regulation controlling such test. Testing shall be required monthly by Contractor and quarterly by a water treatment professional, approved in advance by Director, notwithstanding any additional regulations. The results of these tests are to be retained in accordance with the appropriate agency or current industry standards. The findings shall be considered an operational report and shall be reported to the Director immediately upon completion.
- 4.11 Filter Replacement IAH, HOU & EFD
- 4.11.1 As part of Basic Services, Contractor shall inspect and replace HVAC filters in a timely manner, as required with the frequency of inspection based upon field conditions.
- 4.11.2 Contractor shall monitor all filters affected by construction projects and notify HAS of any deficiencies.
- 4.11.3 Replacement filters must meet or exceed the performance requirements of original OEM design matching the filtration requirements of specific HVAC and equipment.
- 4.11.4 Correct filters must ensure filtration at optimum efficiency consistent with minimum static pressure compensation.
- 4.11.5 Filter replacement requires the use of various types of filters properly located to ensure maximum indoor air quality at an economical cost.
- 4.11.5.1 Filter Selection Performance Factors
- 4.11.5.1.1 Filter type must be consistent with efficient operation at a minimum energy penalty for static pressure compensation.
- 4.11.5.1.2 Re-circulated filtered air shall provide superior indoor air quality with minimum effect of increasing the Airports ventilation load, energy consumption and operating costs in accordance with the most current version of ASHRAE Standard 62.1.
- 4.11.5.1.3 Filter type must be appropriate for specific mixing and distribution levels.

EXHIBIT "A"

PERFORMANCE/WORK STATEMENT

- 4.11.5.1.4 Filter selection must conform to current ASHRAE standards and existing EPA requirements.
- 4.11.5.1.5 Whenever possible, filters must utilize existing filter frames.
- 4.11.5.1.6 Filter selection must minimize any design modifications in both equipment and duct.
- 4.11.5.1.7 Filter selection must be a pleat type with a minimum of MERV 8 rating for all 2 inch and 6 inch filters.
- 4.11.5.2 Filter Types
- 4.11.5.2.1 Charcoal Filters - Charcoal Filters are utilized at IAH in Terminals A, B, C, D, and FIS and require periodic removal for regeneration or replacement. Regeneration may be accomplished by delivering the filters to the Contractor's off-site Sub-contractor for such services. During the time the charcoal filters are being regenerated, Contractor shall install spare filters until the filters are cleaned, regenerated, and reinstalled. To ensure minimum equipment shutdown, Contractor shall inventory an adequate number of replacement filters for this purpose. As part of Basic Services, Contractor shall be responsible, at its expense, for the maintenance, replacement, and regeneration of all such filters, both installed and in inventory for back-up. Contractor shall ensure all such filters are tested, at a minimum, every six months and changed as required by filter manufacturers. Efficiency rating of particulate filters is to be stamped on filter. Test results must be submitted to the Director. Failure to provide this report will result in the application of liquidated damages in accordance with Section 19 of this contract.
- 4.11.5.2.2 Electronic Air Cleaners - The electronic air cleaners at IAH in Terminal D require periodic maintenance. Collection units must be washed in an appropriate solvent, returned, and installed. To ensure minimum equipment shutdown, Contractor shall keep a minimum of 1 additional replacement cell in inventory for this purpose.
- 4.11.5.2.3 Carbon and Potassium Permanganate Filter Systems – These systems must be sampled quarterly and samples sent to a laboratory to determine useful life remaining. These filters must be changed at the end of their useful life not to exceed fifteen (15) months. The replacement filter or media must be on site at replacement time. Once the projected useful life is determined for each exposure (i.e., aircraft apron level, ground terminal area, parking third level, etc.) the sampling period for laboratory can be revised, but must not exceed 75% of projected useful life.
- 4.11.5.2.4 Panel Filters, Media Filters, Roll Filters, Air Washers, etc -Various types and methods of filtration are utilized in the Airports' HVAC to meet specific levels of air contaminants and environmental requirements. These filter media must be maintained to provide effective air filtration and efficient air movement. Efficiency rating of particulate filters is to be stamped on filter. 2-inch pleated filters need to be changed out at .8 inches on the magnehilic, 6-inch box filters need to be changed out at 1.25 inches. NO EXCEPTIONS.
- 4.11.6 Filter Replacement Schedule - Contractor shall identify each piece of equipment that has a filtering system in place by the following parameters:
 - 4.11.6.1 Equipment & Type.
 - 4.11.6.2 Filter Material.
 - 4.11.6.3 Filter Size.
 - 4.11.6.4 Type of Filter.
 - 4.11.6.5 Location of Filter.
 - 4.11.6.6 Frequency of Changing.
 - 4.11.6.7 Effectiveness.
- 4.11.7 Contractor shall collect this data and incorporate it into Contractor's filter maintenance schedule as part of its normal operations and maintenance responsibilities.
- 4.12 Administrative Tasks IAH, HOU & EFD

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 4.12.1 As part of Basic Services, Contractor shall perform certain administrative tasks which include implementation, operation, and maintenance of data systems, radio communications, security and badging requirements, preparation of work orders, generating reports, attending meetings, administering a quality control program, and performing certain housekeeping duties.
- 4.13 Maintenance Management System (MMS)
- 4.13.1 General Description
- 4.13.1.1 The contractor shall comply with HAS' Technology policies and best practices regarding the use of HAS infrastructure, technology assets, and HAS Enterprise Asset Management solution (currently Infor Enterprise Edition). The condition and disposition of all HVAC-related assets supported, on behalf of HAS, shall be documented and maintained in HAS' CMMS which includes scheduled preventive, corrective maintenance, and all other work order activity. Documented assets shall be in alignment with HAS asset hierarchy principles, location and asset naming convention. Technologies utilized as a result of this agreement are subjected to HAS Technology's governance, security, and life cycles.
- 4.13.1.2 HAS will retain all right, title, interest and full ownership of any work, invention, and all Agreement documents including all software, computer applications, preliminary plans, reports, or any modifications or improvements to the data at all times. In the event that modifications to the EAM database are required to move, enhance or manipulate HVAC-asset data, contractor will hire a subcontractor that meets HAS minimum requirements/qualifications to perform IT-related tasks. This will be under the supervision of the HAS Technology Division and handled through OSR.
- 4.14 Reliability Centered Maintenance (RCM), IAH, HOU & EFD
- 4.14.1 As a part of Basic Services throughout the term of the Agreement, the Contractor shall provide Reliability Centered Maintenance on HVAC at minimum life-cycle costs.
- 4.14.2 Contractor must use the RCM to determine the most effective approach to maintenance and what must be done to ensure that the HVAC continues to perform as designed by the OEM within the present operating context. RCM is an ongoing process in which the Contractor gathers data from the HVAC performance and uses this data for future maintenance and/or recommend design changes.
- 4.14.3 RCM must employ Preventive Maintenance, Predictive Testing/Inspection, Reactive Maintenance, and Proactive Maintenance techniques in an integrated manner to increase the probability that the HVAC will function in the required manner over their design life-cycle.
- 4.14.4 RCM requires that the Contractor make maintenance decisions based on maintenance requirements supported by sound technical and economic justification. RCM includes, but is not limited to:
- 4.14.4.1 Obtaining the highest level of performance and safety for the occupants and employees maintaining the Agreement.
- 4.14.4.2 Providing maximum functionality, availability, safety and reliability performance of HVAC at the lowest cost.
- 4.14.4.3 Identifying and implementing the most cost effective actions that reduce the probability of HVAC failure.
- 4.14.4.4 Provide statistical method of optimizing the preventive maintenance and predictive maintenance programs for HVAC.
- 4.14.4.5 Establish and identify issues of personnel performance and make any required corrections.
- 4.14.4.6 Restore equipment to the required levels of performance when deterioration occurs, but before failure. "Required" shall be defined as a serviceable condition, not necessarily equal to new condition, which will allow the equipment to operate safely and at design capacity without any known deficiencies. Losses in efficiency and

EXHIBIT "A"

PERFORMANCE/WORK STATEMENT

projects recommended to recover efficiency shall be provided as part of the annual Capital Improvements Plan described in Section 4.6 of this Agreement.

- 4.14.4.7 Collect the data, during the life of the Agreement and/or equipment, to change the workflow or design of the equipment in order to improve its reliability.
- 4.14.4.8 Re-evaluate the workforce and identify efficiencies and changes in personnel for long-term productivity reductions.
- 4.14.4.9 Report monthly progress and areas of improvement in performance, personnel, equipment, and process in enough detail to cover the items specified above related to RCM. This report shall be provided to the Director monthly. Additionally, the monthly performance metrics listed below in Table 1 shall be met and included in this monthly report. Failure to provide this report will result in the application of liquidated damages in accordance with Section 19 of the Agreement.

Table 1 Monthly Performance Metrics

Metric	Variables and Equations	Benchmark
Equipment Availability	$\% = \frac{\text{Hours each unit is available to run at capacity}}{\text{Total hours during the reporting time period}}$	>95%
Schedule Compliance	$\% = \frac{\text{Total hours worked on scheduled jobs}}{\text{Total hours scheduled}}$	>90%
Emergency Maintenance Percentage	$\% = \frac{\text{Total hours worked on emergency jobs}}{\text{Total hours worked}}$	<10%
Maintenance Overtime Percentage	$\% = \frac{\text{Total maintenance overtime during period}}{\text{Total regular maintenance hours during period}}$	<5%
Preventive Maintenance Completion Percentage	$\% = \frac{\text{Preventive maintenance actions completed}}{\text{Preventive maintenance actions scheduled}}$	>95%
Preventive Maintenance Budget/Cost	$\% = \frac{\text{Preventive maintenance cost}}{\text{Total maintenance cost}}$	15%-18%
Predictive Maintenance Budget/Cost	$\% = \frac{\text{Predictive maintenance cost}}{\text{Total maintenance cost}}$	10%-12%

Figure 4.1 adapted from Operations & Maintenance Best Practices Manual developed by the U.S. Department of Energy.

- 4.15 CFC Refrigerants IAH, HOU & EFD
- 4.15.1 Title VI of the Clean Air Act of 1990, as amended from time to time, concerns the depletion of the stratospheric ozone layer, and specifically addresses the use of CFC Refrigerants and regulations to significantly limit their production and venting.
- 4.15.2 Contractor shall comply with Title VI, Clean Air Act of 1990, together with any amendments thereto, and together with any other applicable governmental regulations related to the use of CFC Refrigerants. The City strictly prohibits the discharge of CFC Refrigerants into the atmosphere resulting from the installation, repair, maintenance, or any condition requiring the release of CFC Refrigerants from any City-owned equipment, system, etc., new or existing.
- 4.15.3 Contractor shall ensure the necessary procedures and safeguards are in place to prevent the occurrence of a CFC Refrigerant discharge into the atmosphere. Contractor shall be required at the request of HAS to remove and dispose of any refrigerants from old and unused appliances within the airport complex.

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 4.15.4 All costs associated with removal of CFC Refrigerants for the purpose of recovery, recycling, or reclamation is at Contractor's sole expense and is included in Contractor's costs for Basic Services. No additional compensation will be allowed.
- 4.15.5 The use of new (unused), recovered, recycled or reclaimed refrigerant by Contractor shall be permitted under these specifications. However, Contractor must provide a written statement indicating which it will utilize; new (unused), recovered, recycled or reclaimed and will warrant the refrigerant by any of these methods, to be within the nine (9) physical properties standards set by: ARI Standard 700-88, Table 1 - Physical Properties of Fluorocarbon Refrigerant and Maximum Contaminated Levels.
- 4.15.6 Any refrigerant that has been reclaimed must meet the then current ARI Standard 700-88 before it may be introduced into any City system. Appropriate test results must be submitted supporting the reclaimed refrigerant as being within the established maximums. Contractor shall attest to the test results as being applicable to the recycled refrigerant presented for use in the specified system in accordance with ARI Standard 700-88.
- 4.15.7 Contractor shall be responsible and wholly liable, for any and all fines, penalties, taxes, judgments, settlements or liabilities arising out of any violation or infraction of the Clean Air Act of 1990, any amendments thereto, or any other applicable governmental regulations related to the use of CFC Refrigerants.
- 4.16 *Best in Practice Service IAH, HOU & EFD*
- 4.16.1 Contractor shall implement industry best practices service through use of documented policies, procedures, processes, and employee training programs. Best-in-Practice Service is in accordance with the latest release of the Operations & Maintenance Best Practices developed by the U.S. Department of Energy.
- 4.16.2 Contractor's Best In Practice Service shall include, but not be limited to the following:
- 4.16.2.1 A central Help Desk to provide a focal point for operations planning, scheduling, communications with Contractor's customers, and control of all contract activities; and provide an integrating function for all HVAC program activities including a priority response system and fail-safe process to ensure the Contractor responds in the allotted time.
- 4.16.2.2 Efficient deployment and optimum use of all modules and capabilities of the MMS that includes electronic documentation and reporting of all HVAC activities.
- 4.16.2.3 An organizational model and work schedules that integrate all elements of strategic site leadership, field supervisory, customer service, and technical responsiveness.
- 4.16.2.4 A model and management approach that considers and fosters internal departmental and external process handoffs, communications, teamwork, and process improvements.
- 4.16.2.5 A Reliability Centered Maintenance strategy that logically incorporates into a maintenance program the proper mix of reactive, preventive, predictive, and proactive maintenance practices.
- 4.16.2.6 A world-class performance measurement program. A world-class performance measurement program will be implemented by the Contractor and facilitated either internally by the Contractor or by a third party vendor with no less than 10 years of experience with performance measurement governed by the methodologies and techniques defined in the current revision of the International Performance Measurement and Verification Protocol (IPMVP). Cost and statement of work for enhancements and expansion of the BAS system and its functionality that accommodate or supplement IPMVP methodologies for performance measurement shall be the responsibility of the Contractor as a Basic Service.
- 4.16.2.7 Employee-training program that ensures Contractor's employees remain highly skilled and proficient.
- 4.16.2.8 Contractor's continuous improvement that incorporates the latest advances in Quality and Customer Satisfaction programs.

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 4.16.2.9 A communications and reporting program that stresses and mandates customer and internal formal and informal communications and reporting.
- 4.16.2.10 Contractor must deploy best practices in HVAC maintenance programs that are integral to the HAS facilities which includes mission critical environments, vendor management, energy management, phase-in processes, HR support, and account planning and reporting.
- 4.17 Third Party Audits IAH, HOU & EFD
- 4.17.1 Contractor must have a Third Party Audit of equipment specified by the Director performed during Contractor phase out. In addition HAS may at its discretion, request a third party audit, no more than once a year. A third party audit company must be approved by the Director.
- 4.17.2 Third Party Audits must verify quality of Operation and Maintenance of HVAC to include but not limited to:
- 4.17.2.1 Operation & maintenance of HVAC.
- 4.17.2.2 Operation of Thermal Utility Generation Systems
- 4.17.2.3 Operation & Maintenance of DDC Systems.
- 4.17.2.4 Preventive Maintenance.
- 4.17.2.5 Condition of equipment.
- 4.17.2.6 Energy Management, including analysis of energy usage data.
- 4.17.2.7 Water Treatment Programs.
- 4.17.2.8 Proficiency/accuracy of Work performed by Contractor's employees.
- 4.17.2.9 House Keeping.
- 4.17.3 The cost for third party audits will be at HAS expense. An Independent and qualified third party agency must be selected by HAS. The third party agent/agency must be accountable to HAS. All reports must be sent directly to HAS with copies to Contractor.
- 4.17.3.1 Any deficiencies discovered by third party audits which are the responsibility of Contractor, must be rectified by the Contractor at no cost to the City. Correction/Work shall commence within thirty (30) working days of receipt of the notice of any such deficiency. Contractor shall provide the Director with a written explanation for such deficiency in performance and a plan to prevent future such deficiencies within fifteen (15) days of receipt of such notice.
- 4.17.3.2 Failure of Contractor to correct deficiencies covered under the terms of the Agreement may be used by the Director as grounds for application of liquidated damages or termination of the Agreement within the meaning of the general provisions entitled "Default."
- 4.17.3.3 At the Director's discretion, Contractor shall submit a revised Quality Control Program for review and approval by the Director within thirty (30) working days. The Quality Control Program must detail how future occurrences as identified in the above audit will be prevented.
- 5.0 PERSONNEL REQUIREMENTS IAH & HOU**
- 5.1 Staffing – Contractor shall provide the necessary number of personnel required to operate and maintain the HVAC and equipment at all Airports. During the phase-in period, Contractor shall develop and implement a full project schedule detailing the responsibilities of personnel and submit this schedule to the Director for written approval. All personnel assigned by Contractor to perform in accordance with the terms of the Agreement will not be assigned to any other projects or contracts managed by Contractor unless approved in writing by the Director.
- 5.2 The Contractor's Project Manager, Central Plant Operations Manager, and Terminal Maintenance manager shall all have e-mail capabilities. Contractor shall answer correspondence via e-mail within 24 hours.

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 5.3 Should HAS determine that the Contractor is not meeting the Agreement responsibilities with the Contractor's on-site crew, then upon the Director's request, Contractor shall modify/increase its on-site crew in order to meet Agreement obligations. Contractor shall increase its on-site crew at no cost to HAS as required to fulfill the requirements of the Agreement. Should the Director determine that Contractor is not meeting Agreement responsibilities; the Director will notify Contractor in writing. Contractor shall address and cure performance issues relating to personnel immediately. A plan to cure must be approved in writing by the Director at his sole discretion. If Agreement responsibilities can only be met with additional permanent staff, Contractor shall pay for the cost of such additional staff.
- 5.4 Contractor shall provide a dedicated Project Manager for all of HAS, skilled and experienced in the operation and maintenance of the type of systems/equipment identified in the Agreement, who will be actively included in the system maintenance and who will serve as the main point of contact for Contractor. The Project Manager shall not be a working technician/mechanic. The Project Manager shall be office at IAH, subject to change at the Director's discretion, from 8:30 a.m. through 5:30 p.m., Monday through Friday at a minimum. If Project Manager is on vacation, sick, etc., he will name a responsible subordinate to act on his behalf with full authority to represent the Contractor as if the subordinate was the Project Manager.
- 5.5 After execution of the Agreement the Project Manager shall attend a minimum of one meeting every month, or as requested by Director, with the Director to report on the status of the system/equipment and the Work/Services. Contractor shall prepare a typed agenda covering the topics to be discussed, keep minutes of the meetings in a form satisfactory to the Director, and issue copies of the minutes to all attendees within four (4) business days of each meeting. Liquidated damages may be assessed for failure of Contractor to comply with the above requirement.
- 5.6 The Project Manager shall be the communications contact with the Director and shall be exclusively assigned to this project. The Project Manager shall not be reassigned from this project without prior approval of the Director. Contractor shall provide a toll free telephone number if the Project Manager resides outside of the 713, 832, or 281 Area Codes.
- 5.7 The Project Manager, Central Plant Operations Manager, and Terminal Maintenance Manager shall not be reassigned and or be replaced from this Agreement without prior written approval of the Director.
- 5.8 Although personnel are assigned to specific Airports, every employee shall be cross trained and deployed as required.
- 5.9 Contractor shall notify Director of holiday/vacation schedules at least fourteen (14) days in advance.
- 5.10 The following job descriptions are intended to address minimum key personnel qualifications and are not intended to establish the level of staffing needed to operate and maintain the HVAC and equipment.
- 5.10.1 Project Manager – The Project Manager shall have minimum 2 years of HVAC central plant experience with a minimum 15,000 tons capacity or more.
- 5.10.1.1 A minimum of 10 years HVAC maintenance project experience with verifiable HVAC management capability and experience including but not limited to, Centrifugal and Reciprocal chillers 2000 tons or larger and water tube high-pressure boilers up to 600 degrees (F) @ 225 lbs. having a minimum capacity of 50,000 lbs per hour.
- 5.10.1.2 A minimum of 2nd Class Stationary Engineer License or Class A Texas Air Conditioning and Refrigeration Contractor License with "R" endorsement.
- 5.10.1.3 Minimum of five (5) years Energy Management experience.
- 5.10.1.4 Five (5) years cost forecasting and training and managing personnel.
- 5.10.1.5 Advanced computer skills and in-depth knowledge of complex DDC control systems.

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 5.10.1.6 HVAC Control experience is a plus.
- 5.10.1.7 The Project Manager shall communicate with the Director and shall be exclusively assigned to this Agreement. The Project Manager shall not be reassigned from this A without prior written approval of the Director. The Project Manager will be physically located at IAH but will operate between all facilities.
- 5.10.2 IAH Dispatch/Work Order Control –Generates work orders. Tracks and provides monthly, daily, weekly data on PM Logs and scheduling Parts Usage, Labor Hours and Warranty Reports:
 - 5.10.2.1 2 to 4 years experience in Service Dispatch.
 - 5.10.2.2 Excellent typing skills.
 - 5.10.2.3 In-depth computer skills.
 - 5.10.2.4 Proficiency with MS Office Applications and able to create and maintain spreadsheets.
 - 5.10.2.5 Minimum coverage 16 hours a day, 6 days a week.
- 5.11 IAH Contractor's personnel shall include professionals in the following job categories:
 - 5.11.1 IAH Maintenance Manager - Maintenance Manager shall have at least ten (10) years HVAC Facility Maintenance Experience in a large facility environment of at least 1.0 million sq. ft. At a minimum, experience and requirements will include, but not be limited to:
 - 5.11.1.1 Five 5 years supervisory capacity.
 - 5.11.1.2 A State of Texas HVAC License Class B or higher.
 - 5.11.1.3 A Universal Recovery Certificate.
 - 5.11.1.4 Working knowledge of Variable Frequency Drives.
 - 5.11.1.5 Knowledge of Complex Control Systems, BACNET.
 - 5.11.1.6 Native language required with graphic capability.
 - 5.11.1.7 Excellent Chemical Treatment knowledge.
 - 5.11.1.8 Building Pneumatics and Compressors.
 - 5.11.1.9 Building Chilled Water and Hot Water Pumps.
 - 5.11.1.10 Excellent working knowledge of Heat Exchangers.
 - 5.11.1.11 Basic Electrical Diagnostic Skills.
 - 5.11.2 IAH Central Plant Operations Manager –Central Plant Operations Manager must have a minimum of ten (10) years experience in a large central plant (15,000 tons or higher) and at a minimum shall have experience and requirements which include, but not limited to:
 - 5.11.2.1 Maintenance and Operation of Steam Boilers 50,000 lbs or higher.
 - 5.11.2.2 A Stationary Engineering License.
 - 5.11.2.3 Maintenance on Steam Turbines and Electric Driven Chillers.
 - 5.11.2.4 Five (5) years of Energy Management Experience.
 - 5.11.2.5 Operating High Pressure Boilers, 600 °F, 225 lbs.
 - 5.11.2.6 Excellent Chemical Treatment knowledge.
 - 5.11.2.7 Experience in Operative Plant Automation Systems.

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 5.11.2.8 Shift of five (5) days a week.
- 5.11.3 IAH Terminal Maintenance Supervisor - –Must have a minimum of five (5) years experience in Facility Maintenance, including but not limited to the following requirements:
 - 5.11.3.1 Three (3) years supervisory experience.
 - 5.11.3.2 Universal Recovery Certificate.
 - 5.11.3.3 State of Texas A/C License, Class B or higher.
 - 5.11.3.4 Working knowledge of Variable Frequency Drives.
 - 5.11.3.5 Excellent Chemical Treatment knowledge.
 - 5.11.3.6 Excellent working knowledge of Building Automation System.
 - 5.11.3.7 Experience with Pneumatics Control Systems and Compressors.
 - 5.11.3.8 Building Chilled Water and Hot Water Repair experience.
 - 5.11.3.9 Experience with repair and operation of Heat Exchangers.
 - 5.11.3.10 Basic Electrical Diagnostic Skills.
- 5.11.4 IAH Preventive Maintenance Technicians – Preventive Maintenance Technician must have three (3) years experience in a Facility Maintenance environment. Experience includes but not limited to:
 - 5.11.4.1 Preventive Maintenance on pumps, air compressors, electrical motors/starter, AHU, Mixing Boxes, Duct Work, Bearing Replacement and Centrifugal Blowers.
 - 5.11.4.2 Staffing Requirements for PM Technicians must be - - for 24 hours a day, 7 days a week coverage.
 - 5.11.4.3 Preventive Maintenance Technician are to be assigned full time to terminals A, B, C, D, & FIS.
- 5.11.5 IAH Preventive Maintenance Technician Helpers — Preventive Maintenance Technician Helpers must have at least one (1) year experience in a Facility Maintenance environment. Staffing requirement for Preventive Maintenance Technician Helpers must be for 24 hours a day 7 days week coverage.
- 5.11.6 IAH Electricians (Journeyman) - – Electrician Mechanic must have a minimum of three (3) years HVAC electrical experience and requirements including but not limited to:
 - 5.11.6.1 Maintenance electrician and a Journeyman Electrician's license in conformance with the City of Houston Building Code.
 - 5.11.6.2 Qualifications to perform most maintenance tasks on:
 - 5.11.6.2.1 Variable Speed Drives.
 - 5.11.6.2.2 High voltage experience.
 - 5.11.6.2.3 480 V. 3 ph, switch gear.
 - 5.11.6.2.4 12.47 KV systems.
 - 5.11.6.2.5 Motor starters, transformers.
 - 5.11.6.2.6 Buss distribution, buss-ties.
 - 5.11.6.2.7 Automatic and manual transfer switches.
- 5.12 The following Controls personnel shall be OEM certified. Candidates must be approved by the Director: (These controls personnel will be use to dispatch trouble tickets calls after reviewing the DDC system).
- 5.12.1 IAH DX Maintenance Mechanics –DX Maintenance Mechanic must have a minimum of 5 years continuous HVAC installation/repair experience including but not limited to:

EXHIBIT "A"

PERFORMANCE/WORK STATEMENT

- 5.12.1.1 Journeyman experience.
- 5.12.1.2 Five 5 years of repair experience in commercial air conditioning.
- 5.12.1.3 Universal Refrigerant recovery license and minimum of class B state of Texas A/C license.
- 5.12.1.4 DX Maintenance Mechanic will maintain all stand alone facilities.
- 5.12.1.4.1 Quantities:
 - Covering the 1st. shift - 7 am to 3 pm - (Monday - Friday).
 - Covering the 2nd. Shift - 3 pm to 11 pm - (Monday - Friday).
- 5.12.2 IAH Central Plant Stationary Engineers – Sufficient for 24/7 Coverage Stationary Engineers must have a Stationary Engineer License, Second Grade or higher and have a minimum of five (5) years experience in Central Plant Operations, 8,000 tons of higher and 50,000 lbs of steam. At a minimum, four of these positions will be required to be First Grade. Experience and requirements include but not limited to:
 - 5.12.2.1 A Universal Freon Recovery Certificate.
 - 5.12.2.2 Operation of large tonnage chillers of 2,000 tons or higher.
 - 5.12.2.3 Operation of boilers of 40,000 lbs of steam or higher.
 - 5.12.2.4 Heat Exchangers.
 - 5.12.2.5 Cooling Towers.
 - 5.12.2.6 Plant Automation System.
 - 5.12.2.7 Air Compressors.
 - 5.12.2.8 Chemical Treatment Systems.
- 5.12.3 IAH Senior Building Controls Technician – (Controls BACnet Native) - Senior Technicians must have a minimum of Ten (10) years continuous experience on BACNET controls, including but not limited to:
 - 5.12.3.1 Experience in the measurement, calibration, monitoring, testing and troubleshooting of electronic, pneumatic and electrical control systems.
 - 5.12.3.2 Experience must include communication; high speed modems and P.C. based HVAC networking systems.
 - 5.12.3.3 Capable of system management, repair and upgrades.
 - 5.12.3.4 Capable of creating and modifying graphics.
 - 5.12.3.5 Minimum of three (3) years in programming.
 - 5.12.3.6 Completed at least 400 hours of accredited technical schooling in electronic controls.
 - 5.12.3.7 Experience must include a minimum of four (4) years of Alerton Systems.
 - 5.12.3.8 Minimum of three (3) years in personnel management and work scheduling.
- 5.12.4 IAH Building Controls Technicians - (Controls BACnet Native) – Technician shall have a minimum of four (4) years continuous BAC net Controls experience including but not limited to:
 - 5.12.4.1 Capable of systems maintenance/ repair/upgrades.
 - 5.12.4.2 Minimum of 200 hours of accredited technical training in electronics or computer programming.

