Project Manual for:

PHILADELPHIA AIRPORT SYSTEM
FACILITY MAINTENANCE CONTRACT

PHL PNE PHILADELPHIA AIRPORT SYSTEM
Philadelphia International and Northeast

Prepared by:

City of Philadelphia
Department of Commerce
Division of Aviation

Bid No. U5-Z4955-0

Bid Opening Date: August 16, 2006 @ 10:30 A.M.

FACILITY MAINTENANCE CONTRACT

INVITATION AND BID

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SECTION 1: GENERAL BID SUBMISSION

1.1 **TITLE: Facility Maintenance Contract for Philadelphia International (PHL) & Northeast Philadelphia Airport (PNE)**

1.2 **SCHEDULE NO. 100-03**

1.3 **CONTRACT TERM:** DOA to 9/30/2007("Initial Term"), with an option to renew for up to three (3) additional one (1) year periods ("The Renewal Term") exercisable at the City's sole discretion; as of the Initial Term or then current Renewal Term. The City may, at its sole discretion, renew the contract for an additional period of up to three (3) months, commencing as of the expiration of the Initial term (the "Additional Performance Period"), if a decision has been made not to renew the contract for an entire year.

1.3.1 The City shall exercise such sole option to renew the Contract Term by issuing a letter (the "Renewal Notice") notifying the Contractor that the Contract is renewed for the Additional Performance Period (identified by commencement and expiration dates) that is specified in the Renewal Notice. The Contract shall be deemed to be renewed for such Additional Performance Period, and Contractor shall be obligated to follow all terms and conditions of the Contract throughout such Additional Performance Period, as of the effective date indicated on the City's Renewal Notice is issued, whether or not Contractor has agreed, verbally or in writing, to such renewal of the Contract term.

If an individual Performance Bond and/or Payment Bond is required under this Invitation and Bid, such bond(s) shall be and remain in full force and effect throughout the Initial Term, all Renewal Terms, any Additional Performance Period, and the period of any unexpired warranty provided or required under the Contract, without notice of Contract renewal by the City to the surety or the consent of the surety thereto. It is the sole responsibility of the Contractor to ensure that such bonds(s) remain in full force and effect as provided in this section, and failure to do so shall be an event of default pursuant to Section 16, Default, of the attached Terms and Conditions of Bidding and Contract.

1.3.3 If participation in the City's Master Performance Security Program is required under this Invitation and Bid, Contractor shall pay the required annual fee for each Renewal Term upon the issuance of the Renewal Notice

1.4 **CONTRACT TYPE: REQUIREMENTS**

1.4.1 The following services are required in the continued operation of PHL & PNE Facilities as ordered. Exact quantities cannot now be determined but estimates thereof are listed herein. Quantities listed may be increased or decreased to meet the requirements of the City during the period of this contract. Purchase orders issued as a result of this bid will be for Facility Maintenance services to be provided generally on an as-needed basis for each system listed. Successful bidder is cautioned not to provide any services without first being advised to do so by the Division of Aviation.

1.4.2 It is the intent of the Procurement Department to make an award for the period as stated above subject to the appropriation of funds in succeeding fiscal year/years by City Council. The City's fiscal year is from July 1st to June 30th inclusive.

1.4.3 Services in the bid to be ordered after the end of the fiscal year are subject to the issuance of a purchase order for the following fiscal year(s). The City is not liable for the award involving following fiscal years' funds until such order is issued.

1.4.4 The successful bidder's obligation to perform on such purchase orders shall not take effect until the order is issued. To simplify the contract procedure, however, the successful bidder will be required to furnish a Performance Bond or Performance Security Fee to cover units awarded to him.

1.5 **METHODOLOGY OF ACQUISITION**:

1.5.1 Purchase of Maintenance Services for Airport Facility Systems **ONLY.**

1.6 **STATEMENT OF DIRECTION:**

1.6.1 It is the intent of the City of Philadelphia to make an award for Maintenance Services for the Airport’s Facilities Systems as specified herein as required by the Division of Aviation (DOA) during the contract period.

1.7 **BID INFORMATION:**

1.7.1 All information concerning this bid will be contained in this bid document as issued or amended.

1.7.2 Any addenda to the Invitation and Bid document issued by the City during the time of solicitation for bids will be considered a part of this document package. The bidder shall acknowledge receipt of addenda by signing the addenda and returning it with the Invitation and Bid. Addenda issued prior to the mandatory pre-bid meeting and mandatory site inspection will be furnished to each recipient of an Invitation and Bid package. Addenda to be issued after the mandatory pre-bid meeting and mandatory site inspection shall only be furnished to those who have attended these meetings.

1.7.3 Information provided verbally by any City official shall not be binding or relevant.

1.7.4 **MANDATORY PRE BID MEETING & SITE INSPECTION**

1.7.4.1 **MANDATORY PRE-BID MEETING:**
Monday, July 24, 2006
10:30 AM
Municipal Services Building, 1401 JFK Boulevard
Conference Room 'C', 16th Floor
Philadelphia, PA

1.7.4.2 **MANDATORY SITE INSPECTION**
Site Visit Certification forms signed and submitted for Bid No. S5-Z4955-0 will be accepted for Bid No. U5-Z4955-0.

DATE FOR SITE INSPECTION
Wednesday and Thursday, July 19th and 20th, 2006
8:00 AM to 5:00 PM
Airport Situation Room, Location: Communication Center, Terminal C
Philadelphia International Airport

1.7.4.3 Any building audits to identify existing deficiencies prior to contract start up shall be done at this time. Bidders are to submit their questions in **WRITING** at the time of the Pre Bid Meeting. Oral communications concerning this solicitation shall not be binding upon the City. The City will issue **WRITTEN** responses to questions that materially impact upon the bid documents in the form of a written addendum.

1.7.4.4 **BIDS WILL BE EVALUATED ONLY FROM PREQUALIFIED BIDDERS WHO HAVE ATTENDED THE MANDATORY PRE-BID MEETING AND SITE INSPECTION.**

1.7.4.5 The City will not fund investigative site visits. The facilities will be taken over by the successful Contractor in an **"as is"** condition.

Wednesday and Thursday, July 19th and 20th, 2006
8:00 AM to 5:00
Airport Situation Room, Location: Communication Center, Terminal C
Philadelphia, PA.

1.7.5 **DISQUALIFICATION OF BIDDERS:**

1.7.5.1 More than one (1) bid from a bidder under the same or different name(s) will not be