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 5.12.4.3 Able to work with Star-Bus, BACnet Native and other industrial languages.
- 5.12.5 IAH Plant Maintenance Mechanic - Minimum of ten (10) years experience in large central plant (15,000) tons or larger. Experience to include but not limited to:
- 5.12.5.1 Universal recovery certificate.
- 5.12.5.2 Centrifugal chillers (2,000 tons or higher).
- 5.12.5.3 York chiller experience a must.
- 5.12.5.4 Steam turbine experience a must.
- 5.12.5.5 Pneumatic air systems.
- 5.12.5.6 Water treatment programs.
- 5.12.5.7 Boiler experience of at least 40,000 lbs or higher.
- 5.12.5.8 Experience on heat exchangers.
- 5.12.5.9 Operation and maintenance on cooling towers and pump repairs.
- 5.12.6 IAH Administrative Assistant - Must have five (5) to ten (10) year experience as an administrative and operations support assistant. Experience should include but not limited to excellent typing skills, proficiency with MS Office applications (Word, Excel, PowerPoint, Access, and Outlook). Experience with MS Excel, database, spreadsheets and software.
- 5.12.7 IAH Painter -Painting of mechanical rooms, central plant, and duct work etc.
- 5.12.8 IAH Cleaner - (Central Plant Only) Cleaning experience includes but not limited to the following:
- 5.12.8.1 Clean equipment, pads, floors, bathrooms, windows etc.
- 5.12.8.2 Wipe down piping in tunnels, equipment room.
- 5.12.8.3 Plant housekeeping, buff, and wax floors.
- 5.13 HOU Contractor's personnel shall include professionals in the following job categories, and is a shared resource with EFD:
- 5.13.1 HOU Operations Supervisor - The Operations Supervisor shall have a minimum of ten (10) years project or similar HVACM experience with verifiable management capability and experience. The Operations Supervisor will report to the Project Manager and shall not be a working technician/mechanic. The Operations Supervisor shall be on duty from 8:30 a.m. through 5:30 p.m., Monday through Friday or as dictated by job requirements.
- 5.13.2 HOU First Grade Stationary Engineers - First Class Operating Engineers shall have First Grade Stationary Engineer's Licenses in conformance with the City of Houston Codes. Minimum of eight (8) years HVAC operating experience as a First Grade Stationary Engineer.
- 5.13.3 HOU Operations Engineers - Operating Engineer shall have Second Grade Stationary Engineer's Licenses in conformance with the City of Houston Codes. Minimum of eight (8) years operating experience as a Second Grade Stationary Engineer.
- 5.13.4 HOU Maintenance Mechanics - Maintenance Mechanic shall have a minimum of ten (10) years experience in preventive/repair maintenance of HVAC equipment in an environment similar to Houston, Texas. Must have certification of experience on HVAC from an accredited source(s) and instructor/training back-ground.
- 5.13.5 HOU Senior Building Controls Technician - Must have a minimum of ten (10) years continuous experience on BACNet Controls, including but not limited to:

EXHIBIT "A"

PERFORMANCE/WORK STATEMENT

- 5.13.5.1 Experience in the measurement, calibration, monitoring, testing and troubleshooting of electronic, pneumatic and electrical control systems.
- 5.13.5.2 Experience must include communication; high speed modems and P.C. based HVAC networking systems.
- 5.13.5.3 Capable of system management, repair and upgrades.
- 5.13.5.4 Capable of creating and modifying graphics.
- 5.13.5.5 A minimum of three (3) years in programming.
- 5.13.5.6 Must have completed minimum of 400 hours of accredited technical schooling in electronic controls.
- 5.13.5.7 Experience must include at least four (4) years of Alerton Systems.
- 5.13.5.8 Must have a minimum of three (3) years in personnel management and work scheduling.
- 5.13.6 HOU DX Mechanic –Must have minimum of five (5) years of continuous HVAC installation/repair experience including but not limited to:
 - 5.13.6.1 Journeyman Level Experience.
 - 5.13.6.2 Minimum of two (2) years servicing and repair commercial air conditioning.
 - 5.13.6.3 Universal Refrigerant Recovery License.
 - 5.13.6.4 State of Texas Class B Contractor's License or higher
- 5.14 Personnel Approval IAH & HOU
 - 5.14.1 The Contractor shall furnish adequate documentation of the assigned personnel's qualifications for the on-site crew and obtain written approval of acceptance of such qualifications by the Director. Contractor may change personnel only with equally qualified personnel as approved by the Director.
- 5.15 EFD Personnel
 - 5.15.1 HVAC requirements at Ellington Airport will be handled by personnel from HOU and supported by all Contractor personnel.
 - 5.15.2 Contractor personnel reporting to EFD shall spend at least ten (10) hours per week on preventive maintenance.
- 5.16 Housekeeping Duties IAH & HOU
 - 5.16.1 Central Plants Housekeeping Duties – As part of Basic Services
 - 5.16.1.1 Contractor shall perform all work and provide all materials for the housekeeping of the total Central Plants to keep the Central Plants clean at all times including but not limited to break room, bath/restroom and upstairs control room.
 - 5.16.1.2 Contractor shall maintain all parts of all panel boards that have any device serving/affecting heating, ventilating and air conditioning systems.
 - 5.16.1.3 Equipment, parts, supplies, materials etc., must not be stored in any areas unless specifically authorized in writing by the Director.
 - 5.16.1.4 Central Plant Housekeeping Duties Include:

EXHIBIT "A"

PERFORMANCE/WORK STATEMENT

- 5.16.1.4.1 Furnishing the appropriate tools, equipment, and supplies.
- 5.16.1.4.2 Cleaning, waxing and maintenance as appropriate: all floors, walls, ceiling and glass areas on a scheduled basis, meeting or exceeding acceptable industry standards for like areas.
- 5.16.1.4.3 Maintain the condition of all ceiling, glass and wall areas to include painting as may be required to maintain a clean and neat appearance.
- 5.16.1.4.4 Clean and maintain ceiling tiles and floor tiles in offices.
- 5.16.1.4.5 Maintain the lighting in the Central Plant to include, but not be limited to, electrical, fixtures and lamps.
- 5.16.1.4.6 Maintain the Central Plant floor areas, including cleaning and frequent painting. All colors for painting must be approved by the Director. No refuse, trash, etc., is to be left on the Central Plant floor areas. All trash receptacles must be properly maintained and all refuse removed from the Central Plant daily.
- 5.16.1.4.7 All equipment, including piping, valves, etc., must be wiped down on a periodic basis to reduce the dust build-up on the equipment and to eliminate potential problems with equipment that may be sensitive to such dust particles.
- 5.16.1.4.8 All pipe insulation must be painted on a frequent basis as needed to ensure its protection and appearance is maintained. All motors, pumps, valves and other pieces of equipment must also be kept in a painted condition as appropriate for the equipment's use. Color coding must be utilized throughout the Central Plant for ease of identification for piping, motors, valves, etc.
- 5.16.1.4.9 Maintain all drains, grease traps, toilets, etc., in the Central Plant that become clogged. The Contractor's responsibilities extend from the Central Plant to the main sewer line.
- 5.16.2 IAH Tunnel Area Housekeeping Duties
- 5.16.2.1 Contractor shall ensure the utility tunnel area from the IAH Central Plant to Terminal B, containing the chilled and Primary Hot Water piping for the terminal facilities, is free of all trash and debris and is properly maintained on a regularly scheduled basis. All piping insulation must be coated or painted as appropriate for maintenance and appearance. Contractor shall also maintain the lighting in the IAH utility tunnel to include, but not be limited to, electrical, fixtures and lamps.
- 5.16.3 Terminal HVAC Equipment Rooms/Air Handler Rooms Housekeeping Duties
- 5.16.3.1 Contractor shall maintain all HVAC Equipment Rooms/Air Handler Rooms in all terminals and keep them free of all trash and debris. Rooms must be cleaned and maintained on a regularly scheduled basis. Equipment, piping, insulation, etc. must be maintained in a painted condition at all times, consistent with appropriate protection and appearance requirements. All colors for painting must be approved by HAS.
- 5.16.4 IAH Administration Building, ASC, SCM, & Remote Buildings/Facilities Housekeeping Duties
- 5.16.4.1 Contractor shall maintain HVAC Equipment Rooms and Areas for these facilities in a trash and debris free environment. Equipment, piping, insulation, etc. must be maintained in a painted condition at all times consistent with protection and appearance requirements. All colors for painting must be approved by HAS.
- 5.16.5 HOU Building at 8800 Paul B. Koonce and Remote Buildings/Facilities Housekeeping Duties
- 5.16.5.1 Contractor shall maintain HVAC Equipment Rooms and Areas for these facilities in a trash and debris free environment. Rooms and equipment must be cleaned and maintained on a regularly scheduled basis. Equipment, piping, insulation, etc. must be maintained in a painted condition at all times consistent with protection and appearance requirements. All colors for painting must be approved by the Director.
- 5.16.6 Miscellaneous DX Equipment Housekeeping Duties

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 5.16.6.1 Contractor shall maintain a clean work area and shall remove all trash and debris from the area of the equipment upon completion of any O&M or remedial service.
- 5.17 Contractor shall provide, at its own expense:
- 5.17.1 All office furniture and incidentals required for Contractor's operation of the Central Plant Offices, including but not limited to compatible PC's, copy machine, fax machine, pagers, office supplies, and miscellaneous office equipment. Contractor shall remove all Contractor-owned furniture and equipment upon termination or expiration of the Agreement.
- 5.17.2 All expendable items required for the proper operation and maintenance of the facilities. Expendable items include, but are not limited to, the following: mops; floor cleaning agents; paper towels; soap; brooms; toilet tissue; paper, etc.
- 5.17.3 All telephone lines will be provided by the City, but all cost for use thereof will be at Contractor's expense.
- 5.17.4 Contractor shall, at its own expense, replace damaged or lost material, parts, equipment, etc., and repair damaged parts of the Work or facility. As part of the maintenance requirements, Contractor shall develop schedules for regular housekeeping of the central plant HVAC equipment areas.
- 5.18 Uniforms - IAH,HOU & EFD
- 5.18.1 Contractor's personnel shall present a clean and neat appearance. Contractor's personnel shall wear a Contractor furnished uniform with Contractor's name clearly displayed on the front of the shirt and seasonal outerwear approved by the Director.
- 5.19 Training IAH,HOU & EFD
- 5.19.1 The Contractor's training program must be directed towards developing appropriate levels of expertise for skilled trades and management/ supervisory personnel in order that they have the expertise to maintain the HVAC in Best-in-Practice Service. Best-in-Practice Service is in accordance with the latest release of the Operations & Maintenance Best Practices developed by the U.S. Department of Energy. The training program must include both comprehensive training needs analysis and subsequent training by staff professionals. The Contractor shall provide the Director with quarterly and annual training documentation, by employee, with topic and hours. This shall be considered an operational report. Failure to provide this report will result in the application of liquidated damages in accordance with Section 19 of this contract.
- 5.19.2 Training needs analysis and training for skilled trades must include, but not be limited to,:
- 5.19.2.1 General Plant Safety.
- 5.19.2.2 Mathematics and Measurement.
- 5.19.2.3 Hand Tools & Power Tools.
- 5.19.2.4 Bearings & Drive Components.
- 5.19.2.5 Equipment Installation.
- 5.19.2.6 Steam Generation.
- 5.19.2.7 Air Conditioning & Refrigeration.
- 5.19.2.8 Applied Mech. Maintenance.
- 5.19.2.9 Pumps and Piping Systems.
- 5.19.2.10 Hydraulic, Pneumatic, Electric Systems.
- 5.19.2.11 Electric Troubleshooting.
- 5.19.2.12 Turbine & Boiler Operation.

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 5.19.2.13 Energy Conservation.
- 5.19.2.14 First Line Supervision.
- 5.19.2.15 Basic Mechanics
- 5.19.2.16 Lubrication
- 5.19.2.17 Basic Electricity
- 5.19.2.18 Working with Materials
- 5.19.2.19 Blueprints and Schematics
- 5.19.2.20 Non-specialized Welding
- 5.19.2.21 Electronics
- 5.19.2.22 Electric Systems
- 5.19.2.23 Applied Welding
- 5.19.2.24 Building and Grounds Maintenance
- 5.19.2.25 Pollution Control
- 5.19.2.26 First Line Supervision
- 5.19.2.27 Safety and PPE
- 5.19.3 Training needs analysis and training for management/supervisory staff shall include, but not be limited to:
 - 5.19.3.1 Human Resource.
 - 5.19.3.2 Plant Maintenance.
 - 5.19.3.3 Regulatory Compliance.
 - 5.19.3.4 Human Resources
 - 5.19.3.5 Basic Supervision
 - 5.19.3.6 Interviewing
 - 5.19.3.7 Performance Evaluation
 - 5.19.3.8 EEO/ Mayor's Office of Business Opportunity
 - 5.19.3.9 Labor Relations
 - 5.19.3.10 Employee Counseling
 - 5.19.3.11 Work Order Systems
 - 5.19.3.12 Project Management
 - 5.19.3.13 Energy Management
 - 5.19.3.14 Preventative Maintenance
 - 5.19.3.15 Work Planning
 - 5.19.3.16 Federal, State, and Local Codes
 - 5.19.3.17 Computer Skills

EXHIBIT "A"

PERFORMANCE/WORK STATEMENT

- 5.19.3.18 Job Costing/Estimating
- 5.19.3.19 Written Communication
- 5.19.3.20 Risk Management
- 5.19.3.21 Safety and PPE
- 5.19.4 All costs for training must be provided by Contractor as part of Basic Services.

6.0 FACILITIES AND SERVICES PROVIDED BY HAS

6.1 Utilities

6.1.1 HAS will provide all electricity and natural gas required for the operation of HVAC. The existing service and distribution facilities for electricity and natural gas are in place and connected to the equipment.

6.2 HAS will also provide water necessary for use in the HVAC and for Contractor's employees on site.

6.3 480V Electrical Distribution - HAS' responsibility for power distribution is limited to service to the main 480-volt disconnect switches; there is currently a switch in each Terminal.

6.4 Non-Hazardous Solid Waste Pickup - HAS will provide pick-up of non-hazardous solid waste from Airport dumpsters. Disposal of hazardous, unusual (or) heavy items is the sole responsibility and cost of Contractor. With Director's prior written permission, filters can be disposed of in HAS dumpsters.

6.5 Fire Safety Equipment - HAS will maintain existing fire extinguishers.

6.6 Office, Maintenance, and Storage Area – At IAH & HOU, HAS will provide an office, maintenance, and storage areas. Contractor shall provide, at its expense, any additional required facilities. Contractor shall be responsible at its cost for all housekeeping of such facilities including, but not limited to, sweeping, washing, cleaning, waxing, painting, dusting, etc., of all areas, fixtures, and equipment.

6.7 Access to Work Areas – Subject to HAS rules and regulations, Contractor may enter and leave work sites at all reasonable times. Contractor and its employees may use the common areas and roadways at the Airport where the work sites are located. This excludes parking for Contractor's personnel and does not extend to any restricted area of the Airport, including without limitation, the AOA, which requires the Director's prior written approval and an HAS escort. Contractor shall repair any damage it or its employees cause as a result of its use of the common areas.

7.0 COORDINATE PERFORMANCE IAH, HOU & EFD

7.1 HAS Contact – Contractor shall coordinate its performance with such person(s) as the Director designates in writing to Contractor. Contractor shall keep said person(s) currently advised of developments relating to the performance of the Agreement.

7.2 Pre-Performance Conference – Thirty (30) days prior to commencing performance under the Agreement, Contractor shall attend a pre-performance conference with the Director and other representatives of HAS. The Director shall specify the time and place of such meeting in a written notice to Contractor. Representatives of Contractor attending the pre-performance conference include, but are not limited to, the Project Manager whom Contractor has assigned to the Agreement, together with an officer of Contractor who is authorized to bind Contractor in matters relating to the pre-performance conference items listed below to the extent the Project Manager is not so authorized to bind Contractor. In the above-mentioned notice, the Director may, in his sole discretion, further designate other representatives of Contractor who must attend the pre-performance conference and such designated representatives shall attend same. Items to be addressed at the pre-performance conference include, but are not limited to, the following:

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 7.2.1 Phase-in and Start-up schedules.
- 7.2.2 Contract administration.
- 7.2.3 Facilities utilization.
- 7.2.4 Channels of communication.
- 7.2.5 Review of key personnel resumes and certifications.
- 7.2.6 Organization and function charts reflecting the line of management authority.
- 7.2.7 Procedures to be used to ensure Agreement requirements are met (Quality Control Program).
- 7.2.8 Transition Planning, including the existing MMS and spare parts management.
- 7.3 Coordination Meetings - Throughout the Agreement Term and any extensions hereto, Contractor shall meet with the Director to identify and resolve performance issues. Meetings will be scheduled bi-monthly or as determined by the Director. Notice of any such meeting may be given by the Director to Contractor either orally or in writing and will designate the time, date, location, Contractor attendees, and general purpose. The Contractor's designated attendees shall be present at any such performance meeting for its duration and shall prepare a typed agenda covering the topics to be discussed; keep minutes of the meetings in a form satisfactory to the Director; and issue copies of the minutes to all attendees within four business days of each meeting.
- 8.0 PHASE-IN/PHASE-OUT SERVICES IAH & HOU**
- 8.1 Contractor's Phase-In
- 8.1.1 In order to accomplish a smooth and successful transition of operations and maintenance services and at no extra charge to the City, Contractor shall provide Phase-in services for up to thirty (30) days prior to Agreement expiration.
- 8.1.2 Contractor's Phase-In period begins upon receipt of a "Start Phase-in Notice" from the Director and continues until receipt of "official Notice to Proceed" (Start Date of the Contract). The "Start Phase-in Notice" is different than the official Notice to Proceed. Contractor shall have no responsibilities for operating or maintaining the HVAC during the Phase-in period.
- 8.1.3 During the phase-in period, the successful Contractor shall have access to the facilities and areas covered by the Agreement, access to personnel, and allowed to observe all operations.
- 8.1.4 The incumbent Contractor will perform the duties and services listed in its contract during the Contractor's Phase-In period, and will be available during the phase in period to answer questions and resolve issues or any misunderstandings.
- 8.1.5 The Contractor shall provide during Phase-in period, all required deliverables including but not limited to:
 - 8.1.5.1 Review and verify Exhibit I & L of the SOW Equipment List within the first ten (10) Phase-In days.
 - 8.1.5.2 Arrange to have necessary supervisory, technical, and other personnel on site at the Airports to observe the operation and maintenance of the HVAC.
 - 8.1.5.3 Recruit and transfer personnel, train personnel, arrange for security badging.
 - 8.1.5.4 Establish management procedures, set up records, ensure adequate parts, tools and equipment in place for systems operation and maintenance.
 - 8.1.5.5 Prepare for the assumption of technical control without disruption of operations.

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 8.1.5.6 Develop and implement a full project schedule detailing the responsibilities of assigned personnel and submit it to the Director for approval.
- 8.1.5.7 Coordinate Contractor's activities with Director.
- 8.1.5.8 Final transition and training plan addressing the Contractor staffing strategies in determining the necessary staffing and supervision required for compliance with the specified services.
- 8.1.5.9 Emergency phone numbers and verification of cell phones.
- 8.1.5.10 Certification of all Contractor Personnel requirements and training.
- 8.1.5.11 Reporting and approach plans.
- 8.1.5.12 Inventory of supplies, materials, tools, equipment, etc., necessary to start.
- 8.1.5.13 Standard Operating Procedures (SOP).
- 8.1.5.14 Permits, licenses and certifications.
- 8.1.5.15 Security approval and access.
- 8.1.5.16 Sub-contractor & Sub-contractor agreements in place.
- 8.1.6 The Phase-in period will end twenty-four (24) hours prior to the effective contract start date shown in the official Notice to Proceed, at which time Contractor shall assume full responsibility for the operation and maintenance of the HVAC and equipment. The Contractor shall be prepared to perform fully all Work services upon receipt of notification to proceed document from the Director.
- 8.1.7 Within one month after the Agreement start date, the Contractor shall certify to the Director in writing that 100% of the Contractor's employees (fully trained and experienced) necessary for the effective and timely accomplishment of the Contractor's obligations under the Agreement are in place, and all Sub-contractors, if any, necessary for the effective and timely performance of the Contractor's obligations under the Agreement have been engaged by the Contractor and have commenced work under their respective Subcontracts.
- 8.2 Contractor's Phase-Out
 - 8.2.1 Six (6) months prior to the Agreement expiration, the Contractor shall have a third party audit of equipment identified by the Director at Contractor's cost. The third party company must be approved in writing and in advance by the Director and agent/agency must be accountable to HAS. All reports must be sent to HAS with copies to the Contractor. Within these six (6) months, the Contractor shall also correct all deficiencies found by the third party auditor and certify in writing to the Director that all deficiencies have been corrected.
 - 8.2.2 In order to accomplish a smooth and successful transition of operations and maintenance services and at no extra charge to the City, the Contractor shall provide Phase-out services for up to sixty (60) calendar days following the successor's receipt of "Start Phase-in Notice" from the Director and continue until successor's receipt of "official Notice to Proceed". Phase-out orientation comprises a maximum of 30 working days, 8 hours per day for successor's personnel. Orientation includes, but is not limited to, system operations and maintenance procedures, record keeping, reports, and procurement procedures, etc. Contractor shall be totally responsible for providing the services under the Agreement during its Phase-out period. Contractor shall cooperate with its successor Contractor in allowing as many personnel as practical to remain on the job in order to enhance the continuity and consistency of the services in the Agreement.
 - 8.2.3 Contractor shall disclose necessary personnel records and allow its successor to conduct on-site interviews with its employees, provided Contractor obtains the consent of said employees to disclose their records and to conduct such interviews and provided such disclosure and interviews are conducted in accord with all applicable laws,

EXHIBIT "A" PERFORMANCE/WORK STATEMENT

statutes, rules, regulations, and ordinances which have been passed, enacted or promulgated by any governmental body having jurisdiction over such matters.

- 8.2.4 The Contractor shall provide all required deliverables including, but not limited to:
- 8.2.4.1 List of qualified employees working at the Airport.
 - 8.2.4.2 Reporting requirements.
 - 8.2.4.3 Inventory of supplies, materials, tools, and equipment.
 - 8.2.4.4 Current Standard Operating Procedures.
 - 8.2.4.5 Permits, licenses, and certifications.
 - 8.2.4.6 Deficiency status and list.
 - 8.2.4.7 Detailed transition plan.
- 8.2.5 Contractor shall turn over all HVAC in First-Class Condition. Any item not operating in accordance with its required function must be repaired or replaced. Preventive maintenance work must have been performed as required per the PM schedule.
- 8.2.6 One year prior to the expiration of the Agreement Term, Contractor shall prepare and submit to the Director a complete equipment listing of all IAH, HOU, and EFD HVAC equipment. Listing must include identification number, description, location, model/serial number, area served, condition, and age of equipment.
- 8.2.7 Within sixty (60) days of the expiration of the Agreement Term, the Contractor shall perform a complete inspection of all controls and instrumentation. Any HVAC not in First Class Condition and/or not performing as designed by OEM within its present operating condition must be corrected.
- 8.2.8 Sixty (60) days prior to the expiration of the Agreement Term, the Contractor shall provide the Director with a complete final report on the condition of all HVAC, including inspection reports, and certified statements signed by an agent of Contractor, testifying to the Best-in-Practice Service of all equipment and systems and that all HVAC are in First Class Condition and performing as designed by OEM within present operating conditions. HAS will have 30 days to review the final report and respond to the Contractor. The Contractor will be required to correct any deficiencies identified by HAS prior to the expiration of the Agreement term.
- 8.2.9 HAS shall have the right of inspection during or after any of this work, and shall notify Contractor, within seven (7) calendar days of receipt of Contractor's certified statement, of any noted discrepancies. Contractor shall then proceed to correct any discrepancies within thirty (30) days and notify the Director in writing upon completion of all work. Contractor shall assist HAS with any inspections required by the Director at no additional cost to HAS.
- 8.2.10 Should Contractor fail in the performance of this portion of the Agreement, Contractor agrees that the Director may perform such Services and deduct costs from any amount that may be due Contractor. Should costs exceed amounts due Contractor, additional costs must be paid by Contractor to City or by Contractor's performance bond surety.
- 8.2.11 At the expiration or termination of the Agreement, the Contractor shall verify to HAS that all equipment is in Best-in-Practice Service and that all HVAC are in First Class Condition and performing as designed by OEM within present operating conditions. Such responsibility at Agreement expiration includes all equipment, components, software, appurtenances, controls, and instrumentation in all systems identified in The HVAC Equipment Inventory List.

9.0 NOTICE TO PROCEED (NTP) REQUIREMENTS

- 9.1 Immediately after receipt of NTP, the Contractor shall implement a computer-based Maintenance Management System ("MMS"), or City Approved Equal. The system must be web-based ("fully" accessible at all times by HAS). Until such time that the new MMS is accepted by HAS and Contractor, the Contractor will maintain data in existing Maximo system. Contractor shall provide resources for efforts of system configuration and developed procedures for implementation of HAS' CMMS. The Contractor will provide definition of tasks/maintenances (RCM strategies

EXHIBIT "A"

PERFORMANCE/WORK STATEMENT

included) and their schedules and complete data entry of such. Contractor shall comply with reporting specifications upon HAS and Contractor's acceptance of CMMS configuration.

9.2 Within thirty (30) days after the NTP, the Contractor shall submit an emergency procedures plan for the Director's approval. This plan shall contain procedures in advance for all foreseeable emergency situations including but not limited to, personal injuries, sickness, vandalism, intoxication, fire, smoke, power outage, etc. Emergency procedures shall include communications with the Airports and coordination with Airport emergency procedures.

9.3 Within thirty (30) days after the NTP, the Contractor shall certify to the Director in writing that 100% of the Contractor's employee (fully trained and experienced) necessary for the effective and timely accomplishment of the Contractor's obligations under the agreement are in place, and all Sub-contractors, if any, necessary for the effective and timely performance of the Contractor's obligations under the agreement have been engaged by the Contractor and have commenced work under their respective Sub-contracts.

9.4 Within thirty (30) days after the NTP, the Contractor shall provide training on the MMS for up to 5 HAS employees.

9.5 Within sixty (60) days after the NTP, the Contractor shall provide a list of the proposed tools, instruments, and equipment, including test/calibration/diagnostic equipment, tools, and supplies etc., to be provided and used as part of the Agreement.

9.6 Contractor Phase-in/Phase-out Period IAH, HOU & EFD

9.6.1 Within ninety (90) days from the NTP, the new Contractor shall provide to the Director its training program. Failure to provide this report will result in the application of liquidated damages in accordance with the Agreement.

10.0 TELEPHONE SERVICE

10.1 Contractor shall pay for any and all costs associated with the use of HAS-furnished telephone line(s), including but not limited to any and all charges for long distance service.

11.0 SECURITY AND BADGING IAH, HOU & EFD

11.1 Contractor shall comply with all applicable Federal rules governing security at the Airport, as may be amended from time to time.

11.1.1 All on-site personnel of Contractor, including Sub-contractor's, who perform services under the Agreement, are required to undergo a fingerprint-based criminal history records check. Fingerprints are collected at the Airport Badging Office and submitted electronically for investigation. The Project Manager shall have additional training at HAS to approve badging requests for Contractor personnel.

11.2 Contractor shall obtain HAS security badges for its personnel performing services on-site, including its Sub-contractor's personnel. On-site personnel shall wear identification badges at all times while on Airport property. The cost of badges, which is subject to change, is currently \$55.00 each at IAH/ HOU and \$16.00 each at EFD. Costs for the fingerprint-based criminal history records check are reflected in the cost of the badges. Contractor is responsible for the cost of badges, including replacements thereof. Contractor personnel losing badges will be charged for replacement badges at the then current rate. Badge yearly renewal cost is \$16.00.

11.3 Contractor acknowledges that fines or penalties associated with non-compliance with security regulations must be reimbursed to HAS.

11.4 Airport Customs Security Area Bond:

Contractor shall obtain an Airport Customs Security Area Bond in order to have access to the Federal Inspection Services (FIS) located at George Bush Intercontinental Airport (IAH). The bond amount is determined by calculating \$1,000.00 times the number of employees needed to provide the service.

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

12.0 **INVOICING**

12.1 Contractor shall submit its invoices for work completed on a form(s) approved in advance by the Director; invoices must be accompanied by support documents requested by the Director.

12.2 Each invoice submitted must be in duplicate and each copy must include required attachments. The invoice must be identified by the Agreement name and Agreement number. All invoices are to be delivered or mailed to the following location:

City of Houston
Houston Airport System
Finance Division/Accounts Payable
P.O. Box 60106
Houston, Texas 77205-0106

12.3 **Invoicing:**

12.3.1 The Houston Airport system will accept invoices submitted electronically along with required support information; such as Outline Agreement Number(s), Service Release Orders (SRO) Numbers, and etc. Each invoice should be in a TIFF format. Multiple invoices can be submitted in a single email.

12.3.2 Requirements are as follows:

12.3.2.1 Submit invoices in "TIFF" format

12.3.2.2 Submit to has.accountspayable@houstontx.gov

12.4 Invoices submitted for services performed as the result of change orders require copies of the applicable change order are attached to the original and each of the two (2) invoice copies.

12.5 Invoices submitted for services performed as the result of Other Work/Services require a copy of the Director's written request to be attached to the original and each of the two (2) invoice copies.

13.0 **TRANSPORTATION AND PARKING IAH, HOU & EFD**

13.1 Contractor shall park its vehicles in areas designated by Director at its own cost. All transportation activities of Contractor or its Sub-contractor necessary to perform under the Agreement must be provided by Contractor.

13.1.1 All of Contractor's vehicles, including those owned by its employees and Sub-contractors, must be clearly marked with identification indicating Contractor's name. Such identification must be placed on both sides of each vehicle and may be removable, e.g. magnetic.

14.0 **CONTRACTOR'S RADIO COMMUNICATIONS REQUIREMENTS IAH, HOU & EFD**

14.1 Contractor shall operate the radios within protocols established by HAS and the FAA.

14.2 HAS will provide the Contractor with handheld radios (2 at IAH & 2 at HOU) equipped with batteries and chargers for Contractor's use on this contract. The radios will be programmed to transmit and receive on Harris County trunked frequencies. Upon cancellation or termination of Agreement, the Contractor shall return all radios to HAS. At all times the radios remains the property of the City.

14.3 Contractor shall pay for time and materials to repair any damaged radio(s) and full replacement costs for any radio(s) that are lost.

15.0 **SAFETY IAH, HOU & EFD**

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 15.1 Contractor shall not require any person to work in surroundings or under working conditions that are unsanitary, hazardous, or dangerous to their health or safety. Contractor shall comply with all provisions of the Occupational Health and Safety Act (OSHA)
- 15.2 Contractor shall be completely familiar with, and shall enforce all City, State of Texas and Federal OSHA regulations and requirements as applicable, including, but not limited to, the following
- 15.3 Contractor personnel must wear applicable personal protection equipment at all times
- 15.4 Contractor personnel operating equipment or handling materials must be fully trained in the safe operation of the equipment or materials.
- 15.5 Contractor personnel shall follow and apply safety practices prevailing in their applicable industry.
- 15.6 Contractor shall develop, implement and maintain an on-going safety program concerned with equipment, maintenance work, and related procedures. Contractor should present a written Safety Program (including Sub-contractors' services) to Director for approval no later than 60 days after Notice to Proceed. This shall include Security Identification Display Area (SIDA) training for IAH, HOU, and EFD. Contractor shall post safety warnings on equipment as necessary to ensure safe operations. Contractor shall not operate, install, or test any equipment in an unsafe condition. Contractor shall properly operate and maintain all safety equipment associated with its services.
- 15.7 When Contractor becomes aware constructively or actually of a hazardous or potentially hazardous condition during the course of performing services, Contractor shall verbally notify Director. Contractor shall immediately make such notification upon detection of the condition. Contractor shall detail conditions along with non-hazardous conditions and recommendations in its quarterly report.
- 16.0 MATERIAL SAFETY DATA SHEETS (MSDS) IAH, HOU & EFD**
- 16.1 The Contractor shall furnish to each Facility Superintendent all MSDS, (OSHA Form 174), for each product used in each facility. A Material Safety Data Sheet must accompany each product shipment to the facilities.
- 17.0 CONTROL OF PREMISES IAH, HOU & EFD**
- 17.1 Access to the HVAC
- 17.2 Contractor equipment brought into the facilities must not exceed the engineered floor load capacities of the facilities. Operations and maintenance areas must be limited to Contractor's personnel, HAS employees, and certain other individuals authorized by the Director. Access to the premises must be strictly controlled and Contractor shall keep a record of all keys distributed to its personnel. Officers, employees or agents of Contractor shall never enter restricted or operational areas of the Airport without the express permission of the Director or any other governmental bodies having jurisdiction, and Contractor hereby assumes full liability arising from any such unauthorized incursions.
- 17.3 All equipment PM sheets, schedules, and other records must be available at Contractor's Project Manager's office for inspection by HAS personnel. All documents generated or obtained by Contractor that pertain to the operation and maintenance of the HVAC and equipment shall become HAS property upon Agreement expiration or termination. All such documents shall be transferred to the Director within ten (10) days of expiration or termination.
- 18.0 INCLUSION/EXCLUSION**
- 18.1 Adjustment to the Fee Schedule shall be allowed only when the cumulative change is greater or less than 10% of the contract value of the total basic services at all three airports with the Contractor being responsible to monitor and value the changes to determine when the threshold is met. Historically the cost has been less than ½ percent the value of total basic services at all three airports. Contractor shall use the attached Inclusion/Exclusion Form to perform the contract evaluation.

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 18.2 Contractor Valuation Process
- 18.2.1 The MMS will establish the required Preventive Maintenance / Corrective Maintenance baseline labor hours by type of equipment which must be approved in writing by the Director.
- 18.2.2 If no MMS historical data is available, the accepted source is Facilities Maintenance & Repair Cost Data, latest edition R.S. Means Company or later version and/or another HAS approved source.
- 18.2.3 Baseline staff hours will be based on productive hours. Assuming 2080 total hours per year productive hours equal 2080 with actual tool time at 65% or 1352 hours per year.
- 18.2.4 Additions or deletions of equipment that equal labor at or above the trigger point of 1352 hour / year indicating that a fulltime equivalent will be required or in excess of service delivery requirement.
- 18.2.5 Contractor Labor cost will be adjusted based on actual labor cost (addition/deletion) x 1.35%.
- 18.2.6 Additions: Contractor shall accurately document materials used and project costs for a 12 month period following additions, to be verified by HAS. The contract amount will be adjusted for the remainder of the contract term following the verification by HAS.
- 18.2.7 Deletions: Contract will be decreased by an amount equal to the total cost expended by the Contractor for the prior 12 months or applicable measurable period.
- 18.2.8 In the case of a large addition or deletion of 250,000 square feet of conditioned space both parties agree to negotiate cost based on the above criteria.

19.0 LIQUIDATED DAMAGES

- 19.1 In addition to the termination rights, Article V, Section C and D, and all other legal and equitable remedies, Director shall have the discretionary right to assess liquidated damages in amounts not to exceed the amounts set forth below on a per occurrence basis and as may be described in other sections of this Agreement. Contractor and City stipulate and agree that any such assessment shall not be construed as a penalty; rather, Contractor and City stipulate that the damages resulting from any such violation will be difficult to measure and ascertain and as such the necessity of liquidated damages. Contractor shall pay any assessment of liquidated damages by the Director to City within ten days of receipt of an invoice for such damages. Multiple Liquidated Damages may be applicable.
- 19.2 Liquidated Damages Matrix

Performance	Liquidated Damage
Failure to maintain critical equipment operational as per the agreement and as a result of Contractor's failure to perform as stated in Section 27 (SOW).	\$3,000.00 deduct for every continuous 12 hour period temperatures or humidity are outside of acceptable limits
Failure to maintain temperatures/humidity in a specific area more than 3 times during any 30 day period (call backs)	\$1,000.00 per occurrence
Failure to perform other work services (OSR) in the time period specified in the OSR	\$250.00 per 24 hour period
Failure to provide a written OSR proposal within three days of receipt of Director's request for an OSR	\$150.00 per 24 hour period
Contractor fails to meet the minimum staffing levels as agreed for 2 consecutive weeks	\$1,000.00 per person per 24 hour period
Failure to meet response times as defined in the Agreement	\$2,000.00 per occurrence
Contractor fails to complete PMs for more than two weeks over schedule	\$1,000.00 per PM violation

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

Contractor fails to provide reports/ accurate operational data to HAS within defined reporting times	\$500.00 per day until report is provided
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- 19.3 Notwithstanding the foregoing, the Director shall not be entitled to assess Liquidated Damages under any of the following circumstances:
- 19.3.1 Force Majeure.
- 19.3.2 Annual shutdowns or upgrades/modifications set forth in the Agreement.
- 19.3.3 Damage to HVAC or equipment that is caused solely by the acts of the City.
- 19.3.4 Unplanned material changes to energy requirements not caused by Contractor. However, this exception is available to Contractor only at the sole discretion of the Director.
- 19.3.5 Assessment of Liquidated Damages must never be construed as an exclusive remedy for any other damage incurred as the result of the breach of any other covenants, conditions, or obligations contained in the Agreement, and the City will always have the right to avail itself of other remedies available to it in law or equity.

20.0 RECORDS AND REPORTS IAH, HOU & EFD

- 20.1 As part of Basic Services, Contractor shall develop and maintain daily logs, weekly, monthly, and annual reports for operation and maintenance of HVAC and equipment as more specifically described in Sections 20.5, 20.6, 20.7, and 20.8. The logs and reports shall provide a record of all pertinent operating data and maintenance performed. Contractor's record keeping system must be first approved by the Director in writing prior to implementation by Contractor and all required records may be inspected by the Director at any time during normal business hours. The Contractor shall provide all maintenance records and history with one hard copy and three Compact Discs (CD's) to the Director. Upon expiration or termination of the Agreement, all manual and automated records (including software data) produced and maintained on file become the property of HAS; Contractor shall submit all maintenance records to Director every 6 months. Contractor may retain all original employee and accounting files, but shall furnish a copy of the accounting files to Director, upon request. Failure to provide this and all additional reports in Section 20 will result in the application of liquidated damages in accordance with Section 19 of this contract.
- 20.2 Reports must be signed by the Contractor's Project Manager. Such signature is certification that all reports and information are truthful and accurate. Falsification of any records is grounds for termination of the Agreement.
- 20.3 Contractor's Logs provided to the Director must document all pertinent operating data and maintenance performed by Contractor or its Sub-contractors under the Agreement. Contractor shall describe any event or condition not readily discernible from recorded data in a "Remarks" section, including any task required under this Agreement but not performed. Failure to document this can result in the application of liquidated damages in accordance with Section 19 of this Agreement.
- 20.4 Contractor shall develop and maintain on site records, including but not limited to, Agreement documents, inventory records, accounting and procurement records, system documents and manuals and any other documents necessary to meet reporting requirements or any other documents reasonably required by the Director. Contractor shall coordinate with HAS CAD personnel to provide records of any equipment modifications or additions which will affect the utility plant drawings. The Contractor shall provide the CAD manager with the information required to update the drawings within 30 days of completion of any such modifications or additions.
- 20.5 Daily Records and Reports
- 20.5.1 Contractor shall develop and maintain an automated Daily Work Log to record HVAC and equipment daily operation and maintenance events and to produce a Daily Work Log Summary. The Daily Work Log must record all pertinent daily operating and maintenance data, including but not limited to date, time, service performed, status or results, and person who performed service or inspection. Relevant events or conditions not readily discernible from the recorded data must be described in a "Remarks" section. The Daily Work Log and Summary must be in a

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

format acceptable to the Director. Additionally, Contractor shall provide a daily log of parts/materials used.

20.6 Weekly Records and Reports

20.6.1 Contractor shall provide weekly reports to include but not limited to:

20.6.2 Boiler Flue Gas Analysis Report.

20.6.3 Equipment Status for Chiller Capacities and Redundancies.

20.6.4 Daily Chiller Water Tonnage Report.

20.6.5 Cooling Tower, Make Up Water, and Blow Down Reports.

20.6.6 Daily Steam and Hot Water BTU Report

20.6.7 Other information reasonably required by the Director.

20.7 Monthly Records and Reports

20.7.1 Contractor shall provide a monthly Operation and Maintenance report. The report must provide essentially the following information in a format acceptable to the Director. A compliance check list of all items required in this section shall be included with the report. The Monthly Operation & Maintenance Report must include, but is not limited to:

20.7.2 Daily Summary Maintenance Log Summary Report.

20.7.3 Status of Systems and Equipment Report.

20.7.4 Parts/Material Usage Report.

20.7.5 Summary of Maintenance Work Performed and all work that was scheduled but not performed for any reason.

20.7.6 The results of inspections and tests conducted (including but not limited to water treatment, harmful organism tests).

20.7.7 Reliability Centered Maintenance Report.

20.7.8 Two (2) month schedule of upcoming inspections or tests, and projection of major equipment shutdowns required for maintenance.

20.7.9 List of Equipment Breakdowns and Repair Time Report.

20.7.10 Statistical Operating Data Report (including, but not limited to, equipment on-line/standby report).

20.7.11 Summary of Cooling Tower, Make-up Water, and Blow Down Reports.

20.7.12 Warranty Report.

20.7.13 Employee Roster Report.

20.7.14 Other reports as may be required by the Director (including, but not limited to, filter replacement).

20.7.15 Monthly maintenance reports must be submitted to the Director by the fifteenth (15th) day following the reported month. Maintenance reports are to be submitted on CD's, with one hard copy delivered to the Director.

20.7.16 In addition to the above required reports, the Contractor shall provide a report comparing the current and previous month's data to the current month's data for the preceding year. This data shall include, but not be limited to, weather data, energy usage (overall individual utilities and individual thermal systems), individual equipment efficiencies, and energy cost by system and equipment.

EXHIBIT "A"

PERFORMANCE/WORK STATEMENT

- 20.8 Annual Reports
- 31.8.1 Contractor shall provide an annual shutdown report. The Annual Summary Report must be submitted within 30 days after the shutdown work is completed.
- 20.9 Additional Reporting Requirements
- 20.10 Daily Work Log – Contractor shall submit a daily work log depicting the work completed or performed for each day. Work log summaries must also be included in monthly reports.
- 20.11 Parts/Materials Usage - Contractor shall submit daily reports depicting parts/materials usage each day. Contractor shall also submit a monthly Parts/Materials Usage report indicating current materials, stock levels, and required restocking over the past month.
- 20.12 Water Treatment Records - Contractor shall maintain daily records of chemical analysis. At the end of each week, Contractor shall submit a summary of chemical treatment work performed and the effectiveness of the water treatment program. Contractor shall include any recommendations for improving the program, if any, as part of this report.
- 20.13 Central Plant On-Line/Standby Reports - Contractor shall provide as part of its monthly report the actual hours of utilization for all major equipment in the Central Plant.
- 20.14 Fuel/Air Ratio (Excess Air) in Boiler Firing Report/Flue Gas Analysis – Contractor shall maintain a weekly record of flue gas analysis for oxygen to determine "excess air," incomplete combustion, and NOX emissions. At the end of each week, Contractor shall submit a summary of boiler firing effectiveness and include any recommendations for improving the program, if any, as part of this report.
- 20.15 Harmful Organism Test Report - Contractor shall report and submit all test results to the Director and maintain a permanent record in the HVAC Central Plant files for future reference.
- 20.16 Wastewater Report - Due to the loss of water that occurs through evaporation at the cooling towers, additional water must be added to the condenser water system as necessary to maintain the water volume for efficient operation of the HVAC. It is also necessary to release water into the City's sewage system to control the amount of total dissolved solids in the system. This results in greater amounts of water being utilized that are not in direct proportion to the amount being released into the City sewage system.
- 20.16.1 HAS pays a sewage fee based on the amount of water it utilizes unless it provides a method to show that all the water it utilizes does not end up as discharge into the sewage system. Therefore, make-up and blow-down meters have been installed to ensure the HAS does not pay a sewage fee for water that is evaporated during the heating and cooling process.
- 20.16.2 Contractor shall read the make-up meters and blow-down meters on IAH and HOU cooling towers on the last day of each calendar month and deliver the data to the City of Houston, Water Customer Service, no later than the fifth (5th) day of the following calendar month.
- 20.16.3 The Director will provide Contractor with a form to be used to record the meter readings. Contractor shall be fully responsible for obtaining the required meter readings, completing the form in its entirety and delivering it to the address specified within the time periods specified. Contractor shall keep one copy in its contract files and one copy forwarded to Director for its records. A delivery receipt for this form from the City must be obtained and attached.
- 20.17 Employee Roster Report - Contractor shall maintain a weekly record of employee attendance records by date, title, attendance etc. and submit to Director monthly to the extent allowed by law.
- 20.18 Hazardous Chemical Records – Contractor and its Sub-contractor shall provide a completed Material Safety Data Sheet (MSDS) as required by applicable laws for each and every hazardous chemical as used in performance of the work or stored on City property.

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 20.18.1 Any material declared as hazardous by the Texas Department of Health, Austin, the EPA or the TCEQ requires an MSDS. That Department also will provide standard MSDS forms upon request.
- 20.18.2 Contractor's Project Manager shall maintain the completed forms. All hazardous chemical records must be made available to the Director for periodic review.
- 20.19 Annual Shutdown Report - Contractor shall prepare a formal "Annual Shutdown Report" and present it to the Director within 30 days after the shutdown work is completed. This report must summarize preplanning, execution, startup and debriefing activities and resulting recommendations and follow-up assignments.
- 20.19.1 Contractor shall provide a certified report from the testing lab for tests performed on PCB Transformers indicating which tests were performed, the level of PCB contamination, and recommended action required, if any.
- 20.19.2 This report will be submitted as part of the annual shutdown report as specified elsewhere herein.
- 20.20 Hydrostatic Test Reports - provide hydrostatic reports every 3 years and when boiler tubes are replaced.
- 20.21 Warranty Report
- 20.21.1 As part of Basic Services throughout the Agreement Term, Contractor shall administer warranties on systems and equipment as may be applicable from time to time. Contractor shall maintain warranty records and submit documentation and follow-up procedures on all warranty work. Contractor shall enforce all warranties on behalf of HAS. Contractor shall provide service regardless of whether equipment is wholly or partially under warranty. Warranty data must be maintained in a format acceptable to the Director and current data must be available for inspection by the Director at his/her discretion.

21.0 OTHER WORK/SERVICES IAH, HOU & EFD

- 21.1 Within the general scope of the Agreement, Other Work/Services may be required to meet desired conditions and/or services not covered in Basic Services. Contractor shall perform Other Work/Services in accordance with all provisions of the Agreement plus any special provisions issued with authorization for work, so long as the specific provisions are consistent with, and related to the scope of the Agreement. With the exception of Emergency Service Requests or Urgent Service Requests, where a request may be verbal and followed immediately in writing, all requests for Other Work/Services will be in writing in the form of an Other Service Request (OSR) provided by the Director and signed by the Director or his/her designated representative. Contractor shall perform Other Work/Services to the same standards required for Basic Services.
- 21.2 Performing Other Work/Services
- 21.2.1 Other Work/Services shall be performed in accordance with the Agreement.
- 21.2.1.1 Other Work/Services shall be performed in accordance with all provisions of the Agreement and any special provisions issued with the Other Service/Request (OSR).
- 21.2.1.2 Before issuing an OSR, the Director will first issue a written notice to the Contractor detailing the specific OSR to be performed by the Contractor.
- 21.2.1.3 In response to any such written notice, the Contractor shall provide the Director with a written proposal within three (3) business days of receipt of OSR. Contractor must include a description of the services to be performed, applicable labor rates, estimated labor hours, performance schedule, total estimated cost, and other requirements set forth in the written notice to the Contractor.
- 21.2.1.4 Contractor shall furnish all materials, labor, tools, equipment, transportation, and incidentals for accomplishing the described services or as otherwise specified by Director. Director will not approve an OSR without a specified completion date. Contractor shall complete all such Other Work/Services within the time specified in the OSR.

EXHIBIT "A"

PERFORMANCE/WORK STATEMENT

Contractor can request in writing an extension to the completion date. However, Director may or may not allow the extension. Director's decision is final.

- 21.2.1.5 Upon receipt of the Contractor's proposal, the Director has the option to reject the Contractor's proposal, require resubmission with revised or additional information, or issue an OSR. Should the Director reject the Contractor's Proposal and require resubmission, the Contractor shall resubmit a modified proposal within three (3) business days of the rejection.
- 21.2.1.6 Upon approval by Director of the modified proposal, an OSR will be issued. Contractor shall commence work as stated in the OSR. Contractor shall diligently work to completion in accordance with the terms and conditions of this Agreement, and the approved OSR.
- 21.2.1.7 Labor cost must not exceed the rate stated in the "Price Sheet". Labor is inclusive of supervision, tools, and expendables.
- 21.2.1.8 Prices for equipment, parts, supplies, and sub-contracted work, which may be required for authorized Other/Work Services, shall be the Contractor's actual cost plus percent (%) mark-up proposed on the "Price Sheet" (*Mark-up excludes Freight and Travel*). Copies of invoices from the Contractor's suppliers for these items must be submitted with Contractor's invoices at the time of submittal to the City for payment. The mark-up percentages stated shall not increase during the term of the Agreement. The quantity of equipment, parts, and supplies will depend on the needs of the HAS.
- 21.2.1.9 If the OSR work is over \$5,000.00, the Contractor shall obtain three (3) itemized bids/estimates within three (3) business days from separate/different vendors/ suppliers for the required equipment, parts, supplies, and subcontracted works. Contractor shall submit the bids/estimates to Director and obtain written approval from Director before proceeding with the work. Any bids/estimates obtained from vendors/suppliers affiliated with the Contractor shall have written approval from the Director. Contractor shall be compensated at "Bid Cost" plus percent (%) mark-up proposed on the Price Sheet/Fee Schedule.
- 21.2.1.10 If the OSR work is under \$5,000.00, the Contractor shall obtain one (1) itemized bid/estimate from vendor/supplier within three (3) business days, for the required equipment, parts, supplies, and subcontracted works. Contractor shall submit the bid/estimate to the Director and obtain written approval from the Director before proceeding with the Work. Any bids/estimates obtained from vendors/suppliers affiliated with the Contractor shall have written approval from the Director. Contractor shall be compensated at "Bid Cost" plus percent (%) mark-up proposed on the Price Sheet/Fee Schedule.
- 21.2.1.11 A copy of the approved OSR must accompany the monthly invoice for payment.
- 21.2.1.12 While performing work on any OSR, if hidden damage or additional cost is discovered, Contractor shall notify the Director immediately. After determining the extent of hidden damage a supplemental OSR proposal must be submitted to the Director.
- 21.2.1.13 Contractor shall submit to Director, copies of original purchase orders and invoices evidencing Contractor's acquisition costs.
- 21.2.1.14 In the case of emergency service, the Contractor may perform Other Work/Services upon the verbal approval of the Director. However, during the next business day, the Director will submit a written Emergency Service Request to the Contractor and the same process for non-emergency OSRs will apply.
- 21.2.1.15 If it is subsequently determined this Scope of Work should be covered under Basic Services, any amount paid to the Contractor under Other/Services Request will be reimbursed to the City by the Contractor within thirty days of such determination. The City does not waive any of its rights and remedies whether by statute, at law, in equity, or under this Agreement.
- 21.2.1.16 If Other Work/Services are performed by the on-site crew in conjunction with their regular duties, the Contractor shall not receive additional compensation for their labor.

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 21.3 Other Work/Services may include, but are not limited to the following categories: IAH,HOU&EFD
- 21.3.1 Emergency After-Hours Services HOU & EFD only.
- 21.3.2 Systems and Equipment Upgrades/Modifications.
- 21.3.3 Special Energy Retrofits.
- 21.3.4 Hazard Materials Testing and Removal.
- 21.3.5 Certain O&M Service Requirements.
- 21.3.6 Visual inspection and testing of IAH fire dampers located in ductwork.
- 21.3.7 Air quality studies.
- 21.3.8 Air Balance Balancing Services
- 21.3.9 Systems and Equipment damaged by force majeure or vandalism
- 21.3.10 Replacement parts in excess of \$25,000.00 as described in Section 4.5.1.1
- 21.3.11 Sub-contract to HAS-approved CMMS software provider per Section 4.13.1.2, page 42 and no mark-up shall be applied.
- 21.4 Use of On-Site - Extra Work
- 21.4.1 When the Contractor's on-site crew performs extra or changed work covered by Change Orders or Other Work/Services during normal hours, Contractor shall not be relieved of its other performance responsibilities herein.
- 21.5 Remedial Maintenance (Other Works/Services) IAH, HOU & EFD
- 21.5.1 Contractor shall provide Remedial Maintenance (RM) to include individual parts up to \$25,000 or less as part of Basic Services. Remedial Maintenance (RM) with an individual cost of parts greater than \$25,000 shall be provided by Contractor when requested to do so by the Director at the labor (except as provided Section 21.2.1.16) and material rates specified in Exhibit B, Fee Schedule.
- 21.5.2 Documentation of Preventive Maintenance and inspections shall indicate all equipment deterioration, and shall be discussed with the Director and/or designee every two weeks. Director and/or designee shall provide guidance on which degraded equipment is to be replaced and which degraded equipment is to remain in service. Equipment replacements shall be according to the Remedial Maintenance guidelines listed above. If the Director dictates that certain degraded equipment is to remain in service and the equipment subsequently fails, it shall also be replaced according to the Remedial Maintenance guidelines listed above.
- 21.5.3 Contractor shall repair/restore HVAC equipment/systems performance to designed function with parts, materials, and labor. RM includes repairs and replacement of related components, parts, and appurtenances that have failed, no longer perform reliably, or have worn beyond safe tolerances. Immediate notification of equipment or deficiency is to be provided with a detailed report of the equipment malfunction or deficiency shall be submitted to the Director within 7 calendar days of failure. Failure to provide this report will result in the application of liquidated damages in accordance with Section 19 of this contract.
- 21.5.4 The Director will provide Contractor with instructions and schedules pertaining to the RM Work.
- 21.5.5 The remedial maintenance Sub-contractors and/or craftsmen used to perform Other Works/Services must be certified and/or approved by OEM equipment manufacturer prior to performing any Work.
- 21.5.6 RM performed due to Contractor's negligence, including, but not limited to, failure to perform proper preventive maintenance will be the responsibility of the Contractor at no cost to HAS.
- 21.5.7 Contractor shall complete required RM work to the satisfaction of the Director. Any RM items not repaired on a timely basis and/or found to be deficient after being repaired by Contractor may be repaired at the Director's

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

discretion by parties other than Contractor. If the repairs are determined by the Director to be the responsibility of the Contractor, the Contractor shall be back-charged by HAS for all associated costs.

- 21.5.8 RM equipment/materials will be obtained for the Agreement by the following methods:
- 21.5.8.1 HAS shall have the option to supply the equipment / materials to Contractor at no cost to the Contractor.
- 21.5.8.2 Contractor shall obtain (3) itemized bids/estimates from separate/different vendors/suppliers for the required equipment / materials.
- 21.5.9 Emergency After-Hour Services (Other Works/Services) HOU & EFD
- 21.5.9.1 HOU When requested by Director, Contractor shall provide - after-hour service between the hours of 11:00 p.m. and 5:00 a.m. within 1 hour of notification - Under basic service
- 21.5.9.2 EFD - When requested by Director, Contractor shall provide - after-hour service between the hours of 10:00 p.m. and 6:00 a.m. within 2 hours of notification - Under basic service.

22.0 **WARRANTIES**

- 22.1 Contractor warrants that it shall perform all work in a good and workmanlike manner meeting the standards of quality prevailing in Harris County, Texas, for work of this kind. Contractor shall perform all work using trained and skilled persons having substantial experience performing the work required under this Agreement.
- 22.2 With respect to any parts, instruments, equipment, and goods it furnishes, Contractor warrants:
 - 22.2.1 that all items are free of defects in title, design, material, and workmanship,
 - 22.2.2 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.
 - 22.2.3 that each 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 item was new).
 - 22.2.4 that no items or their use infringe upon any patent, copyright, or other proprietary rights. In the event Contractor becomes aware of such an infringement, Contractor shall replace the items that are the subject of the infringement with non-infringing items in a timely manner; and
 - 22.2.5 that for one year from the date of any installation ("Warranty Period"), Contractor shall provide all parts, instruments, equipment, and goods required to complete all Preventive and Remedial Maintenance required under the Agreement at no cost to the City. This warranty is in addition to Contractor's obligation to provide Basic Services under the Agreement. When the manufacturer's warranty period for any parts, instruments, equipment, and goods is greater than 1 year, the longer period prevails.
 - 22.2.6 As part of Basic Services, Contractor shall manage and enforce on the City's behalf all manufacturer warranties issued before the Effective Date of this Agreement, during the Term of the Agreement, and any extensions. Contractor shall not be entitled to any additional compensation for the management and enforcement of these manufacturer warranties. If Contractor does not exhaust all remedies, including litigation, against a manufacturer who fails to honor all or a part of a warranty, it shall not receive additional compensation from the City for the labor and material costs it incurs to repair or replace the item that otherwise would have been under warranty.

23.0 **REGULATORY COMPLIANCE/CODES**

- 23.1 Regulatory Compliance

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 23.1.1 The Contractor shall comply with all applicable Federal, State and local laws, HAS Regulations and policies, ordinances, rules, and regulations pertaining to the performance of the Work specified herein.
- 23.1.2 Licenses, Permits and Bonding: All personnel engaged in the maintenance activities must possess certificates of training, licenses, permits, and bonding as required by the Federal, State, City, County, HAS, and other local authorities having jurisdiction and as specified for each activity they will be directly engaged in or supervise. All certificates of training, licenses, permits and bonds shall be current and valid and available immediately upon request by HAS.
- 23.1.3 The Contractor shall obtain and pay for all permits, licenses, certifications and approvals required to perform services under the Agreement.
- 23.1.4 The Contractor shall schedule recurring inspections and certifications, and pay all associated fees.
- 23.1.5 The Contractor shall obtain any permits required to work on the Airports, including in restricted areas, as defined by Federal, State and local laws, City policies, procedures, ordinances, rules, codes and regulations. Both the Contractor's business and the Contractor's employees, including Sub-contractor's employees, must be certified to work on the Airports property, including restricted areas.
- 23.1.6 The Contractor shall be required to provide, as requested and on demand, all licenses, permits, certifications, and other such proof of qualifications for any personnel required to work on the Airports, including restricted areas, for proper execution of the Agreement.
- 23.2 Testing and Reporting Required by TCEQ and Federal Agencies
- 23.2.1 The Contractor shall take all steps necessary to operate and maintain boilers to ensure compliance with all current TCEQ regulations and those stipulated by Federal EPA New Source Performance Standards. Record keeping and compliance standards may be different for "new" boilers versus "grandfathered boilers," and Contractor shall implement the correct procedures for each. Contractor shall apply standard combustion control techniques such as proper excess air firing, flue gas analysis, and properly maintaining the burner/boiler packages. Within the first 90 days under the Agreement, Contractor shall study past stack tests for existing boilers to confirm that these systems are within the limits of the operating permits and the Maximum Allowable Emission Rate Tables furnished by the TCEQ.
- 23.2.2 As new or revised regulations are placed into effect, and HAS performs any replacement, retrofit, and/or reconstruction of the boiler packages to keep them in compliance with the new standard(s), Contractor shall modify its operation and maintenance procedures and its testing and reporting procedures to ensure compliance with regulations.
- 23.3 Codes and Standards
- 23.3.1 Except where specified or exceeded by the requirements of the specification, the Contractor shall comply with to the latest edition of the following Codes:
- 23.3.1.1 Federal, state, and local building, plumbing, mechanical, electrical, safety and environmental codes.
- 23.3.1.2 National Electrical Code (NEC).
- 23.3.1.3 International Plumbing Code.
- 23.3.1.4 International Mechanical Code.
- 23.3.1.5 International Fire Code.
- 23.3.1.6 International Energy Conservation Code.
- 23.3.1.7 State and Local Building Codes and Ordinances.
- 23.3.1.8 State and Local Fire Codes and Regulations.

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 23.3.1.9 Federal Aviation Standards and Regulations.
- 23.3.1.10 Occupational Safety and Health Administration Regulations.
- 23.3.2 Codes and Standards listed above and throughout these specifications are minimum standards.

24.0 OPERATING PHILOSOPHY IAH, HOU & EFD

24.1 General Requirements

24.1.1 Best-in-Practice Service (as defined in accordance with Operations & Maintenance Best Practices Manual developed by the U.S. Department of Energy) of HVAC, maintaining specified environmental conditions, and cost-effective energy management are of paramount importance in operating and maintenance of the Airports HVAC. Contractor shall observe OEM recommended preventive maintenance and maintenance practices and procedures. Contractor shall comply with applicable Federal, State and Local regulations of Authorities having jurisdiction including regulations of Occupational Safety and Health Act (OSHA), Environmental Protection Agency (EPA) requirements and recommended practices of National Institute for Occupational Safety and Health.

24.1.2 The operating procedures used by Contractor must be in accordance with OEM instructions contained in applicable manufacturers' manuals for individual items of equipment, including the latest OEM technical/user manuals, service bulletins, service advisories, product/service information updates, and all other such OEM published information pertaining to the maintenance and operation of HVAC SYSTEMS. Contractor's operating procedures must address overall operation of the plant, taking into account the interrelationships of various systems to ensure that proper sequences are followed in start-up, shutdown, or in making operating adjustments. All written operating instructions and procedures must be readily available to operating personnel at all times for reference.

24.1.3 It is recognized that Contractor has no responsibility regarding design of the facilities, which it will operate and maintain. However, where it is evident that safety, reliability or efficiency can be improved through capital investment in equipment, analyzers, instrumentation, etc., Contractor shall bring such matters to the attention of the Director in writing for his consideration and action as the Director deems appropriate.

24.1.4 Contractor shall operate and maintain HVAC equipment to provide optimum performance, energy usage, and reliability.

24.2 IAH Operating Philosophy

The IAH chilled water system is a primary-secondary variable pumping system. The primary pumps, chillers and the automatic pressure bypass are located in the IAH Central Plant. Secondary pumps are located in the Terminals. Terminals A, B, C, D, and FIS have secondary pumps that are variable speed drives.

24.2.1 For the IAH Central Plant to deliver adequate chilled water (flow and pressure), it is imperative that the design chilled water rise (15°F) be maintained during all cooling load conditions. The IAH Central Plant is designed for a 40°F leaving water temperature. All existing air handling equipment is adjusted for 42°F entering water temperature and leaving air temperature and air quantity at the coils to provide for a 15°F chilled water rise. All new equipment is being designed for 42°F entering water temperature and a 15°F chilled water rise. Any cooling equipment and controls not maintaining design must be promptly identified, cleaned and/or repaired then, if not balanced, the Director shall be notified.

24.2.2 For the IAH Central Plant to deliver adequate heating water, it is imperative that the design heating water rise (40°F) be maintained during all heating load conditions. The IAH Central Plant is designed for a 190°F leaving water temperature. All existing air handling equipment is adjusted for an appropriate entering water temperature, leaving air temperature and air quantity at the coils to provide for a 40°F heating water rise. All new equipment is being designed for a 40°F heating water rise. Any heating equipment and controls not maintaining design must be promptly identified, cleaned and/or repaired. The Director shall be notified if deficiencies still exist after cleaning and repair.

24.2.3 HOU Operating Philosophy

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

24.2.3.1 The HOU existing chilled water system is a primary variable pumping system. The primary pumps and chillers are located in the Central Plant. Booster pumps exist at some AHUs. The new HOU chilled water system is a primary-secondary system with all pumps in the central plant. Secondary pumps are scheduled for variable speed drives. CW set points is designed at 42°F.

24.2.4 EFD Operating Philosophy

24.2.4.1 Contractor shall rotate the chilled water pumps and compressor usage on the units located at 510 Administration building.

25.0 OPERATE THE HVAC IAH & HOU

25.1 As a part of Basic Services throughout the term of the Agreement, Contractor shall operate all heating, ventilation, exhaust, re-circulating and air conditioning and related systems for IAH in the Central Plant, Terminals A, B, C and D, Aviation Administration Building, ASC facility, Remote Buildings/Facilities, Miscellaneous DX Equipment and all new facilities that may be built and start operation within the term of the Agreement.

25.2 Contractor shall operate all heating, ventilation, exhaust, re-circulating and air conditioning and related systems for HOU in the Central Plant, Terminal, Building at 8800 Paul B. Koonce Blvd., Remote Buildings/Facilities, Miscellaneous DX Equipment and all new facilities that may be built and start operation within the term of the Agreement.

25.3 Contractor shall operate and maintain HVAC and equipment that include, but are not limited to, the following:

25.3.1 All Central Plant mechanical and electrical systems for IAH and HOU, including chilled water generation system, condenser water system, steam generation system, high temperature and domestic hot water generation systems, pumping, controls, instrumentation, plumbing system, electrical system, heating system, pneumatic systems, ventilating, exhaust and re-circulating systems.

25.3.1.1 Within the Central Plants, the Contractor shall maintain all plumbing systems back to the main line. The Contractor's responsibilities for the plumbing systems within peripheral areas are those HVAC related items such as drains in the mechanical rooms (air handlers, condenser drains, sewage/sump pump and pits, heat exchanger plumbing from tanks to pumps to walls, etc.).

25.3.1.2 Within the Central Plants, Contractor shall clean, inspect, maintain and repair the electrical distribution components as necessary from the point where the power comes into the transformer complex at the plant (refer also to the Annual Maintenance Shutdown Procedures, Exhibit J). In peripheral areas, Contractor shall maintain the HVAC electrical systems from the existing panels.

25.3.1.3 The SW to MCC and MCC to Equipment at IAH and HOU.

25.4 All outdoor systems and equipment related to the Central Plant including piping, pumps, cooling towers, utility services, transformers, cables and switchgear.

25.5 All heating, ventilating, exhaust, re-circulating and air conditioning systems and related systems/equipment for IAH in Terminals A, B, C, D, FIS, Aviation Administration Building, ASC facility, Remote Buildings/ Facilities and Miscellaneous DX Equipment, including, but not limited to, heating, ventilating and air conditioning units, exhaust and re-circulating fans, automatic temperature controls, instrumentation, pumps, piping system, ductwork, mixing boxes, panel boards, motor starters, disconnect switches and wiring, VAV boxes and electronic air cleaners, etc.

25.6 All heating, ventilating, exhaust, re-circulating and air conditioning systems and related systems/equipment for the Airports in Terminal Areas, Old FAA Tower, FAA Motor Maintenance Building, Remote Buildings/Facilities and Miscellaneous DX Equipment, including, but not limited to, heating, ventilating and air conditioning units, exhaust and re-circulating fans, automatic temperature controls, instrumentation, pumps, piping system, ductwork – including all supply and return air components, mixing boxes, and panel boards, motor starters, disconnect switches and wiring, VAV boxes and electronic air cleaners, etc.

EXHIBIT "A"

PERFORMANCE/WORK STATEMENT

- 25.7 Clean and repair all HVAC vents, registers and intake grilles. Exception will be terminal A main lobby vents, until HAS completes a project upgrade.
- 25.8 Domestic hot water generating systems for the Terminals, and all related controls, plumbing and electrical equipment and systems within their respective equipment rooms. HAS personnel will maintain all domestic hot water and re-circulating hot water piping outside the mechanical room.
- 25.9 IAH - Maintain and monitor existing high/low temperature sensor alarms located in the telecommunication equipment/switch rooms located in Terminals A and Aviation Administration Building. Both are monitored from the Central Plant via Aviation provided cabling. Contractor is not responsible for the cabling of the sensors to the Central Plant. In the event of a problem associated with the cable, Director and AMIS are to be contacted.
- 25.10 Evaluate and troubleshoot electronic and electrical control systems to ensure appropriate repairs are made and maintained.
- 25.11 Replace lamps, ballast, sockets, photocells, etc., in the Central Plants (interior and exterior) and all mechanical rooms with air handling units or sump pits in the terminal(s) and remote buildings.
- 25.12 IAH - Operate and maintain the Terminal D -Alerton system.
- 25.12.1 IAH, HOU & EFD Operating Procedures and Manuals – Contractor is responsible for obtaining/providing the following manuals for use in the operation and maintenance of HVAC.
- 25.12.1.1 Operations Manual.
- 25.12.1.2 Equipment Manuals and Equipment Data Sheets.
- 25.12.1.3 Systems Manual.
- 25.12.2 When available HAS will provide manuals etc. to Contractor.
- 25.12.3 Operations Manual, Equipment Manuals, and Equipment Data Sheets address the HVAC equipment from a component perspective. The Systems Manual details the operational procedures of the HVAC equipment from a procedural perspective. Contractor shall use these manuals in the operation and maintenance of the facilities.
- 25.12.4 Contractor shall follow the procedures in the Operations Manuals and ensure the Operations manuals and data sheets, technical/user manuals, service bulletins; service advisories, product/service information updates, and all such other OEM published information pertaining to the maintenance and operation of HVAC and equipment are regularly updated and maintained.
- 25.12.5 Some equipment installed by tenants and the City may not be included in the equipment manuals. Contractor shall obtain any missing pertinent data for the equipment manuals for any equipment installed by:
- 25.12.5.1 Tenants which has become the property of the City or,
- 25.12.5.2 By the Director, all being part of Contractor's responsibility.
- 25.12.6 HAS will assist in the transfer of available copies of the operations manuals and the equipment manuals to Contractor upon HAS issuance of notice to proceed document for each Airport.
- 25.12.7 Updating of the Equipment Manual shall be completed by the end of the first year of the Agreement and shall include development by Contractor of Equipment Data forms expanded to include all data pertinent to the normal operation and maintenance of each piece of mechanical and related electrical equipment. Such data shall include in addition to existing data, the sheave and belt sizes, motor data, starter and heater sizes, and the manufacturer's data identifying the equipment or component. Recommended changes in the Operations Manual, as a result of knowledge and experience with the systems, shall be submitted in writing for the Director's consideration. These suggestions will be taken under advisement by the Director. As required, the suggestions will be reviewed by the Director with Contractor. Resulting changes to the Operations Manual shall be the responsibility of Contractor.

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

Once finalized and completed by the end of the first year of the Contract, Contractor shall maintain and update the documents.

26.0 **PERFORMANCE STANDARDS IAH, HOU & EFD**

26.1 *General*

26.1.1 Contractor's operation and maintenance of Airports HVAC and equipment must be in accordance with the highest standards prevailing in the industry, including but not limited to the latest release of the Operations & Maintenance Best Practices developed by the U.S. Department of Energy, recommendations of the OEM, as well as all applicable codes, rules, regulations, and laws of any regulatory or legislative body having jurisdiction over IAH, HOU, and EFD which include, but are not limited to, State of Texas agencies having jurisdiction over boiler operations, Texas Commission on Environmental Quality (TCEQ) over certain environmental matters, and Federal regulatory bodies, including, but not limited to EPA, OSHA, TSA, and FAA. Contractor shall ensure full compliance and shall bear the cost of any additional work or materials not specified that may be required. Any violation, omission, or question of compliance must be brought to the attention of the Director within five days of Contractor's actual or constructive knowledge.

26.1.2 Contractor shall respond immediately to a request from the Director for emergency service to perform all steps reasonably necessary to protect persons and property from risk of harm due to a problem with the system. Priority must be given to requests for emergency service.

27.0 **ENVIRONMENTAL CONDITIONS IAH, HOU & EFD**

27.1 As a part of Basic Services, Contractor shall maintain the following environmental conditions within occupied conditioned spaces, unless otherwise specified in the Agreement or requested by the Director.

<u>IAH, HOU, EFD</u>	<u>Summer</u>	<u>Winter</u>
Cooling Temperature	74°F ± 2°F	74°F ± 2°F
Design Day	97°Fdb and 80°Fwb	22°Fdb
Humidity	55% + 5%	40% max.
Heating Temperature	74°F ± 2°F	74°F ± 2°F

27.2 *IAH – Central Plant Reserve Capacities*

27.2.1 As part of the Basic Services, Contractor shall operate the (IAH) Central Plant facilities in such a manner as to have available capacity to meet 100% of the projected loads plus one redundant piece of equipment on the heating and cooling systems. Exceptions to this requirement will be allowed for disruptions to electric, water, or natural gas service, which do not result from Contractor's actions. Equipment will be permitted to be taken offline to perform preventive maintenance or needed repairs. Preventive maintenance and service should be scheduled during times of reduced load and when service will not be interrupted.

27.3 *HOU – Central Plant Reserve Capacities*

27.3.1 As part of the Basic Services, Contractor shall operate the (HOU) Central Plant facilities in such a manner as to have available capacity to meet 100% of the projected loads plus one redundant piece of equipment on the heating and cooling systems. Exceptions to this requirement will be allowed for disruptions to electric, water, or natural gas service, which do not result from Contractor's actions. Equipment will be permitted to be taken offline to perform preventive maintenance or needed repairs. Preventive maintenance and service should be scheduled during times of reduced load and when service will not be interrupted.

28.0 **HVAC AND RELATED EQUIPMENT IAH, HOU, & EFD**

28.1 The Airports HVAC and Related Equipment in the Central Plants covered under Basic Services include, but are not limited to:

EXHIBIT "A"

PERFORMANCE/WORK STATEMENT

- 28.1.1 All mechanical and specified plumbing systems and all related electrical systems to include heat exchanger tubing bundles.
- 28.1.2 Pneumatic and electronic systems associated with the generation of chilled water, steam, high temperature water, and heating water.
- 28.1.3 Cooling and heating water distribution and pumping systems within the Central Plant and Terminals.
- 28.1.4 Controls.
- 28.1.5 Instrumentation.
- 28.1.6 Central Plant lighting, inside and outside Building Lights and Cooling Tower Lighting.
- 28.1.7 Central Plant domestic cold and hot water.
- 28.1.8 Storm and sanitary sewer systems to the main line, including main room floor drains.
- 28.1.9 Water treatment services and water treatment chemicals.
- 28.1.10 Full housekeeping services in the Central Plants and Contractor's office areas.
- 28.2 The Airports Electrical Systems in the Central Plants covered under Basic Services include, but are not limited to:
 - 28.2.1 All related pneumatic and electronic systems associated with the generation of chilled water, steam, high temperature water, heating water, cooling and heating water distribution and pumping systems
 - 28.2.2 Controls.
 - 28.2.3 Instrumentation.
- 28.3 The Airports HVAC and Related Equipment from the Airports Central Plants to the most remote points in the Terminals and Concourse covered under Basic Services include but are not limited to:
 - 28.3.1 All associated HVAC, equipment and components including, but not limited to, all cooling and heating water - pumping systems including:
 - 28.3.2 All pneumatic compressors and related controls.
 - 28.3.3 All air side mechanical rooms.
 - 28.3.4 All domestic hot water generation and storage water systems to include all backflow preventers in all mechanical rooms.
 - 28.3.5 All related controls and electrical service.
 - 28.3.6 All air handler units and air distribution systems and components including ductwork, mixing boxes and controls actuators and VSD's.
 - 28.3.7 All exhaust and re-circulating fans and controls.
 - 28.3.8 All automatic temperature controls and instrumentation.
 - 28.3.9 All pumps described in Exhibit L.
- 28.4 The Airports Electrical Systems and Related Equipment from the Airports Central Plants to the most remote points in the Terminals and Concourse covered under Basic Services include, but are not limited to,:

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 28.4.1 All electrical service systems, equipment and components serving HVAC, equipment and components. (All encompassing with exception of high voltage transmission lines and sub-stations).
- 28.4.2 All electrical service to and electrical service of motor control centers.
- 28.4.3 Mechanical panel-boards, fused switches and circuit breakers, motor starters, disconnect switches, conduit, wiring, and related electrical controls.
- 28.4.4 All specified stand-alone A/C units, heaters, furnaces; and other related equipment.

29.0 IAH SYSTEM OVERVIEW - PERFORMANCE REQUIREMENT SYNOPSIS

29.1 IAH Central Plant

- 29.1.1 The IAH Central Plant houses all of the major equipment providing closed loop chilled/hot water HVAC to Terminals A, B, C, D and FIS Building. As a part of Basic Services, Contractor shall operate and maintain all systems within the Central Plant. The major systems include, but are not limited to, the following:
 - 29.1.2 Steam Generating System.
 - 29.1.3 Hot Water System.
 - 29.1.4 Refrigeration Units.
 - 29.1.5 Chilled Water System.
 - 29.1.6 Condenser Water System.
 - 29.1.7 Service Water System.
 - 29.1.8 Compressed Air System.
 - 29.1.9 Air Distribution, Heating, Ventilating and Exhaust Systems.
 - 29.1.10 Auxiliary Systems.
 - 29.1.11 Electrical Equipment, including emergency and backup power.
 - 29.1.11.1 High Voltage Transformers for Chillers and Motor Control Centers (transformers located adjacent to the Central Plant building) and across the street in the electrical sub-station.
 - 29.1.12 The primary heating and cooling mediums are conveyed from the Central Plant via tunnel to Terminal B and underground chilled water connecting west of Terminal C where distribution is accomplished to the rest of the complex.
 - 29.1.13 The Central Plant also houses the Administration Offices for Contractor and the repair facilities for the Contractor's 24-hour on-site staff complete with break and restroom/shower facilities.

29.2 IAH Central Plant Equipment

- 29.2.1 Contractor shall operate and maintain all systems in or associated with the Central Plant. A detailed listing of Central Plant Equipment is provided in SOW Equipment List Exhibit I.
- 29.2.2 Contractor shall operate and maintain all electrical power distribution from the point the power comes into the transformer complex at the plant.
- 29.2.3 Contractor shall operate and maintain all HVAC-related piping systems, electrical distribution systems and appurtenances from the Central Plant to the Terminals and Old FAA Tower.

EXHIBIT "A"

PERFORMANCE/WORK STATEMENT

- 29.2.4 Contractor shall maintain all domestic water components from the meter that supports the Central Plant functions (i.e. cooling towers, makeup water, standpipes, fill pipes, backflow preventers, and domestic water within the plant).
- 29.2.5 Contractor shall maintain all the chilled and hot water piping to all demarcation points (i.e. Old FAA Tower entrance valve point and all other IAH distribution side chilled and hot water).
- 29.2.6 HAS will provide access (digging, trenching, etc.) to piping outside the building envelope, which is not accessible through the tunnel system or other accessible means in order for Contractor to perform repairs.
- 29.3 Performance Requirements at IAH - Terminals A, B, C, D, and FIS
- 29.3.1 General
- 29.3.1.1 IAH Terminal Buildings A, B, C, D, and FIS are supplied primary heating and cooling mediums from the remote Central Plant facilities located at the west end of Will Clayton Parkway. The Terminal systems are designed to maintain $74^{\circ}\text{F} \pm 2^{\circ}\text{F}$ indoor temperature through wide variations of outdoor temperature utilizing chilled and high temperature hot water. The mediums are conveyed in tunnels and pedestrian walkways to each terminal. The Central Plant system is capable of supplying chilled water at 40°F on demand to meet peak cooling demands with no more than 42°F at the coil. The Plant is also capable of supplying high temperature hot water at a temperature of 300°F on demand to meet peak heating requirements. Hot water for domestic use and kitchen use is converted by shell and tube heat exchangers in hot water generators at each Terminal Complex. The Domestic hot water systems are designed to provide 160°F water. HAS will select Primary and Domestic Hot Water Temperature settings as required to meet requirements in individual Terminals. Contractor shall maintain all primary water, air, and secondary air systems to meet design and performance requirements set forth in the specific Contract documents under which they were installed. A detailed listing of Terminals Equipment is provided in SOW Equipment List Exhibit I, Coil leaving air temperatures are generally designed for 52.5°F leaving air temperature for all new equipment and new coils with 42°F entering water while maintaining a 15°F water temperature rise. Lowering leaving air temperatures below 52.5°F is not acceptable as a satisfactory solution to resolving any space temperature control problem. This Practice results in lower water temperature rise reducing Central Plant and Distribution System Deliverable Capacities. AHU system balancing including Fan and Coil, maintaining clean filters, and cleaning coils are the proper ways to maintain AHU System performance in accordance with design conditions. 2-inch, Merv 8 pleated filters need to be changed out at .8 inches on the magnehelic, and 6-inch box filters need to be changed out at 1.25 inches. **NO EXCEPTIONS.** Any time the Director finds dirty filters on any AHU that unit will have the coils cleaned immediately. Coil cleaning will be done on next third shift, **NO EXCEPTIONS.**
- 29.3.2 IAH Terminal Buildings A, B, C, FIS, and APM.
- 29.3.2.1 Air Handling Equipment or air handling units with new coils in these Terminals have been designed and selected for 52.5°F leaving air temperature. Equipment installed prior to 1990 is all designed to meet a performance requirement of 54°F with 42°F chilled water at the coil. Under these conditions all unit coils will produce a 15°F Water Temperature Rise. Air temperature leaving coils must not be set below a temperature resulting in less than a 15°F water temperature rise.
- 29.3.3 Below Grade – Inter-Terminal Train (ITT) Level.
- 29.3.3.1 The ITT Level of both Terminals consists of Mechanical and Electrical rooms to the south of the ITT Track area. The Electrical Rooms serve primary electric power to the Terminals. "Pump Rooms" in each Terminal contain pumps to provide adequate pressure and flow for cooling and heating water to the Terminals. High temperature water heat exchangers for generation of heating water are also located in the pump rooms. Domestic hot water generators/storage tanks in this same area provide domestic hot water for the Terminals.
- 29.3.3.1.1 Terminal A has developed areas north of the tracks at the ITT Level but Terminal B has not. This area in Terminal A contains the ITT Train service and maintenance area and other general airport service equipment and other service agencies. These areas are cooled and heated by multi-zone and single-zone units. All outside air is pretreated.

EXHIBIT "A"

PERFORMANCE/WORK STATEMENT

- 29.3.3.1.2 Below the elevator core area of the ITT Level in both Terminals A & B are elevator machine rooms. These rooms contain an air-handling unit to cool elevator machinery.
- 29.3.3.2 Train-Pedestrian Tunnel
- 29.3.3.2.1 This area is served by low pressure single zone units located in fan rooms adjacent to Pump Rooms in Terminals A & B and in rooms at or under Stairwells #2, #4, #5, #7 and #9 and at the ITT Train Turn-around at Terminal D Train Stop. Low-pressure single zone variable temperature units without outside air pretreatment units serve the pedestrian Tunnel. The supply is routed above the ceiling to conventional diffusers with air returned through the ceiling plenum, then to a main return duct to the AHU mechanical room. The Pedestrian Tunnel will be maintained at $74^{\circ}\text{F} \pm 2^{\circ}\text{F}$.
- 29.3.4 Ground Level, Second Level and Mezzanine Level
- 29.3.4.1 The ground levels of both Terminals A & B are used as general terminal access, baggage handling and claim and private offices for Airport personnel and airline baggage services. The second floor is ticketing, food service and airline ticketing office areas. This level also provides access to arrival and departure areas in the concourses of Terminal A.
- 29.3.4.2 On the 1st parking level of Terminals A & B, four major quadrant air handling mechanical rooms serve the terminal building ground, second and mezzanine level areas. The mechanical rooms are positioned over the wings of the terminals and contain two recently upgraded AHU's, one double duct type and one multi-zone type, and one new outside air pretreatment unit (OAPU) to serve the primary terminal areas. The space temperature through the air distribution system is controlled with dual duct fan powered air terminal units. The new OAPUs provide outside air to the two AHUs serving general public and private office areas. Supply air is conveyed downward to the mezzanine, second and ground levels through supply/return air chases in the various quadrant wings of the Terminal below the mechanical equipment rooms. Cold supply air must be maintained at 52.5°F for humidity and temperature control on all these units.
- 29.3.4.3 The ground level baggage pick-up areas are served by the multi-zone systems and office areas by dual duct systems. Each office zone is controlled by local thermostats controlling a dual duct mixing box. Multi-zone systems are controlled by thermostats and the AHU mixing damper section at the unit.
- 29.3.4.4 The dual duct control settings for the new and existing upgraded units with new cooling coil systems are scheduled for 52.5°F cold deck settings. Hot deck settings will vary with the zone of greatest heating demand to maintain a $74^{\circ}\text{F} \pm 2^{\circ}\text{F}$ indoor temperature.
- 29.3.4.5 Pedestrian traffic, baggage and high infiltration rates create greater filter maintenance on the ground and second level AHU's. Filters on AHUs at these levels will be scheduled for more frequent replacement.
- 29.3.5 Ground Level, Ticket Level & Mezzanine Level – Terminals A
- 29.3.5.1 The outside air pretreatment unit serving air to all units should have the cold deck temperatures at 52.5°F .
- 29.3.5.2 Coil leaving air temperatures should be set on these units at a minimum of 54°F to assure adequate return water temperature.
- 29.3.6 Terminal Building D
- 29.3.6.1 Terminal D is situated directly east of Terminal C and north of the West bound terminal through road. It is essentially a four-story linearly configured structure with a two-story connecting corridor to the West, which connects Terminal D with Terminal "C." The remote Central Plant supplies primary heating and cooling mediums for the Terminal. The mediums are conveyed through primary piping systems in tunnels and pedestrian walkways connecting all terminals with the Central Plant.

EXHIBIT "A"

PERFORMANCE/WORK STATEMENT

29.3.6.2 Terminal D HVAC Equipment

As a part of Basic Services, Contractor shall operate and maintain all HVAC in or associated with Terminal D. A detailed listing of Terminal D Equipment is provided in SOW Equipment List Exhibit I. The following is a general description of Terminal D HVAC equipment.

- 29.3.6.2.1 Air Handling Units and associated Control Valves.
- 29.3.6.2.2 Outside Air Pretreatment Units.
- 29.3.6.2.3 Electronic Air Cleaners and Carbon Filter Systems.
- 29.3.6.2.4 Fan Powered Air Terminal Units w/ Heating Coils.
- 29.3.6.2.5 Exhaust/Circulating Fans (Baggage Make-Up).
- 29.3.6.2.6 Fan Coil Units.
- 29.3.6.2.7 Heating and Ventilating Units.
- 29.3.6.2.8 Heating Hot Water Converter/Generators.
- 29.3.6.2.9 Domestic Hot Water Converter/Generators with recirculation Water Pumps
- 29.3.6.2.10 Chilled Water Circulating Pumps.
- 29.3.6.2.11 Heating Water Circulating Pumps.
- 29.3.6.2.12 Domestic Hot Water Return Pumps.
- 29.3.6.2.13 Exhaust Fans for Inside Terminal Areas.
- 29.3.6.2.14 Alerton Building Management System.

29.3.6.3 In summary, there are 31 AHUs including outside air pretreatment units; Single zone, Multi-zone and Variable Volume units. There are 7 Fan coil units, 2 Heating ventilation units, 13 exhaust fans, 3 transfer fans, 1 DX split system, 16 relief fans, 7 electronic air cleaners, 4 Leibert units maintaining the requirements of the telephone and airlines file server system.

29.3.7 Performance Requirements – Terminal D

29.3.7.1 Water Side System

29.3.7.1.1 The chilled water and high temperature water systems deliver water from the Central Plant through primary water piping distribution systems in tunnels and pedestrian walkways. Chilled water is designed for delivery at 40°F supply. High temperature water is designed to deliver heating water to the Terminal at 180°F.

29.3.7.1.2 In Terminal D are two (2) variable speed control chilled water pumps. The control points for the network are a 44-66 PSI delta to be maintained in the branch circuits pressures at the ends of the network.

29.3.7.1.3 The hot water system has two (2) variable speed controls pumps. The superheated water is delivered through the tunnel and walkway. The system has two heat exchangers with a temperature reset schedule from supply water equal to 180°F at outside temperature of 20°F to 80°F.

29.3.7.2 Air Side System

29.3.7.2.1 Level 121 lobby - is served by several AHU's. Supply is through fan powered VAV boxes of various types, some of which have reheat capabilities. Fan powered VAV boxes without heat take care of the air conditioning requirements throughout the remaining areas with some of the small exclusive areas being handled by VAV boxes.

29.3.7.2.2 Fixed Bridges - are all conditioned with single zone air handling units with 75°F setpoints within the space, controlling the heating and cooling valves. These units are all of the Constant Volume Type.

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 29.3.7.2.3 Level 106 - has the full variety of units used on this "site" from Fan Powered VAV boxes with and without heat to straight forward VAV boxes without fan assist. Temperature set point as with other levels is 74°F.
- 29.3.7.2.4 Level 100 - which interfaces directly with the outside, uses relief fans, outside air fans, heating ventilation units and air handling units along with fan coil units. At the eastern edge of Level 100, where the airline operations have their offices and work areas, there are the full assortment of VAV box types used on site, all with 74°F as their objective.
- 29.3.7.2.5 Level 88 - houses the majority of offices along the interior and per design should require no heating through straight VAV units serving these areas. The lobby is basically handled by two (2) AHU's each having multiple temperature sensors with the highest and the lowest of their respective AHU controlling its hot and cold deck accordingly. The western half of the level because of its diversity of loads has all types of VAV units.
- 29.3.7.2.6 Level 74 and Train Tunnel areas - are serviced by VAV AHU's with 74 ± 2°F set points.
- 29.3.7.2.7 Restricted Access Areas – Terminal D
- Access to Terminal D Operations Areas is limited to Contractor's personnel, HAS employees, and certain individuals authorized by the Director, provided those persons identified by the Director do not interfere with or jeopardize the Contractor's responsibilities under the Agreement. Contractor shall conform to such identification and security procedures as the Director may deem necessary and as required by law and FAA regulations. Access must be strictly controlled and Contractor shall keep a record of all keys distributed to its personnel. Officers, employees or agents of Contractor shall never enter restricted or operational areas of Terminal D without the express permission of the Director or any other governmental bodies having jurisdiction, and Contractor hereby assumes full liability arising from any such unauthorized incursions.
- 29.4 Other Remote Facilities
- 29.4.1 Old FAA Tower
- 29.4.1.1 IAH primary distribution systems (PCHW & HTW) to the Old FAA Tower; Applies up to, but not including, Secondary CHW Pump Headers; Service Applies up to, but not including, Heating Water Heat Exchanger.
- 29.4.2 Airport Services Complex (ASC)
- 29.4.2.1 The Airport Services Complex (ASC) is located at 4500 Will Clayton Parkway and was put into service in March, 1992. The ASC comprises the following buildings and facilities.
- 29.4.2.2 Physical Plant Maintenance (PPM) Offices and Service Bays.
- 29.4.2.3 Airfield & Grounds Maintenance Building.
- 29.4.3 ASC HVAC Equipment
- 29.4.3.1 As part of Basic Services, Contractor shall maintain all HVAC in or associated with the ASC. A detailed listing of ASC Equipment is provided in SOW Equipment List Exhibit I. The following is a general description of the ASC HVAC equipment.
- 29.4.3.1.1 Packaged Chiller.
- 29.4.3.1.2 Air Cooled Condensing Unit.
- 29.4.3.1.3 Air Handling Units.
- 29.4.3.1.4 Air Handling Unit Filters.
- 29.4.3.1.5 Air Handling Unit Interlocks.
- 29.4.3.1.6 Ventilating Fans with thermostats, speed controls, etc.

EXHIBIT "A"

PERFORMANCE/WORK STATEMENT

- 29.4.3.1.7 Fire Dampers.
- 29.4.3.1.8 Electric Duct Heaters.
- 29.4.3.1.9 Gas-Fired Warm-Air Heating Units.
- 29.4.3.1.10 Air Distribution Devices.
- 29.4.3.1.11 Volume Dampers.
- 29.4.3.1.12 Liebert unit in Main Distribution Frame (MDF) Telephone Room.

29.4.3.2 Performance Requirements – ASC

Contractor shall operate the HVAC to maintain a year-around interior ambient of 74 ± 2 degrees temperature and a maximum of $50\% \pm 5\%$ relative humidity in summer within the building envelope, except for the MDF Telephone room in which Contractor shall operate the Liebert unit to maintain a year-around ambient of 68 degrees with a non-condensing relative humidity.

29.4.4 Aviation Administration Building

29.4.4.1 Contractor shall maintain all HVAC in or associated with the Aviation Administration Building. A detailed listing of Administration Complex HVAC Equipment is provided in SOW Equipment List Exhibit I. The following is a general description of the Administration Building HVAC equipment.

- 29.4.4.1.1 Air Cooled Chillers.
- 29.4.4.1.2 Air Cooled Condensers.
- 29.4.4.1.3 Air Handler Units.
- 29.4.4.1.4 Chilled Water Pumps.
- 29.4.4.1.5 Air Compressor with Air Dryer for instrument air.
- 29.4.4.1.6 Boilers and associated pumps.

29.4.4.2 Performance Requirements - Administration Complex

The HVAC should maintain a year-around interior ambient of 74 ± 2 degrees temperature and a maximum of $50\% \pm 5\%$ relative humidity in summer within the building envelope.

29.4.5 Supply Chain Management

29.4.5.1 Contractor shall maintain all HVAC in or associated with the Supply Chain Management. A detailed listing of Supply Chain Management HVAC Equipment is provided in the SOW Equipment List Exhibit I. The following is a general description of the Supply Chain Management HVAC equipment.

- 29.4.5.1.1 Chillers (1) 80 Ton & (1) 50 Ton.
- 29.4.5.1.2 Chilled Water Pumps.
- 29.4.5.1.3 Air Handler Units.
- 29.4.5.1.4 Controls.
- 29.4.5.1.5 Ductwork & Grilles.

29.4.5.2 Performance Requirements – Supply Chain Management

The Contractor shall operate the HVAC to maintain a year-around interior ambient of 74 ± 2 degrees temperature and a maximum of $50\% \pm 5\%$ relative humidity in summer within the building envelope.

29.4.6 Other Remote Buildings/Facilities

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

29.4.6.1 In several remote buildings and structures at the Airport, Contractor shall maintain the HVAC equipment as part of basic services. It is anticipated that quantities of Security Guard/Taxi Booths may increase or decrease during the Agreement Term. Remote buildings and structures include but not limited to the following:

- 29.4.6.1.1 *18845 Col. Fischer Dr. (Fleet Maintenance Facility).
- 29.4.6.1.2 Vault 927.
- 29.4.6.1.3 Vault 826.
- 29.4.6.1.4 *5051 Wright Road.
- 29.4.6.1.5 3060 Air Freight (Freight Forwarder Building).
- 29.4.6.1.6 Security and Taxi Booths.
- 29.4.6.1.7 Cargo Building N Suites A & B1, 18500 Lee Road (Airport Engineers).
- 29.4.6.1.8 ARFF Fire Stations.
- 29.4.6.1.9 Equestrian Center on Luthe Rd.

**(Locations marked with asterisk indicate facilities most likely to be affected by future lease agreements).*

29.4.7 Remote HVAC Equipment

29.4.7.1 Contractor shall maintain all HVAC in or associated with the remote buildings and structures. A detailed listing of Remote Equipment is provided in the SOW Equipment List Exhibit I. A general description of the remote HVAC equipment follows:

- 29.4.7.1.1 Air Cooled Condenser Units.
- 29.4.7.1.2 Air Handler Units.
- 29.4.7.1.3 Fan Coil Units.
- 29.4.7.1.4 Gas Flow Furnaces.
- 29.4.7.1.5 Forced Air Furnaces.
- 29.4.7.1.6 Boiler.
- 29.4.7.1.7 Air Compressor w/ air dryer.

29.4.7.2 Performance Requirements – Remote

The HVAC should maintain a year-around interior ambient of 74 ± 2 degrees temperature and $50\% \pm 5\%$ relative humidity within the building envelop.

29.4.8 Miscellaneous DX Equipment

29.4.8.1 IAH includes certain buildings housing both HAS employees and airport tenants that fall outside the chilled water closed loop system including Airport Services Complex, HAS Administration Building, Supply Chain Management buildings, and Other Remote Buildings/ Facilities. The designation (DX) in these documents identifies those specific stand alone systems for which O&M HVAC services Contractor is responsible to operate and maintain. The systems in these facilities range from stand alone 3/4-ton window units to complete packaged heating and cooling units.

29.4.9 Miscellaneous (DX) HVAC Equipment

29.4.9.1 Contractor shall maintain certain DX HVAC equipment. A detailed listing of Miscellaneous (DX) HVAC Equipment is provided in the SOW Equipment List Exhibit I.

EXHIBIT "A"

PERFORMANCE/WORK STATEMENT

- 29.4.9.1.1 Window Units.
- 29.4.9.1.2 Packaged Units.
- 29.4.9.1.3 Roof Unit.
- 29.4.9.1.4 Blower Unit.
- 29.4.9.2 Performance Requirements Miscellaneous (DX).

The HVAC should maintain a year-around interior ambient of 74 °F ± 2° F temperatures and 50% relative humidity within the building envelope.

30.0 **HOU AIRPORT SYSTEM OVERVIEW - PERFORMANCE REQUIREMENT SYNOPSIS**

30.1 HOU Central Plant

30.1.1 The Central Plant houses all of the major equipment providing closed loop chilled/hot water HVAC to the Terminal. Contractor shall operate and maintain all systems within the Central Plant. The major systems are as follows:

- 30.1.1.1 Hot Water System.
- 30.1.1.2 Refrigeration Units.
- 30.1.1.3 Chilled Water System.
- 30.1.1.4 Condenser Water System.
- 30.1.1.5 Service Water System.
- 30.1.1.6 Compressed Air System.
- 30.1.1.7 Air Distribution, Cooling and Heating Air Systems.
- 30.1.1.8 Make-up Air, Ventilating and Exhaust Systems.
- 30.1.1.9 Control Systems.
- 30.1.1.10 Auxiliary Systems.

30.2 Existing HOU Central Plant Equipment

30.2.1 The Central Plant houses the Administration Offices for Contractor and the repair facilities for the Contractor's on-site staff. Contractor shall operate and maintain all systems in or associated with the Central Plant. A detailed listing of Central Plant Equipment is provided in the SOW Equipment List Exhibit I. The following is a general description of the existing Central Plant HVAC equipment.

30.2.1.1 Hot Water Boilers

30.2.1.1.1 Two (2) HVAC hot water circulating pumps - 30 HP.

30.2.1.2 Domestic Water System

30.2.1.2.1 Water heater – 260,000 BTU.

30.2.1.2.2 Domestic hot water circulation pump – ½ HP.

30.2.1.3 Refrigeration Units – Centrifugal Water Chillers

30.2.1.3.1 Four York Chillers, (2) 1025 ton, (1) 1039 ton, (1) 811 ton

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 30.2.1.3.2 One York Water Source Heat Pump
- 30.2.1.3.3 Four chilled water pumps, 1200 gpm @ 80Ft. head.
- 30.2.1.4 Chilled Water System
- 30.2.1.4.1 Five (5) secondary chilled water circulating pumps.
- 30.2.1.4.2 Chilled water expansion tanks.
- 30.2.1.4.3 Four primary chilled water pumps, 1200 gpm @ 80Ft. head.
- 30.2.1.5 Condenser Water System
- 30.2.1.5.1 Four Cell 1500 gpm cooling towers @ 96 F to 86 F.
- 30.2.1.5.2 Four 50 HP each cooling tower fan motors.
- 30.2.1.5.3 Four (4) Ceramic/cellular w/ 3' PVC tower cell fill. (500 tons Ea.).
- 30.2.1.5.4 Four (4) chilled water circulating pumps.
- 30.2.1.5.5 Four (4) chilled water circulation pumps, horizontal split case.
- 30.2.1.5.6 One (1) Condenser water filter system.
- 30.2.1.6 Refrigerant Recovery Unit - One (1) ¾ HP Low pressure recovery unit.
- 30.2.1.7 Condenser Tube Cleaner - One (1) pneumatic condenser tube cleaner.
- 30.2.1.8 Compressed Air Systems
- 30.2.1.8.1 Two (2) twin air compressor.
- 30.2.1.8.2** Air dryer.
- 30.3 HOU Main Terminal and Concourse Areas
- 30.3.1 The HOU Main Terminal Building houses the HOU Central Plant. The Main Terminal Building handles Ticketing and Baggage and presents access to Concourse. Air handling systems currently serving the upper and lower terminal areas are principally constant volume and multi-zone types. For most multi-zone units, the Mechanical Rooms are a common return plenum. Newer air handling units use ducted returns. Units installed in recent years including the baggage claim areas, west end, and east end ramps are in good condition.
- 30.3.2 Contractor shall operate and maintain all existing HVAC and equipment in or associated with the Terminal and Concourse, plus other Remote Facilities. The environmental systems utilized in the Terminal at HOU employ many different types of air conditioning systems, heating and ventilating units, heat transfer systems, etc. Contractor shall minimize exhaust air requirements and maximize outside air intake requirements, both in accordance applicable codes, to minimize fumes and humidity. A detailed listing of Terminal and Concourse equipment is provided in the SOW Equipment List Exhibit I.
- 30.3.3 Building pressurization shall be in accordance with ASHRAE Standard 62.1. It is difficult to recommend specific guidelines for building pressurization as this will vary by building and is determined through calculations and engineering judgment.
- 30.3.4 The City of Houston has adopted 2006 UMC, which references ASHRAE 62.1 as the ventilation standard.
- 30.4 Existing HOU Terminal and Concourse Equipment
- 30.4.1 The following is a general description of the HVAC equipment.

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 30.4.1.1 Air Handling Units/Filters.
- 30.4.1.2 Control Air Compressors.
- 30.4.1.3 Air Driers.
- 30.4.1.4 Exhaust/Circulating Fans.
- 30.4.1.5 Supply Fans.
- 30.4.1.6 Heating and Ventilating Units.
- 30.4.1.7 Hot Water Boilers.
- 30.4.1.8 Chilled Water Circulating Pumps.
- 30.4.1.9 Hot Water Circulating Pumps.
- 30.4.1.10 Outside Air Fans.
- 30.4.1.11 Exhaust Fans for Inside of Terminal Areas.
- 30.4.1.12 Unitary DX HVAC Equipment.
- 30.4.1.13 Fan Coil Units.
- 30.4.1.14 Air Curtains.
- 30.4.1.15 Air Distribution Devices.
- 30.5 HOU Energy Management and Control.
- 30.5.1 Existing Control Systems:
- 30.5.1.1 Existing Controls are a combination of electric/pneumatic and Metasys' DDC system. Some of these controls will all be demolished as a part of the renovation and expansion projects. Contractor shall maintain existing controls and make adjustments as required to make the construction phasing, sequencing and transitions as painless as possible. Contractor shall work with the construction Contractors to assure that existing controls are left in service until new controls are ready for service.
- 30.5.2 New Control Systems:
- 30.5.2.1 BacNet protocols of Local Intelligent Control Panels are in place at HOU for each air handling system, the chillers, and heat exchangers. The local intelligent panels have stand-alone capability, and contain all programs necessary for equipment operation. The local intelligent panels will be able to interface with the centralized control system.
- 30.5.2.2 The control system is an open protocol BACnet Building Automation and Control System, which includes UES and Alerton. Included in the Hardware for the system is EMI/RFI remediation in component and control panel selection and in construction procedures. HAS requires all systems not BACnet to provide Owner release of the Propriety Protocol and to have a gateway for permitting full communication capabilities. Specific controls systems include:
 - 30.5.2.2.1 Chiller ControlsChiller controls should follow manufacturer's guidelines.

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

30.5.2.2.2 Control panel is able to control the chiller's operation through diagnostics and diagnostic history that are time/date stamped. Diagnostics include among many others (1) sensor and switch faults, (2) excessive purge activity, (3) overload trips, (4) loss of flows, (5) high motor winding temperature.

30.5.2.2.3 The control panel is able to communicate with a BACnet Compatible Building Automation System.

30.5.2.2.4 Pump Control

The BACnet Compatible Energy Management and Control System for the primary variable speed pump operation will be capable of performing the following:

30.5.2.2.4.1 Alternating pumps.

30.5.2.2.4.2 Staging pumps.

30.5.2.2.4.3 Controlling AFD speed.

30.5.2.2.4.4 Monitoring of motor performance.

30.5.2.2.4.5 PID functions and set point modifications.

30.5.2.2.4.6 Energy management through a de-coupled system.

30.6 HVAC Air Side Systems Controls

30.6.1 Variable Air Volume Air Handling Units include a factory furnished and mounted direct digital control panel for temperature control and energy management function. The system includes electronic actuators for coil control valves, dampers and duct pressure sensors for variable fan speed operation. DDC controllers are of modular construction and be able to withstand vibrations if mounted inside the AHU. The system is capable of controlling all the air handling unit operational parameters including:

30.6.1.1 Discharge temperature reset.

30.6.1.2 Supply fan state control and status.

30.6.1.3 Supply/return air temperature monitoring and control.

30.6.1.4 Outdoor air flow monitoring control. (For 100% O.A. Units).

30.6.1.5 Night set back, warm-up and cooling down cycles.

30.6.1.6 Space and duct humidity control.

30.6.1.7 AQ monitoring through CO2 sensors with O.A. control.

30.6.1.8 Variable frequency drives control from static pressure transducer.

30.6.1.9 Optimum start/stop, soft start.

30.6.1.10 Fan over pressurization safety switch.

30.6.1.11 Smoke control functions.

30.6.1.12 Chilled and hot water valves control.

30.6.1.13 Fan Operation status.

30.6.1.14 Filter status.

30.7 Inter-operability with BACnet-Compatible Building Management Systems

30.7.1 Constant Volume Air Handling Units are controlled by a general type direct digital control system for temperature control and energy management functions. DDC controllers are of modular construction and be able to withstand vibrations if mounted inside the AHU.

EXHIBIT "A"

PERFORMANCE/WORK STATEMENT

30.7.2 Variable Air Volume Modules are controlled using a general type direct digital control system. Individual space temperature sensors as part of a sensor group will be used as an input for a master zone controller.

30.8 Compressor Air System

30.8.1 The existing air compressor is providing air for the existing pneumatic control systems.

30.9 Performance Requirements – HOU Main Terminal and Concourse.

30.9.1 General – The Terminal Building is supplied primary heating and cooling mediums from the Central Plant facility. The systems are designed to maintain 74 °F ± 2°F indoor temperature through wide variations of outdoor temperature utilizing chilled and hot water. The mediums are conveyed through various piping throughout the terminal. The system should be capable of supplying chilled water at 42°F on demand with no less than 42.5°F at the coil, and hot water should be delivered at a temperature of 165°F. Hot water for domestic use and kitchen use is converted by shell and tube heat exchangers. HAS will select Primary and Domestic Hot Water Temperature setting. Contractor shall maintain all primary water, air, and secondary air systems to meet design performance requirements.

30.9.2 Special Conditions

30.9.2.1 HVAC Design Conditions. Carrier E20-11 cooling load calculation program was used to calculate the building cooling/heating block load. The air conditioning system is designed to maintain the specified indoor conditions at the specified outdoor weather conditions.

Outdoor Conditions

Summer:	97° F DB	77° F WB
Winter:	28° F DB	

These temperatures are based on ASHRAE 1% design conditions.

Indoor Conditions

Area Designation	<u>Cooling</u>	<u>Heating</u>
	RH Control	RH Control
Concourse, Baggage Claim, Gates, Ticketing	74°Fdb±2°F No RH Control	74°Fdb±2°F No RH Control
Office & Other Areas	74°Fdb±2°F 50% RH±5%	74°Fdb±2°F No RH Control
Mechanical Rooms	104°F (Max) No RH Control	60°F DB No RH Control

The Total Estimated Building Cooling Loads:

Ticketing Building Lower (Level 1)	650 tons
Ticketing Building Upper (Level 2)	450 tons
Central Concourse	1,150 tons
Central Concourse expansion – Bridge	100 tons 50 tons
Total	2,400 tons

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 30.9.2.2 A central dedicated ventilation unit will handle transmission and internal loads. Unit is a modular double skin construction complete with a centrifugal or airfoil supply fan section, cooling coil section with copper coil/copper fin construction, a heating coil section with copper coil/copper fin construction, an access door section wide enough to allow for adequate maintenance, a filter section comprising a 2" thick 30% efficiency pre-filter section, an electric excitation field and a 12" thick 85% efficiency cartridge filter, and a mixing box with O.A. measuring station (VAV units only).
- 30.9.2.3 An airflow measuring probe station is mounted on the supply ducts to provide for flow balancing and measuring.
- 30.9.2.4 A dedicated outdoor air handling unit (O.A. AHU) will handle the outside air sensible and latent loads. This unit is of modular double skin construction complete with copper coil/copper fin cooling coil section, a copper coil/copper fin heating section, an 85% efficiency 12" cartridge filter section, and a centrifugal fan supply section. A 2-speed fan motor is used and controlled through return air duct mounted CO₂ sensors. The O.A. AHU is complete with unit-mounted starters and DDC control panel for its operation. Two-way modulating temperature control valves with electric actuators and automatic flow control valves are used to control chilled water flow. Three-way control valves are used on the most remote units in the loop to prevent loss of flow conditions.
- 30.9.2.5 Outbound Baggage Handling Areas. Fresh outside air from a clean source are carried and supplied to dedicated O.A. AHUs in the baggage handling areas. Air will then be treated and tempered to a minimum temperature of 65°F in summer and maximum of 75°F in winter and supplied through a duct distribution system to spot cool the work areas. Drum louvers with adjustable cylindrical drums are used to adjust for season change air pattern distribution. Air delivery will be at a speed of 1,500 FPM. Redundancy will be used as each conveyor belt is supplied by two overhead supply air ducts from two independent units.
- 30.9.2.6 Baggage Claim Conveyor Belt Area. Air curtains are installed on all baggage claim area conveyor belts to prevent air infiltration from the tug drive area. Air curtains are interlocked with the security door operation.
- 30.9.2.7 Ventilation for Toilet Rooms. Toilet room ventilation is designed to come from adjacent areas. Hence, Contractor shall maintain toilet areas at negative pressure conditions at all times. The air requirement for ventilation will be the highest of the following:
- 30.9.2.7.1 1 CFM/sq. ft. of toilet room floor areas.
- 30.9.2.7.2 15 ACH in the toilet room areas.
- 30.9.2.7.3 50 CFM/WC or 50 CFM/Urinal.
- 30.9.2.8 Backwardly inclined in-line centrifugal exhausters are used to push the air outdoors. For VAV air handling systems, Contractor shall coordinate operation of the exhausters with the air handling system operation to avoid building loss of pressurization problems.
- 30.9.2.9 Concession Kitchen Ventilation. Make-up air provided for the concession areas exhaust will not be provided from adjoining spaces. Concession vendors will supply all make-up air quantity required for the kitchen exhaust equipment. Vendors will supply the heating, ventilation and air condition equipment. Chilled/heating water supply and return tapings will be only provided for concession vendor's use. To provide for tenant billing, energy or BTU meters will be used for each independent tenant. Flow meter and temperature sensors in the supply/return piping are installed and connected to the BTU meter. Contractor to provide and monitor the meters. Providing meters is outside of Basic Services and included as an OSR.
- 30.10 HOU - BUILDING AT 8800 PAUL B. KOONCE BOULEVARD
- 30.10.1 HVAC Equipment – Building at 8800 Paul B. Koonce Boulevard
- Contractor shall operate and maintain all HVAC in or associated with the building at 8800 Paul B. Koonce Boulevard (former FAA facility). A detailed listing of Equipment is provided in SOW Equipment List Exhibit I. HVAC equipment includes, but is not limited to, the following:

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 30.10.1.1 Packaged Chiller.
- 30.10.1.2 Air Cooled Condensing Unit.
- 30.10.1.3 Air Handling Units.
- 30.10.1.4 Air Handling Unit Filters.
- 30.10.1.5 Air Handling Unit Interlocks.
- 30.10.1.6 Ventilating Fans with thermostats, speed controls, etc.
- 30.10.1.7 Fire Dampers.
- 30.10.1.8 Electric Duct Heaters.
- 30.10.1.9 Gas-Fired Hot Water Boiler Unit.
- 30.10.1.10 Air Distribution Devices.
- 30.10.1.11 Volume Dampers.
- 30.10.2 Performance Requirements – Building at 8800 Paul B. Koonce Boulevard
- 30.10.2.1 Contractor shall operate the HVAC to maintain a year-round interior ambient of 74 ± 2 degrees F temperature and $50\% \pm 5\%$ relative humidity within the building envelope.
- 30.11 HOU Remote Buildings/Facilities
- 30.11.1 Contractor shall maintain the HVAC equipment in several remote buildings and structures at the Airport. Remote buildings and structures that include, but are not limited to, the following.
 - 30.11.1.1 Public Safety/TSA/H.P.D. buildings.
 - 30.11.1.2 Fire Station No. 81.
 - 30.11.1.3 Airfield & Grounds Building.
 - 30.11.1.4 Vehicle Maintenance Shop.
 - 30.11.1.5 North Ramp Electrical Vault.
 - 30.11.1.6 South Ramp Electrical Vault.
 - 30.11.1.7 Cab Drivers' Break Room.
 - 30.11.1.8 Parking Garage Ground Transport Building.
 - 30.11.1.9 Electrical Hangar.
 - 30.11.1.10 Guard Shacks (N60).
 - 30.11.1.11 Fuel Farm A/C Unit.
 - 30.11.1.12 All domestic water pumps.
 - 30.11.1.13 All circulating pumps.
- 30.12 Remote HVAC Equipment
- 30.12.1 Contractor shall operate and maintain all HVAC in or associated with the remote buildings and structures. A detailed listing of Remote Equipment is provided in SOW Equipment List Exhibit I. Remote HVAC equipment includes, but is not limited to, the following:
 - 30.12.1.1 Air Cooled Condenser Units.
 - 30.12.1.2 Air Handler Units.

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 30.12.1.3 Fan Coil Units.
- 30.12.1.4 Gas Flow Furnaces.
- 30.12.1.5 Forced Air Furnaces.
- 30.12.1.6 Boiler.
- 30.12.1.7 Air Compressor w/air dryer.
- 30.13 Performance Requirements – Remote Facilities
- 30.13.1 The HVAC should maintain a year-around interior ambient of 75 degrees F temperature and 50% relative humidity within the building envelope.
- 30.14 Miscellaneous DX Equipment at HOU
- 30.14.1 The HOU airport system includes certain buildings housing both HAS employees and airport tenants that fall outside the chilled water closed loop system, the building at 8800 Paul B. Koonce Boulevard, and Remote Buildings/Facilities. The designation (DX) in these documents identify those specific stand alone systems for which O&M HVAC services for which Contractor is responsible to operate and maintain. The systems in these facilities range from stand-alone 3/4-ton window units to complete packaged heating and cooling units.
- 30.15 Miscellaneous (DX) HVAC Equipment
- 30.15.1 Contractor shall maintain certain DX HVAC equipment. A detailed listing of Miscellaneous (DX) HVAC Equipment is provided in SOW Equipment List, Exhibit I.
- 30.15.1.1 Window Units.
- 30.15.1.2 Packaged Units.
- 30.15.1.3 Roof Unit.
- 30.15.1.4 Blower Unit.
- 30.16 Performance Requirements - Miscellaneous (DX)
- 30.16.1 The HVAC should maintain a year-around interior ambient of 74°F ± 2 degrees F temperature and in summer a 50% ± 5% relative humidity within the building envelope.
- 30.17 HOU Offices under the East and West U-Ramp
- 30.17.1 The HVAC equipment comprised within vacant offices under the East U-Ramp and PPM offices under the West U-Ramp are fan coil units. A detailed list of the equipment to be maintained is provided in SOW Equipment List, Exhibit I.
- 31.0 ESTIMATED RENOVATION, UPGRADE, EXPANSION AND DEMOLITION WORK:**
- 31.1 IAH
- 31.1.1 Project 621- Central Plant expansion - Construction to provide up to two (2) 50,000 pounds per hour boilers and associated equipment, pumps etc. and up to one 3,000 ton electric chiller and associated equipment, pumps etc. Refer to Exhibit N for anticipated replacement equipment (Estimate project completion 2014).
- 31.1.2 Project 500N- T-D Renovations- Construction to remove existing Andover DDC control system and replace with a Bac-net non proprietary system. (Estimate project completion 2015).
- 32.0 CONTRACTOR RESPONSIBILITY DURING IMPLEMENTATION OF NEW FACILITIES AND EQUIPMENT IAH, HOU & EFD**

EXHIBIT "A"

PERFORMANCE/WORK STATEMENT

- 32.1 As part of the Basic Services, Contractor shall work with HAS and construction Contractor to meet operational and capacity requirements during renovations, upgrades, expansion, and demolitions for any future projects. Contractor shall provide optimum system operations during any construction /project work to meet additional cooling and heating load requirements from on-line facilities, systems, and equipment as new systems and equipment are being readied to come on line for full cooling and heating operating service.
- 32.2 Upon issuance of a certificate of substantial completion and/or beneficial use and the equipment is put into revenue service the Contractor shall take full responsibility of equipment maintenance and manage any warranties in effect.
- 32.3 System Upgrades/Modifications Testing and Acceptance
- 32.3.1 Acceptance Tests. New system modifications and upgrades performed by the Contractor will be subject to individual thirty (30) day Acceptance Test(s) to verify successful startup and proper performance and functionality in an operational environment. Unless specified in a change order or otherwise, the following items are the necessary elements of an Acceptance Test:
- 32.3.1.1 After startup the Contractor will operate the new equipment for thirty (30) days as the initial step in the Acceptance Test(s).
- 32.3.2 Test procedures shall determine whether the equipment is fully operational and performing in accordance with product specifications and performance requirements provided in this Agreement. The Airport, at its sole option and expense, may perform additional acceptance testing to verify that the equipment is installed correctly and functioning in accordance with the terms of the Agreement. In the event that Airport conducts its own tests, the Contractor will be given advance written notification and will be afforded the opportunity to witness and observe the Airport tests. Notwithstanding any Airport test(s), the Airport shall be entitled to rely on results obtained and recommendations made by the Contractor regarding the operation and performance of new equipment. Testing by Airport shall not relieve the Contractor of its obligations to test and determine that the equipment is properly installed, adjusted, and functioning. Neither observations by the Airport nor inspections, tests, or approvals by others shall relieve the Contractor from its obligations to perform in accordance with this Agreement.
- 32.3.3 During the thirty-day acceptance test period, the Contractor shall notify the Director in writing within twenty-four (24) hours of the occurrence of any downtime. Equipment downtime will be computed according to the following guidelines:
- 32.3.3.1 Downtime will accumulate during any period when the equipment is not able to perform its scheduled function or meet performance requirements, as specified, due to a failure of hardware or software.
- 32.3.3.2 Downtime will not accumulate if a failure occurs due to Force Majeure.
- 32.3.4 If no more than a cumulative total of three hours of system downtime occurs within the thirty-day period, the new equipment will be deemed to have passed the Acceptance Test.
- 32.3.5 If more than three hours of system downtime occurs at any point-during the thirty day Acceptance Test, the Airport may, at its sole option, require the Contractor to conduct a new thirty-day Acceptance Test.
- 32.3.6 If more than a cumulative total of seven hours of system downtime occur during the thirty-day acceptance period, the Airport may elect to:
- 32.3.6.1 Request the Contractor to begin a new thirty (30) day Acceptance Test within seven days; or
- 32.3.6.2 Notify the Contractor that the specific modification or upgrade is not acceptable and seek remedy through the Contractor's Performance Bond or other available remedies. The Contractor shall remove the failed new component or equipment. Title to the failed item(s) will then be transferred to the Contractor and Airport will not be responsible for the condition of, or any loss or damage to, the said item(s); or Waive the defect(s) and accept the item, if the demonstrated operation of the equipment is such that reliable and efficient operation and performance of the Airport systems and all associated Warranties shall not be compromised. The Contractor shall bear all direct costs attributable to Airport's performance evaluation and determination to waive any defect and accept equipment (such costs to be approved by Airport as to reasonableness and to include, but not be

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

limited to: fees and charges of engineers, architects, attorneys and other professionals). If any such acceptance occurs, the Airport shall be entitled to an appropriate negotiated decrease in the Agreement Price. If the acceptance occurs after such recommendation, a written Change Order will be issued and an appropriate amount will be paid by the Contractor to Airport.

- 32.3.7 The Contractor shall be responsible for all costs associated with the Acceptance Test(s) including the costs for any independent tests or certifications (except as noted above).
- 32.3.8 Notice of Acceptance. If the new equipment passes the Acceptance Test, the Airport will provide written notice of acceptance within five (5) working days following the completed thirty consecutive day Acceptance Test period. The official date of acceptance shall be the first day following successful completion of the acceptance test.
- 32.3.9 Title - Risk of Loss. For items provided or furnished by Contractor, title to any new upgrade or modification component of the Airport systems or equipment will vest in the Airport upon date of installation; however, the obligation to pay the Contractor remaining progress payments will not accrue until the date of acceptance by the Airport.
- 32.3.10 The Warranty Period shall begin to run upon Airport's date of acceptance.

33.0 ENERGY MANAGEMENT - IAH, HOU & EFD

- 33.1 At the inception of Project 621, any payments will cease for Energy Management Savings. After completion of Project 621, an eighteen (18) month base line shall be established for any renewal of credits. Estimated Project 621 completion is thirty (30) months.
- 33.2 Any new energy management system installed under the scope of future projects shall be compatible with existing energy management system.
- 33.3 Contractor for performance measurement, whether implemented internally by the Contractor or by contract with a third party vendor, shall implement a comprehensive M&V plan using the guidelines and methodologies defined by the International Performance Measurement and Verification Protocol (IPMVP). This will include but not be limited to baseline evaluation and development, independent variable analysis, monitoring strategies, savings calculations, error analysis, documentation, and reporting. Per IPMVP recommendations, Contractor is to use one or a combination of the following four methodologies for effective performance measurement.
 - 33.3.1 Option A – Retrofit Isolation:
 - 33.3.2 Key Parameter Measurement
 - 33.3.3 Option B – Retrofit Isolation: All Parameter Measurement
 - 33.3.4 Option C - Whole Facility
 - 33.3.5 Option D - Calibrated Simulation
- 33.4 The Contractor assumes the responsibility for all processes needed to develop and maintain energy baselines, establish energy savings goals, and monitor and track energy use and report on energy savings. At the discretion of the Director, the Contractor may engage a third party vendor to provide the monitoring services specified above, at the Contractor's expense. The roles and responsibilities for a third party vendor shall be negotiated based on a defined statement of work at the discretion of the Director.

33.5 Baseline Development & Maintenance Guidelines

- 33.5.1 Where savings strategies will be relatively isolated from one another, Option A or Option B shall be utilized to develop a baseline independent of utility bill records. Where multiple savings strategies are installed and become highly interactive with one another or other building systems, the use of Option C is required. 24 months of utility bill records are required for Option C baseline evaluation and development. Option D is reserved for

EXHIBIT "A"

PERFORMANCE/WORK STATEMENT

applications where either an energy baseline does not exist, meter data is not available, or a facility will be remodeled and space utilization will dramatically change. In these instances, the baseline shall be modeled using energy modeling software.

33.5.2 For overall tracking and baseline development independent of incorporating new strategies, option C shall be utilized. Contractor to provide plan and methodology to the Director for approval.

33.6 Independent Variable Evaluation

33.6.1 Independent variables should be monitored and included in the energy savings analysis and baseline analysis. The variables may include but are not limited to: climate data, operating schedules, occupancy, equipment inventories, and population.

33.7 Baseline Development and Maintenance

33.7.1 Baseline maintenance is critical to accurate measurement of energy savings and overall Contractor performance. This often involves tracking and evaluation of independent variables or other conditions that cause energy use to deviate from anticipated performance. In addition to independent variables, this may include but is not limited to building additions, scheduling, changes in energy density, control strategies, personal preferences, etc. Data collection, monitoring, documentation, and calculations to evaluate the value of each variable or condition are required for acceptance in the energy savings analysis. Two separate comparisons shall be tracked and utilized to develop and maintain the baseline:

33.7.1.1 Current month data versus same month data during previous year

33.7.1.2 Rolling 12 month data versus previous year rolling 12 month data

33.8 Measurement & Verification

33.8.1 The key performance variables listed in Section 4.2.5 shall be tracked via utility bills, BAS trending and monitoring, or field observation and measurement.

33.8.2 At the sole discretion of the Director, field measurement of pre-retrofit and post-retrofit variables may be sufficient to quantify energy savings on an on-going basis. If utility bill records and/or meter and sub-meter data is used to evaluate energy savings, the comprehensive M&V plan shall define the process and frequency of data collection, baseline modifications, documentation, system monitoring, savings calculations and reporting.

33.8.3 The Contractor shall submit to the Director justification related to the adjustment or normalization of the baseline for events or occurrences not directly attributable to the Contractor. This shall be evaluated by the Director and feedback shall be provided to the Contractor within thirty (30) days of receipt. The Director will have sole authority to accept or deny all justifications provided.

33.8.4 At any time during the course of the Agreement, the Contractor may submit a request to reset the baseline. The Contractor shall submit justification to the Director, who shall have the sole authority to accept or deny all requests.

33.8.5 Contractor, at Director's discretion, shall implement a shared energy savings approach whereby 80% of the savings will be retained by HAS and 20% will be shared with Contractor, for initiatives developed solely by the Contractor. Dollar amounts must be calculated monthly based on the energy unit cost for the particular month, multiplied by the units saved (verified and validated with International Performance Measurement and Verification Protocol – IPMVP). Incentives will be paid quarterly upon the Director's approval. Energy reduction reporting shall include a detailed description of the Contractor's actions to which the savings are directly attributable. The Contractor shall submit a preliminary assessment of any operational change that is being contemplated showing projected energy impact. Upon approval and implementation, a completion report certifying that the change has been implemented and any performance test data to support the defined M&V protocol and resulting determination of cost reduction.

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 33.9 Shared Energy Savings Award Fee
- 33.9.1 The savings will be calculated as the difference between the monthly utility cost (of the utility being considered) and the cost during the corresponding baseline period, plus or minus any adjustments approved by the Director. For all no cost improvements, HAS shall retain 80% of the savings and shall share the remaining 20% with the Contractor for the remaining term of the Agreement. For all additional capital improvements funded by HAS, HAS shall retain 90% of the savings and shall share the remaining 10% with the Contractor for one year. After 1 year, HAS retains all savings. All other provisions of this Agreement must be satisfied in order to receive this savings.
- 33.9.2 At the Director's discretion, the Contractor shall be allowed to fund all or part of the cost of any efficiency improvement project and receive a larger portion of the savings generated by installing such equipment through the shared savings approach. If the Contractor wishes to negotiate the terms of the shared savings agreement, the Contractor shall submit this request along with the Contractor's required preliminary assessment.
- 33.9.3 All utilities, including water, are eligible for savings incentives.
- 33.10 Propose a detailed description for:
- 33.10.1 Operating the chiller equipment and system in a manner to utilize the energy source (gas for steam turbine drive versus electric drive chillers), which produces the lowest cost per ton. (IAH only).
- 33.10.2 Optimizing energy usage, balancing operating hours on all equipment, and determining optimum modes of operations for all HVAC.
- 33.10.3 Exploring Load share plans.
- 33.10.4 Evaluating energy usage and identifying opportunities for efficiencies/savings.
- 33.10.5 Identifying and implementing additional energy conservation strategies.
- 33.10.6 Operating and maintaining HVAC and monitoring and controlling performance related items at optimum efficiency for control including but not limited to the following:
- 33.10.6.1 Fuel/Air ratio (excess air) in boiler firing.
- 33.10.6.2 Chillers, boilers, pumps, and all utility production equipment.
- 33.10.6.3 Management control system(s).
- 33.10.6.4 Blow-off and Blow-downs of boilers.
- 33.10.6.5 Blow-down on cooling tower systems.
- 33.10.6.6 De-aerator venting and operating pressure.
- 33.10.6.7 Operation of constant and variable speed parallel pumping units.
- 33.10.6.8 Operation of cooling towers and fans.
- 33.10.6.9 Centrifugal chiller oil analysis.
- 33.10.6.10 Water softening system.
- 33.10.6.11 Monitoring of Cathodic protection.
- 33.11 Propose shared savings/incentives that includes, but is not limited to:

EXHIBIT "A"
PERFORMANCE/WORK STATEMENT

- 33.11.1 Methods of tracking and identifying savings.
- 33.11.2 Auditing utility bills.
- 33.12 Contractor shall reduce energy usage without adversely impacting tenant comfort using the following approaches:
 - 33.12.1 A comprehensive maintenance program that helps to ensure that equipment and systems are running at peak efficiency.
 - 33.12.2 High efficiency rated replacement parts.
 - 33.12.3 BAS control software must be regularly adjusted to provide maximum benefit from free cooling and outside air-reset technologies.

34.0 PERFORMANCE BOND

- 34.1 The successful Contractor shall furnish and maintain throughout the Agreement term a Performance Bond in the amount of 100% of the annual applicable Agreement year. Contractor shall renew this bond for each renewal year of this Agreement in an amount equal to the Agreement amount for the applicable renewal term. The bond shall be conditioned upon Contractor's full and timely performance of this Agreement and must be issued by a corporate surety authorized to write surety bonds in the State of Texas and be in the form as shown in Exhibit E.
- 34.2 The Performance Bond shall be in the same form as that distributed by the City, all duly executed by this bidder (as "Principal") and by a corporate surety company licensed to do business in the State of Texas. The surety must be listed on the current list of accepted sureties on federal bonds published by the United States Treasury Department.

35.0 INCLUSION/EXCLUSION FORM

- 35.1 Contractor shall review Exhibit M and retain for future use.

EXHIBIT "B" FEE SCHEDULE

FEE SCHEDULE		
Contractor shall furnish all necessary labor, equipment, material, supplies, personnel, services, and all activity necessary for, or incidental, to perform the Work as specified in the Agreement.		
All quantities listed are estimated quantities for budgetary purposes only. The actual quantities may be higher or lower than any estimates, and Contractor shall be paid only for actual Work performed, subject to prior HAS direction and approval.		
YEARS (1- 5) BID TOTAL SUMMARY "B-1"		
YEAR ONE RATES - BID TOTAL SUMMARY		
I-a.	Total Basic Services (IAH)	\$3,776,751.27
I-b.	Total Basic Services (HOU)	\$811,449.42
I-c.	Total Basic Services (EFD)	\$56,132.01
II-a.	Total Other Work/Services (IAH)	\$734,291.00
II-b.	Total Other Work/Services (HOU)	\$136,090.00
II-c.	Total Other Work/Services (EFD)	\$54,847.85
TOTAL BASIC SERVICES & OTHER WORK /SERVICES YEAR ONE RATES (IAH)(HOU)&(EFD)		\$5,569,561.55
YEAR TWO RATES - BID TOTAL SUMMARY		
I-a.	Total Basic Services (IAH)	\$3,705,415.62
I-b.	Total Basic Services (HOU)	\$803,892.42
I-c.	Total Basic Services (EFD)	\$53,059.32
II-a.	Total Other Work/Services (IAH)	\$621,659.50
II-b.	Total Other Work/Services (HOU)	\$105,691.25
II-c.	Total Other Work/Services (EFD)	\$47,194.90
TOTAL BASIC SERVICES & OTHER WORK /SERVICES YEAR TWO RATES (IAH)(HOU)&(EFD)		\$5,336,913.01
YEAR THREE RATES - BID TOTAL SUMMARY		
I-a.	Total Basic Services (IAH)	\$3,822,427.94
I-b.	Total Basic Services (HOU)	\$841,109.57
I-c.	Total Basic Services (EFD)	\$56,885.66
II-a.	Total Other Work/Services (IAH)	\$628,961.00
II-b.	Total Other Work/Services (HOU)	\$107,239.90
II-c.	Total Other Work/Services (EFD)	\$47,961.60
TOTAL BASIC SERVICES & OTHER WORK / SERVICES YEAR THREE RATES (IAH)(HOU)&(EFD)		\$5,504,585.67

EXHIBIT "B" FEE SCHEDULE

YEAR FOUR (OPTION YEAR 1) RATES – BID TOTAL SUMMARY		
I-a.	Total Basic Services (IAH)	\$3,868,461.01
I-b.	Total Basic Services (HOU)	\$851,639.43
I-c.	Total Basic Services (EFD)	\$55,572.36
II-a.	Total Other Work/Services (IAH)	\$636,500.50
II-b.	Total Other Work/Services (HOU)	\$108,839.60
II-c.	Total Other Work/Services (EFD)	\$48,754.00
TOTAL BASIC SERVICES & OTHER WORK /SERVICES OPTION YEAR 1 RATES (IAH)(HOU)&(EFD)		\$5,569,766.90
YEAR FIVE (OPTION YEAR 2) RATES - BID TOTAL SUMMARY		
I-a.	Total Basic Services (IAH)	\$3,906,206.88
I-b.	Total Basic Services (HOU)	\$850,493.93
I-c.	Total Basic Services (EFD)	\$56,477.12
II-a.	Total Other Work/Services (IAH)	\$644,249.00
II-b.	Total Other Work/Services (HOU)	\$110,483.35
II-c.	Total Other Work/Services (EFD)	\$49,567.70
TOTAL BASIC SERVICES & OTHER WORK /SERVICES OPTION YEAR 2) RATES (IAH)(HOU)&(EFD)		<u>\$5,617,477.98</u>
FIVE YEAR GRAND TOTAL		\$27,598,305.11

EXHIBIT "B" FEE SCHEDULE

I-a YEAR ONE – (IAH) BASIC SERVICES

	Cost Per Month	X	Cost Per Year
HVAC SYSTEMS Operation and Maintenance. Includes all Basic Services specified in the required SOW	\$314,729.27	(12)	\$3,776,751.27
(IAH) BASIC SERVICES TOTAL ITEMS			\$3,775,751.27

II-a YEAR ONE – (IAH) OTHER WORK/SERVICES

Other Work/Services may be required for the HVAC SYSTEMS to meet desired conditions and/or repairs not covered in the Basic Services of the Agreement. Any estimated quantities, labor hours, and remedial maintenance and supplies expenditures listed below are estimated amounts for Other Work/Services for each year of the Agreement. Consequently, the actual dollar amount for Other Work/Services may be higher or lower than the estimates, and the Contractor shall only be paid for actual work performed, subject to City direction and approval. **If Other Work/Services are performed by the on-site crew in conjunction with their regular duties, Contractor shall not receive additional compensation for their labor.**

A Estimated (IAH) Other Work/ Services Labor (Quantities are estimated for budget purposes only)

No.	Description	Est. Annual Labor Hours	X	Cost per Hour	=	Annual Cost
1.	<u>HVAC MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	825	X	\$73.23	=	\$60,414.75
	b. After Normal Work Hours	400	X	\$95.20	=	\$38,080.00
2.	<u>DDC MAINTENANCE TECHNICIAN</u>					
	a. Normal Work Hours	800	X	\$110.34	=	\$88,272.00
	b. After Normal Work Hours	150	X	\$143.25	=	\$21,487.50
3.	<u>DX MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	225	X	\$73.23	=	\$16,476.75
	b. After Normal Work Hours	100	X	\$95.20	=	\$9,520.00
	Total Estimated Other Work / Services Labor Annual Costs (add items 1 - 3)					\$234,251.00

B. Estimated (IAH) Other Work/ Services Subcontracts/Materials/Supplies (Quantities are estimated for budget purposes only)

PRICES SHALL BE BASED ON THE CONTRACTOR'S ACTUAL COST PLUS THE FOLLOWING MARK-UP PERCENTAGES:

ITEM	Est. Annual Cost	Proposer Percent Mark-	Total Annual Est. Cost
Materials	\$463,000.00	8%	\$500,040.00
TOTAL ESTIMATED (IAH) OTHER WORK/SERVICES LABOR & MATERIAL ANNUAL COST (add A & B)			<u>\$734,291.00</u>

EXHIBIT "B" FEE SCHEDULE

I-b YEAR ONE – (HOU) BASIC SERVICES

	Cost Per Month	X	Cost Per Year
HVAC SYSTEMS Operation and Maintenance. Includes all Basic Services specified in the required SOW	\$67,620.79	(12)	\$811,449.42
(HOU) BASIC SERVICES TOTAL ITEMS			\$811,449.42

II-b YEAR ONE – (HOU) OTHER WORK/SERVICES

Other Work/Services may be required for the HVAC SYSTEMS to meet desired conditions and/or repairs not covered in the Basic Services of the Agreement. Any estimated quantities, labor hours, and remedial maintenance and supplies expenditures listed below are estimated amounts for Other Work/Services for each year of the Agreement. Consequently, the actual dollar amount for Other Work/Services may be higher or lower than the estimates, and the Contractor shall only be paid for actual work performed, subject to City direction and approval. **If Other Work/Services are performed by the on-site crew in conjunction with their regular duties, Contractor shall not receive additional compensation for their labor.**

A Estimated (HOU) Other Work/ Services Labor (Quantities are estimated for budget purposes only)

No.	Description	Est. Annual Labor Hours	X	Cost per Hour	=	Annual Cost
1.	<u>HVAC MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	250	X	\$73.23	=	\$18,307.50
	b. After Normal Work Hours	65	X	\$95.20	=	\$6,188.00
2.	<u>DDC MAINTENANCE TECHNICIAN</u>					
	a. Normal Work Hours	100	X	\$110.34	=	\$11,034.00
	b. After Normal Work Hours	60	X	\$143.25	=	\$8,595.00
3.	<u>DX MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	50	X	\$73.23	=	\$3,661.50
	b. After Normal Work Hours	20	X	\$95.20	=	\$1,904.00
Total Estimated Other Work / Services Labor Annual Costs (add items 1 - 3)						\$49,690.00

B. Estimated (HOU) Other Work/ Services Subcontracts/Materials/Supplies (Quantities are estimated for budget purposes only)

PRICES SHALL BE BASED ON THE CONTRACTOR'S ACTUAL COST PLUS THE FOLLOWING MARK-UP PERCENTAGES:

ITEM	Est. Annual Cost	Proposer Percent Mark-up (Max. 15%)	Total Annual Est. Cost
Materials	\$80,000.00	8%	\$86,400.00
TOTAL ESTIMATED (HOU) OTHER WORK/SERVICES LABOR & MATERIAL ANNUAL COST (add A & B)			\$136,090.00

EXHIBIT "B" FEE SCHEDULE

I-c YEAR ONE – (EFD) BASIC SERVICES

	Cost Per Month	X	Cost Per Year
HVAC SYSTEMS Operation and Maintenance. Includes all Basic Services specified in the required SOW	\$4,677.67	(12)	\$56,132.01
(EFD) BASIC SERVICES TOTAL ITEMS			\$56,132.01

II-c YEAR ONE – (EFD) OTHER WORK/SERVICES

Other Work/Services may be required for the HVAC SYSTEMS to meet desired conditions and/or repairs not covered in the Basic Services of the Agreement. Any estimated quantities, labor hours, and remedial maintenance and supplies expenditures listed below are estimated amounts for Other Work/Services for each year of the Agreement. Consequently, the actual dollar amount for Other Work/Services may be higher or lower than the estimates, and the Contractor shall only be paid for actual work performed, subject to City direction and approval. **If Other Work/Services are performed by the on-site crew in conjunction with their regular duties, Contractor shall not receive additional compensation for their labor.**

A Estimated (EFD) Other Work/ Services Labor (Quantities are estimated for budget purposes only)

No.	Description	Est. Annual Labor Hours	X	Cost per Hour	=	Annual Cost
1.	<u>HVAC MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	155	X	\$73.23	=	\$11,350.65
	b. After Normal Work Hours	15	X	\$95.20	=	\$1,428.00
2.	<u>DDC MAINTENANCE TECHNICIAN</u>					
	a. Normal Work Hours	70	X	\$110.34	=	\$7,723.80
	b. After Normal Work Hours	10	X	\$143.25	=	\$1,432.50
3.	<u>DX MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	30	X	\$73.23	=	\$2,196.90
	b. After Normal Work Hours	5	X	\$95.20	=	\$476.00
Total Estimated Other Work / Services Labor Annual Costs (add items 1 - 3)						\$24,607.85

B. Estimated (EFD) Other Work/ Services Subcontracts/Materials/Supplies (Quantities are estimated for budget purposes only)

PRICES SHALL BE BASED ON THE CONTRACTOR'S ACTUAL COST PLUS THE FOLLOWING MARK-UP PERCENTAGES:

ITEM	Est. Annual Cost	Percent Mark-up (Max. 15%)	Total Annual Est. Cost
Materials	\$28,000.00	8%	\$30,240.00
TOTAL ESTIMATED (EFD) OTHER WORK/SERVICES LABOR & MATERIAL ANNUAL COST (add A & B)			\$54,847.85

EXHIBIT "B" FEE SCHEDULE

I-a YEAR TWO – (IAH) BASIC SERVICES

	Cost Per Month	X	Cost Per Year
HVAC SYSTEMS Operation and Maintenance. Includes all Basic Services specified in the required SOW	\$308,784.64	(12)	\$3,705,415.62
(IAH) BASIC SERVICES TOTAL ITEMS			\$3,705,415.62

II-a YEAR TWO – (IAH) OTHER WORK/SERVICES

Other Work/Services may be required for the HVAC SYSTEMS to meet desired conditions and/or repairs not covered in the Basic Services of the Agreement. Any estimated quantities, labor hours, and remedial maintenance and supplies expenditures listed below are estimated amounts for Other Work/Services for each year of the Agreement. Consequently, the actual dollar amount for Other Work/Services may be higher or lower than the estimates, and the Contractor shall only be paid for actual work performed, subject to City direction and approval. **If Other Work/Services are performed by the on-site crew in conjunction with their regular duties, Contractor shall not receive additional compensation for their labor.**

A Estimated (IAH) Other Work/ Services Labor (Quantities are estimated for budget purposes only)

No.	Description	Est. Annual Labor Hours	X	Cost per Hour	=	Annual Cost
1.	<u>HVAC MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	825	X	\$76.16	=	\$62,832.00
	b. After Normal Work Hours	400	X	\$99.01	=	\$39,604.00
2.	<u>DDC MAINTENANCE TECHNICIAN</u>					
	a. Normal Work Hours	800	X	\$114.76	=	\$91,808.00
	b. After Normal Work Hours	150	X	\$149.19	=	\$22,378.50
3.	<u>DX MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	225	X	\$76.16	=	\$17,136.00
	b. After Normal Work Hours	100	X	\$99.01	=	\$9,901.00
Total Estimated Other Work / Services Labor Annual Costs (add items 1 - 3)						\$243,659.50

B. Estimated (IAH) Other Work/ Services Subcontracts/Materials/Supplies (Quantities are estimated for budget purposes only)

PRICES SHALL BE BASED ON THE CONTRACTOR'S ACTUAL COST PLUS THE FOLLOWING MARK-UP PERCENTAGES:

ITEM	Est. Annual Cost	Proposer Percent Mark-	Total Annual Est. Cost
Materials	\$350,000.00	8%	\$378,000.00
TOTAL ESTIMATED (IAH) OTHER WORK/SERVICES LABOR & MATERIAL ANNUAL COST (add A & B)			<u>\$621,659.50</u>

EXHIBIT "B" FEE SCHEDULE

I-b YEAR TWO – (HOU) BASIC SERVICES

	Cost Per Month	X	Cost Per Year
HVAC SYSTEMS Operation and Maintenance. Includes all Basic Services specified in the required SOW	\$66,991.04	(12)	\$803,892.42
(HOU) BASIC SERVICES TOTAL ITEMS			\$803,892.42

II-b YEAR TWO – (HOU) OTHER WORK/SERVICES

Other Work/Services may be required for the HVAC SYSTEMS to meet desired conditions and/or repairs not covered in the Basic Services of the Agreement. Any estimated quantities, labor hours, and remedial maintenance and supplies expenditures listed below are estimated amounts for Other Work/Services for each year of the Agreement. Consequently, the actual dollar amount for Other Work/Services may be higher or lower than the estimates, and the Contractor shall only be paid for actual work performed, subject to City direction and approval. **If Other Work/Services are performed by the on-site crew in conjunction with their regular duties, Contractor shall not receive additional compensation for their labor.**

A Estimated (HOU) Other Work/ Services Labor (Quantities are estimated for budget purposes only)

No.	Description	Est. Annual Labor Hours	X	Cost per Hour	=	Annual Cost
1.	<u>HVAC MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	250	X	\$76.16	=	\$19,040.00
	b. After Normal Work Hours	65	X	\$99.01	=	\$6,435.65
2.	<u>DDC MAINTENANCE TECHNICIAN</u>					
	a. Normal Work Hours	100	X	\$114.76	=	\$11,476.00
	b. After Normal Work Hours	60	X	\$149.19	=	\$8,951.40
3.	<u>DX MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	50	X	\$76.16	=	\$3,808.00
	b. After Normal Work Hours	20	X	\$99.01	=	\$1,980.20
Total Estimated Other Work / Services Labor Annual Costs (add items 1 - 3)						\$51,691.25

B. Estimated (HOU) Other Work/ Services Subcontracts/Materials/Supplies (Quantities are estimated for budget purposes only)

PRICES SHALL BE BASED ON THE CONTRACTOR'S ACTUAL COST PLUS THE FOLLOWING MARK-UP PERCENTAGES:

ITEM	Est. Annual Cost	Proposer Percent Mark-up (Max. 15%)	Total Annual Est. Cost
Materials	\$50,000.00	8%	\$54,000.00
TOTAL ESTIMATED (HOU) OTHER WORK/SERVICES LABOR & MATERIAL ANNUAL COST (add A & B)			\$105,691.25

EXHIBIT "B" FEE SCHEDULE

I-c YEAR TWO – (EFD) BASIC SERVICES

	Cost Per Month	X	Cost Per Year
HVAC SYSTEMS Operation and Maintenance. Includes all Basic Services specified in the required SOW	\$4,421.61	(12)	\$53,059.32
(EFD) BASIC SERVICES TOTAL ITEMS			\$53,059.32

II-c YEAR TWO – (EFD) OTHER WORK/SERVICES

Other Work/Services may be required for the HVAC SYSTEMS to meet desired conditions and/or repairs not covered in the Basic Services of the Agreement. Any estimated quantities, labor hours, and remedial maintenance and supplies expenditures listed below are estimated amounts for Other Work/Services for each year of the Agreement. Consequently, the actual dollar amount for Other Work/Services may be higher or lower than the estimates, and the Contractor shall only be paid for actual work performed, subject to City direction and approval. **If Other Work/Services are performed by the on-site crew in conjunction with their regular duties, Contractor shall not receive additional compensation for their labor.**

A. Estimated (EFD) Other Work/ Services Labor (Quantities are estimated for budget purposes only)

No.	Description	Est. Annual Labor Hours	X	Cost per Hour	=	Annual Cost
1.	<u>HVAC MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	155	X	\$76.16	=	\$11,804.80
	b. After Normal Work Hours	15	X	\$99.01	=	\$1,485.15
2.	<u>DDC MAINTENANCE TECHNICIAN</u>					
	a. Normal Work Hours	70	X	\$114.76	=	\$8,033.20
	b. After Normal Work Hours	10	X	\$149.19	=	\$1,491.90
3.	<u>DX MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	30	X	\$76.16	=	\$2,284.80
	b. After Normal Work Hours	5	X	\$99.01	=	\$495.05
Total Estimated Other Work / Services Labor Annual Costs (add items 1 - 3)						\$25,594.90

B. Estimated (EFD) Other Work/ Services Subcontracts/Materials/Supplies (Quantities are estimated for budget purposes only)

PRICES SHALL BE BASED ON THE CONTRACTOR'S ACTUAL COST PLUS THE FOLLOWING MARK-UP PERCENTAGES:

ITEM	Est. Annual Cost	Proposer Percent Mark-up (Max. 15%)	Total Annual Est. Cost
Materials	\$20,000.00	8%	\$21,600.00
TOTAL ESTIMATED (EFD) OTHER WORK/SERVICES LABOR & MATERIAL ANNUAL COST (add A & B)			<u>\$47,194.90</u>

EXHIBIT "B" FEE SCHEDULE

I-a YEAR THREE – (IAH) BASIC SERVICES

	Cost Per Month	X	Cost Per Year
HVAC SYSTEMS Operation and Maintenance. Includes all Basic Services specified in the required SOW	\$318,535.66	(12)	\$3,822,427.94
(IAH) BASIC SERVICES TOTAL ITEMS			\$3,822,427.94

II-a YEAR THREE – (IAH) OTHER WORK/SERVICES

Other Work/Services may be required for the HVAC SYSTEMS to meet desired conditions and/or repairs not covered in the Basic Services of the Agreement. Any estimated quantities, labor hours, and remedial maintenance and supplies expenditures listed below are estimated amounts for Other Work/Services for each year of the Agreement. Consequently, the actual dollar amount for Other Work/Services may be higher or lower than the estimates, and the Contractor shall only be paid for actual work performed, subject to City direction and approval. **If Other Work/Services are performed by the on-site crew in conjunction with their regular duties, Contractor shall not receive additional compensation for their labor.**

A. Estimated (IAH) Other Work/ Services Labor (Quantities are estimated for budget purposes only)

No.	Description	Est. Annual Labor Hours	X	Cost per Hour	=	Annual Cost
1.	<u>HVAC MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	825	X	\$78.44	=	\$64,713.00
	b. After Normal Work Hours	400	X	\$101.98	=	\$40,792.00
2.	<u>DDC MAINTENANCE TECHNICIAN</u>					
	a. Normal Work Hours	800	X	\$118.20	=	\$94,560.00
	b. After Normal Work Hours	150	X	\$153.66	=	\$23,049.00
3.	<u>DX MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	225	X	\$78.44	=	\$17,649.00
	b. After Normal Work Hours	100	X	\$101.98	=	\$10,198.00
Total Estimated Other Work / Services Labor Annual Costs (add items 1 - 3)						\$250,961.00

B. Estimated (IAH) Other Work/ Services Subcontracts/Materials/Supplies (Quantities are estimated for budget purposes only)

PRICES SHALL BE BASED ON THE CONTRACTOR'S ACTUAL COST PLUS THE FOLLOWING MARK-UP PERCENTAGES:

ITEM	Est. Annual Cost	Proposer Percent Mark-	Total Annual Est. Cost
Materials	\$350,000.00	8%	\$378,000.00
TOTAL ESTIMATED (IAH) OTHER WORK/SERVICES LABOR & MATERIAL ANNUAL COST (add A & B)			\$628,961.00

EXHIBIT "B" FEE SCHEDULE

I-b YEAR THREE – (HOU) BASIC SERVICES

	Cost Per Month	X	Cost Per Year
HVAC SYSTEMS Operation and Maintenance. Includes all Basic Services specified in the required SOW	\$70,092.46	(12)	\$841,109.57
(HOU) BASIC SERVICES TOTAL ITEMS			\$841,109.57

II-b YEAR THREE – (HOU) OTHER WORK/SERVICES

Other Work/Services may be required for the HVAC SYSTEMS to meet desired conditions and/or repairs not covered in the Basic Services of the Agreement. Any estimated quantities, labor hours, and remedial maintenance and supplies expenditures listed below are estimated amounts for Other Work/Services for each year of the Agreement. Consequently, the actual dollar amount for Other Work/Services may be higher or lower than the estimates, and the Contractor shall only be paid for actual work performed, subject to City direction and approval. **If Other Work/Services are performed by the on-site crew in conjunction with their regular duties, Contractor shall not receive additional compensation for their labor.**

A Estimated (HOU) Other Work/ Services Labor (Quantities are estimated for budget purposes only)

No.	Description	Est. Annual Labor Hours	X	Cost per Hour	=	Annual Cost
1.	<u>HVAC MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	250	X	\$78.44	=	\$19,610.00
	b. After Normal Work Hours	65	X	\$101.98	=	\$6,628.70
2.	<u>DDC MAINTENANCE TECHNICIAN</u>					
	a. Normal Work Hours	100	X	\$118.20	=	\$11,820.00
	b. After Normal Work Hours	60	X	\$153.66	=	\$9,219.60
3.	<u>DX MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	50	X	\$78.44	=	\$3,922.00
	b. After Normal Work Hours	20	X	\$101.98	=	\$2,039.60
Total Estimated Other Work / Services Labor Annual Costs (add items 1 - 3)						\$53,239.90

B. Estimated (HOU) Other Work/ Services Subcontracts/Materials/Supplies (Quantities are estimated for budget purposes only)

PRICES SHALL BE BASED ON THE CONTRACTOR'S ACTUAL COST PLUS THE FOLLOWING MARK-UP PERCENTAGES:

ITEM	Est. Annual Cost	Proposer Percent Mark-up (Max. 15%)	Total Annual Est. Cost
Materials	\$50,000.00	8%	\$54,000.00
TOTAL ESTIMATED (HOU) OTHER WORK/SERVICES LABOR & MATERIAL ANNUAL COST (add A & B)			<u>\$107,239.90</u>

EXHIBIT "B" FEE SCHEDULE

I-c YEAR THREE – (EFD) BASIC SERVICES

	Cost Per Month	X	Cost Per Year
HVAC SYSTEMS Operation and Maintenance. Includes all Basic Services specified in the required SOW	\$4,740.47	(12)	\$56,885.66
(EFD) BASIC SERVICES TOTAL ITEMS			\$56,885.66

II-c YEAR THREE – (EFD) OTHER WORK/SERVICES

Other Work/Services may be required for the HVAC SYSTEMS to meet desired conditions and/or repairs not covered in the Basic Services of the Agreement. Any estimated quantities, labor hours, and remedial maintenance and supplies expenditures listed below are estimated amounts for Other Work/Services for each year of the Agreement. Consequently, the actual dollar amount for Other Work/Services may be higher or lower than the estimates, and the Contractor shall only be paid for actual work performed, subject to City direction and approval. **If Other Work/Services are performed by the on-site crew in conjunction with their regular duties, Contractor shall not receive additional compensation for their labor.**

A Estimated (EFD) Other Work/ Services Labor (Quantities are estimated for budget purposes only)

No.	Description	Est. Annual Labor Hours	X	Cost per Hour	=	Annual Cost
1.	<u>HVAC MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	155	X	\$78.44	=	\$12,158.20
	b. After Normal Work Hours	15	X	\$101.98	=	\$1,529.70
2.	<u>DDC MAINTENANCE TECHNICIAN</u>					
	a. Normal Work Hours	70	X	\$118.20	=	\$8,274.00
	b. After Normal Work Hours	10	X	\$153.66	=	\$1,536.60
3.	<u>DX MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	30	X	\$78.44	=	\$2,353.20
	b. After Normal Work Hours	5	X	\$101.98	=	\$509.90
Total Estimated Other Work / Services Labor Annual Costs (add items 1 - 3)						\$26,361.60

B. Estimated (EFD) Other Work/ Services Subcontracts/Materials/Supplies (Quantities are estimated for budget purposes only)

PRICES SHALL BE BASED ON THE CONTRACTOR'S ACTUAL COST PLUS THE FOLLOWING MARK-UP PERCENTAGES:

ITEM	Est. Annual Cost	Proposer Percent Mark-up (Max. 15%)	Total Annual Est. Cost
Materials	\$20,000.00	8%	\$21,600.00
TOTAL ESTIMATED (EFD) OTHER WORK/SERVICES LABOR & MATERIAL ANNUAL COST (add A & B)			\$47,961.60

EXHIBIT "B" FEE SCHEDULE

I-a YEAR FOUR (OPTION YEAR ONE) – (IAH) BASIC SERVICES

	Cost Per Month	X	Cost Per Year
HVAC SYSTEMS Operation and Maintenance. Includes all Basic Services specified in the required SOW	\$322,371.75	(12)	\$3,868,461.01
(IAH) BASIC SERVICES TOTAL ITEMS			\$3,868,461.01

II-a YEAR FOUR (OPTION YEAR ONE) – (IAH) OTHER WORK/SERVICES

Other Work/Services may be required for the HVAC SYSTEMS to meet desired conditions and/or repairs not covered in the Basic Services of the Agreement. Any estimated quantities, labor hours, and remedial maintenance and supplies expenditures listed below are estimated amounts for Other Work/Services for each year of the Agreement. Consequently, the actual dollar amount for Other Work/Services may be higher or lower than the estimates, and the Contractor shall only be paid for actual work performed, subject to City direction and approval. **If Other Work/Services are performed by the on-site crew in conjunction with their regular duties, Contractor shall not receive additional compensation for their labor.**

A Estimated (IAH) Other Work/ Services Labor (Quantities are estimated for budget purposes only)

No.	Description	Est. Annual Labor Hours	X	Cost per Hour	=	Annual Cost
1.	<u>HVAC MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	825	X	\$80.80	=	\$66,660.00
	b. After Normal Work Hours	400	X	\$105.04	=	\$42,016.00
2.	<u>DDC MAINTENANCE TECHNICIAN</u>					
	a. Normal Work Hours	800	X	\$121.75	=	\$97,400.00
	b. After Normal Work Hours	150	X	\$158.27	=	\$23,740.50
3.	<u>DX MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	225	X	\$80.80	=	\$18,180.00
	b. After Normal Work Hours	100	X	\$105.04	=	\$10,504.00
Total Estimated Other Work / Services Labor Annual Costs (add items 1 - 3)						\$258,500.50

B. Estimated (IAH) Other Work/ Services Subcontracts/Materials/Supplies (Quantities are estimated for budget purposes only)

PRICES SHALL BE BASED ON THE CONTRACTOR'S ACTUAL COST PLUS THE FOLLOWING MARK-UP PERCENTAGES:

ITEM	Est. Annual Cost	Proposer Percent Mark-	Total Annual Est. Cost
Materials	\$350,000.00	8%	\$378,000.00
TOTAL ESTIMATED (IAH) OTHER WORK/SERVICES LABOR & MATERIAL ANNUAL COST (add A & B)			\$636,500.50

EXHIBIT "B" FEE SCHEDULE

I-b YEAR FOUR (OPTION YEAR ONE) – (HOU) BASIC SERVICES

	Cost Per Month	X	Cost Per Year
HVAC SYSTEMS Operation and Maintenance. Includes all Basic Services specified in the required SOW	\$70,969.95	(12)	\$851,639.43
(HOU) BASIC SERVICES TOTAL ITEMS			\$851,639.43

II-b YEAR FOUR (OPTION YEAR ONE) – (HOU) OTHER WORK/SERVICES

Other Work/Services may be required for the HVAC SYSTEMS to meet desired conditions and/or repairs not covered in the Basic Services of the Agreement. Any estimated quantities, labor hours, and remedial maintenance and supplies expenditures listed below are estimated amounts for Other Work/Services for each year of the Agreement. Consequently, the actual dollar amount for Other Work/Services may be higher or lower than the estimates, and the Contractor shall only be paid for actual work performed, subject to City direction and approval. **If Other Work/Services are performed by the on-site crew in conjunction with their regular duties, Contractor shall not receive additional compensation for their labor.**

A. **Estimated (HOU) Other Work/ Services Labor** (Quantities are estimated for budget purposes only)

No.	Description	Est. Annual Labor Hours	X	Cost per Hour	=	Annual Cost
1.	<u>HVAC MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	250	X	\$80.80	=	\$20,200.00
	b. After Normal Work Hours	65	X	\$105.04	=	\$6,827.60
2.	<u>DDC MAINTENANCE TECHNICIAN</u>					
	a. Normal Work Hours	100	X	\$121.75	=	\$12,175.00
	b. After Normal Work Hours	60	X	\$158.27	=	\$9,496.20
3.	<u>DX MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	50	X	\$80.80	=	\$4,040.00
	b. After Normal Work Hours	20	X	\$105.04	=	\$2,100.80
Total Estimated Other Work / Services Labor Annual Costs (add items 1 - 3)						\$54,839.60

B. **Estimated (HOU) Other Work/ Services Subcontracts/Materials/Supplies** (Quantities are estimated for budget purposes only)

PRICES SHALL BE BASED ON THE CONTRACTOR'S ACTUAL COST PLUS THE FOLLOWING MARK-UP PERCENTAGES:

ITEM	Est. Annual Cost	Proposer Percent Mark-up (Max. 15%)	Total Annual Est. Cost
Materials	\$50,000.00	8%	\$54,000.00
TOTAL ESTIMATED (HOU) OTHER WORK/SERVICES LABOR & MATERIAL ANNUAL COST (add A & B)			<u>\$108,839.60</u>

EXHIBIT "B" FEE SCHEDULE

I-c YEAR FOUR (OPTION YEAR ONE) – (EFD) BASIC SERVICES

	Cost Per Month	X	Cost Per Year
HVAC SYSTEMS Operation and Maintenance. Includes all Basic Services specified in the required SOW	\$4,631.03	(12)	\$55,527.36
(EFD) BASIC SERVICES TOTAL ITEMS			\$55,572.36

II-c YEAR FOUR (OPTION YEAR ONE) – (EFD) OTHER WORK/SERVICES

Other Work/Services may be required for the HVAC SYSTEMS to meet desired conditions and/or repairs not covered in the Basic Services of the Agreement. Any estimated quantities, labor hours, and remedial maintenance and supplies expenditures listed below are estimated amounts for Other Work/Services for each year of the Agreement. Consequently, the actual dollar amount for Other Work/Services may be higher or lower than the estimates, and the Contractor shall only be paid for actual work performed, subject to City direction and approval. **If Other Work/Services are performed by the on-site crew in conjunction with their regular duties, Contractor shall not receive additional compensation for their labor.**

A Estimated (EFD) Other Work/ Services Labor (Quantities are estimated for budget purposes only)

No.	Description	Est. Annual Labor Hours	X	Cost per Hour	=	Annual Cost
1.	<u>HVAC MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	155	X	\$80.80	=	\$12,524.00
	b. After Normal Work Hours	15	X	\$105.04	=	\$1,575.60
2.	<u>DDC MAINTENANCE TECHNICIAN</u>					
	a. Normal Work Hours	70	X	\$121.75	=	\$8,522.50
	b. After Normal Work Hours	10	X	\$158.27	=	\$1,582.70
3.	<u>DX MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	30	X	\$80.80	=	\$2,424.00
	b. After Normal Work Hours	5	X	\$105.04	=	\$525.20
Total Estimated Other Work / Services Labor Annual Costs (add items 1 - 3)						\$27,154.00

B. Estimated (EFD) Other Work/ Services Subcontracts/Materials/Supplies (Quantities are estimated for budget purposes only)

PRICES SHALL BE BASED ON THE CONTRACTOR'S ACTUAL COST PLUS THE FOLLOWING MARK-UP PERCENTAGES:

ITEM	Est. Annual Cost	Proposer Percent Mark-up (Max. 15%)	Total Annual Est. Cost
Materials	\$20,000.00	8%	\$21,600.00
TOTAL ESTIMATED (EFD) OTHER WORK/SERVICES LABOR & MATERIAL ANNUAL COST (add A & B)			\$48,754.00

EXHIBIT "B" FEE SCHEDULE

I-a YEAR FIVE (OPTION YEAR TWO) – (IAH) BASIC SERVICES

	Cost Per Month	X	Cost Per Year
HVAC SYSTEMS Operation and Maintenance. Includes all Basic Services specified in the required SOW	\$325,517.24	(12)	\$3,906,206.88
(IAH) BASIC SERVICES TOTAL ITEMS			\$3,906,206.88

II-a YEAR FIVE (OPTION YEAR TWO) – (IAH) OTHER WORK/SERVICES

Other Work/Services may be required for the HVAC SYSTEMS to meet desired conditions and/or repairs not covered in the Basic Services of the Agreement. Any estimated quantities, labor hours, and remedial maintenance and supplies expenditures listed below are estimated amounts for Other Work/Services for each year of the Agreement. Consequently, the actual dollar amount for Other Work/Services may be higher or lower than the estimates, and the Contractor shall only be paid for actual work performed, subject to City direction and approval. **If Other Work/Services are performed by the on-site crew in conjunction with their regular duties, Contractor shall not receive additional compensation for their labor.**

A. Estimated (IAH) Other Work/ Services Labor (Quantities are estimated for budget purposes only)

No.	Description	Est. Annual Labor Hours	X	Cost per Hour	=	Annual Cost
1.	<u>HVAC MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	825	X	\$83.22	=	\$68,656.50
	b. After Normal Work Hours	400	X	\$108.19	=	\$43,276.00
2.	<u>DDC MAINTENANCE TECHNICIAN</u>					
	a. Normal Work Hours	800	X	\$125.40	=	\$100,320.00
	b. After Normal Work Hours	150	X	\$163.02	=	\$24,453.00
3.	<u>DX MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	225	X	\$83.22	=	\$18,724.50
	b. After Normal Work Hours	100	X	\$108.19	=	\$10,819.00
	Total Estimated Other Work / Services Labor Annual Costs (add items 1 - 3)					\$266,249.00

B. Estimated (IAH) Other Work/ Services Subcontracts/Materials/Supplies (Quantities are estimated for budget purposes only)

PRICES SHALL BE BASED ON THE CONTRACTOR'S ACTUAL COST PLUS THE FOLLOWING MARK-UP PERCENTAGES:

ITEM	Est. Annual Cost	Proposer Percent Mark-	Total Annual Est. Cost
Materials	\$350,000.00	8%	\$378,000.00
TOTAL ESTIMATED (IAH) OTHER WORK/SERVICES LABOR & MATERIAL ANNUAL COST (add A & B)			<u>\$644,249.00</u>

EXHIBIT "B" FEE SCHEDULE

I-b YEAR FIVE (OPTION YEAR TWO) – (HOU) BASIC SERVICES

	Cost Per Month	X	Cost Per Year
HVAC SYSTEMS Operation and Maintenance. Includes all Basic Services specified in the required SOW	\$70,874.49	(12)	\$850,493.93
(HOU) BASIC SERVICES TOTAL ITEMS			\$850,493.93

II-b YEAR FIVE (OPTION YEAR TWO) – (HOU) OTHER WORK/SERVICES

Other Work/Services may be required for the HVAC SYSTEMS to meet desired conditions and/or repairs not covered in the Basic Services of the Agreement. Any estimated quantities, labor hours, and remedial maintenance and supplies expenditures listed below are estimated amounts for Other Work/Services for each year of the Agreement. Consequently, the actual dollar amount for Other Work/Services may be higher or lower than the estimates, and the Contractor shall only be paid for actual work performed, subject to City direction and approval. **If Other Work/Services are performed by the on-site crew in conjunction with their regular duties, Contractor shall not receive additional compensation for their labor.**

A. Estimated (HOU) Other Work/ Services Labor (Quantities are estimated for budget purposes only)

No.	Description	Est. Annual Labor Hours	X	Cost per Hour	=	Annual Cost
1.	<u>HVAC MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	250	X	\$83.22	=	\$20,805.00
	b. After Normal Work Hours	65	X	\$108.19	=	\$7,032.35
2.	<u>DDC MAINTENANCE TECHNICIAN</u>					
	a. Normal Work Hours	100	X	\$125.40	=	\$12,540.00
	b. After Normal Work Hours	60	X	\$163.02	=	\$9,781.20
3.	<u>DX MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	50	X	\$83.22	=	\$4,161.00
	b. After Normal Work Hours	20	X	\$108.19	=	\$2,163.80
Total Estimated Other Work / Services Labor Annual Costs (add items 1 - 3)						\$56,483.35

B. Estimated (HOU) Other Work/ Services Subcontracts/Materials/Supplies (Quantities are estimated for budget purposes only)

PRICES SHALL BE BASED ON THE CONTRACTOR'S ACTUAL COST PLUS THE FOLLOWING MARK-UP PERCENTAGES:

ITEM	Est. Annual Cost	Proposer Percent Mark-up (Max. 15%)	Total Annual Est. Cost
Materials	\$50,000.00	8%	\$54,000.00
TOTAL ESTIMATED (HOU) OTHER WORK/SERVICES LABOR & MATERIAL ANNUAL COST (add A & B)			\$110,483.35

EXHIBIT "B" FEE SCHEDULE

I-c YEAR FIVE (OPTION YEAR TWO) – (EFD) BASIC SERVICES

	Cost Per Month	X	Cost Per Year
HVAC SYSTEMS Operation and Maintenance. Includes all Basic Services specified in the required SOW	\$4,706.43	(12)	\$56,477.12
(EFD) BASIC SERVICES TOTAL ITEMS			\$56,477.12

II-c YEAR FIVE (OPTION YEAR TWO) – (EFD) OTHER WORK/SERVICES

Other Work/Services may be required for the HVAC SYSTEMS to meet desired conditions and/or repairs not covered in the Basic Services of the Agreement. Any estimated quantities, labor hours, and remedial maintenance and supplies expenditures listed below are estimated amounts for Other Work/Services for each year of the Agreement. Consequently, the actual dollar amount for Other Work/Services may be higher or lower than the estimates, and the Contractor shall only be paid for actual work performed, subject to City direction and approval. **If Other Work/Services are performed by the on-site crew in conjunction with their regular duties, Contractor shall not receive additional compensation for their labor.**

A Estimated (EFD) Other Work/ Services Labor (Quantities are estimated for budget purposes only)

No.	Description	Est. Annual Labor Hours	X	Cost per Hour	=	Annual Cost
1.	<u>HVAC MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	155	X	\$83.22	=	\$12,899.10
	b. After Normal Work Hours	15	X	\$108.19	=	\$1,622.85
2.	<u>DDC MAINTENANCE TECHNICIAN</u>					
	a. Normal Work Hours	70	X	\$125.40	=	\$8,778.00
	b. After Normal Work Hours	10	X	\$163.02	=	\$1,630.20
3.	<u>DX MAINTENANCE MECHANIC</u>					
	a. Normal Work Hours	30	X	\$83.22	=	\$2,496.60
	b. After Normal Work Hours	5	X	\$108.19	=	\$540.95
Total Estimated Other Work / Services Labor Annual Costs (add items 1 - 3)						\$27,967.70

B. Estimated (EFD) Other Work/ Services Subcontracts/Materials/Supplies (Quantities are estimated for budget purposes only)

PRICES SHALL BE BASED ON THE CONTRACTOR'S ACTUAL COST PLUS THE FOLLOWING MARK-UP PERCENTAGES:

ITEM	Est. Annual Cost	Proposer Percent Mark-up (Max. 15%)	Total Annual Est. Cost
Materials	\$20,000.00	8%	\$21,600.00
TOTAL ESTIMATED (EFD) OTHER WORK/SERVICES LABOR & MATERIAL ANNUAL COST (add A & B)			\$49,567.70

EXHIBIT "C"

EQUAL EMPLOYMENT OPPORTUNITY

1. The contractor, subcontractor, vendor, supplier, or lessee will not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, or age. The contractor, subcontractor, vendor, supplier, or lessee will take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, religion, color, sex, national origin, or age. Such action will include, but not be limited to, the following: employment; upgrading; demotion or transfer; recruitment advertising; layoff or termination; rates of pay or other forms of compensation and selection for training, including apprenticeship. The contractor, subcontractor, vendor, supplier or lessee agrees to post in conspicuous places available to employees, and applicants for employment, notices to be provided by the City setting forth the provisions of this Equal Employment Opportunity Clause.

2. The contractor, subcontractor, vendor, supplier, or lessee states that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex, national origin or age.

3. The contractor, subcontractor, vendor, supplier, or lessee will send to each labor union or representatives of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided by the agency contracting officer advising the said labor union or worker's representative of the contractor's and subcontractor's commitments under Section 202 of Executive Order No. 11246, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

4. The contractor, subcontractor, vendor, supplier, or lessee will comply with all provisions of Executive Order No. 11246 and the rules, regulations, and relevant orders of the Secretary of Labor or other Federal Agency responsible for enforcement of the equal employment opportunity and affirmative action provisions applicable and will likewise furnish all information and reports required by the Mayor and/or Contractor Compliance Officer(s) for purposes of investigation to ascertain and effect compliance with this program.

5. The contractor, subcontractor, vendor, supplier, or lessee will furnish all information and reports required by Executive Order No. 11246, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to all books, records, and accounts by the appropriate City and Federal Officials for purposes of investigations to ascertain compliance with such rules, regulations, and orders. Compliance reports filed at such times as directed shall contain information as to the employment practice policies, program, and work force statistics of the contractor, subcontractor, vendor, supplier, or lessee.

6. In the event of the contractor's, subcontractor's, vendor's, supplier's, or lessee's non-compliance with the non-discrimination clause of this contract or with any of such rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part, and the contractor, subcontractor, vendor, supplier, or lessee may be declared ineligible for further City contracts in accordance with procedures provided in Executive Order No. 11246, and such other sanctions may be imposed and remedies invoked as provided in the said Executive Order, or by rule, regulation, or order of the Secretary of Labor, or as may otherwise be provided by law.

7. The contractor shall include the provisions of paragraphs 1-8 of this Equal Employment Opportunity Clause in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontractor or purchase order as the contracting agency may direct as a means of enforcing such provisions including sanctions for noncompliance; provided, however, that in the event the contractor becomes involved in, or is threatened with litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

8. The contractor shall file and shall cause his or her subcontractors, if any, to file compliance reports with the City in the form and to the extent as may be prescribed by the Mayor. Compliance reports filed at such times as directed shall contain information as to the practices, policies, programs, and employment policies and employment statistics of the contractor and each subcontractor.



EXHIBIT "D"
MWBE SUBCONTRACT TERMS



ATTACHMENT "A": SCHEDULE OF MWBE PARTICIPATION
SOLICITATION NO.: S33-T24289

Date of Report: July 13, 2012

5 Year Plan

Bid No.: S33-T24289

Formal Bid Title: HVAC OPERATION AND MAINTENANCES SERVICES FOR THE CITY OF HOUSTON AIRPORT SYSTEMS (HAS)

Name of Minority / Women Subcontractor	Affirmative Action Division Certification Num	Cert Type	Street Address and City, State Zip Code	Telephone Number	Scope of Work	Agreed Price
CBIC Inc.	NAICS 238320 NAICS 238310	MBE/ MWBE	1113 Howard Av. Deer Park, Tx 77536	Esther 281-930-9009	Water Treatment, Painting, Labor	\$1,100,000.00
Matt Mechanical	11-12-11210	MBE/ DBE	22716 Hudson Ln New Caney Tx 77357	Laura 281-354-1382	Plumbing, Mech Supplies, Mech Eq.	\$2,385,000.00
Morales & Associates	NAICS-238290 NAICS-423990	MBE	12807 Royal Dr. Ste 108 Stafford Tx 77477	Bob 281-565-8400	Filters, Pump Supplies & HVAC Eq.	\$275,000.00
Silvera Sales	NAICS-425120	MBE	6819 Amber Pine Ct. Humble, Tx 77346	Frank 281-852-8836	Pipe, Valves, Fittings	\$625,000.00
ACS Mechanical	11-3-6803	MBE	4822 Marywood Dr Spring, Tx 77388	Mike 281-379-7933	HVAC Service	\$350,000.00
Independent AC Refrigeration	12-02-6522	MBE	12730 Rpbert E. Lee Rd Houston, Tx 77044	Chris 281-458-7722	HVAC Service	\$350,000.00
Tex Star Bearings	11-08-9733	MBE/ MWBE	4025 Willowbend Blvd Houston, Tx 77025	Jay 713-731-7200	HVAC Parts	\$250,000.00
B&B Valves & Fittings	423720	MBE	3224 Tidwell Rd Houston, Tx 77016	Noel 713-633-3139	HVAC Parts	\$95,000.00
Aus-Tex Electrical	11-11-5821	MBE	1525 Wilbuforce St. Houston, Tx 77091	Patrick 713-682-5809	Electrical & Service Materials	\$125,000.00
Tejas Office Products, Inc.	11-09-1091	MBE	1225 West 230th St Houston, Texas 77008	Stephen 713-864-6004	Office Supplies	\$52,000.00
Building Envelope Performance Consultants Group, LLC	NACIS-236220	MBE/ MWBE	440 Benmar # 2289 Houston, Tx 77060	Laura 404-524-2289	General Contracting & Construction	\$2,375,850.00
Total: \$7,982,850.00						
MWBE Participation Amount: 26.30%						
Total Bid Amount: \$30,358,135.62						



EXHIBIT "E"
PERFORMANCE BOND





Bond No. 09101828

PERFORMANCE BOND

THE STATE OF TEXAS

§

§

KNOW ALL MEN BY THESE PRESENTS:

THE COUNTY OF HARRIS

§

THAT WE, Comfort Systems USA (South Central), Inc., as Principal, hereinafter called "Contractor" and the other subscriber hereto Fidelity and Deposit Company of Maryland § Surety, do hereby acknowledge ourselves to be held and firmly bound to the City of Houston, a municipal corporation, in the sum of FIVE MILLION FIVE HUNDRED SIXTY NINE THOUSAND * \$5,569,561.55 Dollars (\$) for the payment of which sum, well and truly to be made to the City of Houston and its successors, the said Contractor and Surety do bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally.

*FIVE HUNDRED SIXTY ONE AND 55/100

THE CONDITIONS OF THIS OBLIGATION ARE SUCH THAT:

WHEREAS, the Contractor has on or about this day executed a Contract in writing with the City of Houston for HVAC SYSTEMS AND ASSOCIATED PLUMBING, ELECTRICAL AND CONTROL SYSTEMS OPERATIONS AND MAINTENANCE FOR THE HOUSTON AIRPORT SYSTEM @ GEORGE BUSH INTERCONTINENTAL AIRPORT/HOUSTON, WILLIAM P. HOBBY AIRPORT AND ELLINGTON FIELD all of such work to be done as set out in full in said Contract Documents therein referred to and adopted by the City Council, all of which are made a part of this instrument as fully and completely as if set out in full herein.

NOW THEREFORE, if the said Contractor shall faithfully and strictly perform Contract in all its terms, provisions, and stipulations in accordance with its true meaning and effect, and in accordance with the Contract Documents referred to therein and shall comply strictly with each and every provision of Contract and with this bond, then this obligation shall become null and void and shall have no further force and effect; otherwise the same is to remain in full force and effect.

It is further understood and agreed that the Surety does hereby relieve the City of Houston or its representatives from the exercise of any diligence whatever in securing compliance on the part of the Contractor with the terms of the Contract, and the Surety hereby waives any notice to it of any default, or delay by the Contractor in the performance of his Contract and agrees that it, the Surety, shall be bound to take notice of and shall be held to have knowledge of all acts or omissions of the Contractor in all matters pertaining to the Contract. The Surety understands and agrees that the provision in the Contract that the City of Houston shall retain certain amounts due the Contractor until the expiration of



PERFORMANCE BOND

thirty days from the acceptance of the Work is intended for the City's benefit, and the City of Houston shall have the right to pay or withhold such retained amounts or any other amount owing under the Contract without changing or affecting the liability of the Surety hereon in any degree.

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

It is further expressly agreed and understood that the Contractor and Surety will fully indemnify and save harmless the City of Houston from any liability, loss, cost, expense, or damage arising out of or in connection with the work done by the Contractor under the Contract.

If the Contract Price is greater than \$1.2 million and in the event that the City of Houston shall bring any suit or other proceeding at law on the Contract or this bond or both, the Contractor and Surety agree to pay to the City the sum of 10 percent of whatever amount may be recovered by the City in suit or legal proceeding, which sum of 10 percent is agreed by all parties to be indemnity to the City for the expense of or time consumed by its City Attorney, his assistants, and office force, and other cost and damage occasioned to the City. This amount of 10 percent is fixed and liquidated by the parties, it being agreed by them that the exact damage to the City would be difficult to ascertain.

This bond and all obligations created hereunder shall be performable in Harris County, Texas. This bond is given in compliance with the provisions of Article 5160, Revised Civil Statutes of Texas, as amended, which is incorporated herein by this reference. However, all of the express provisions hereof shall be applicable whether or not within the scope of said statute.

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

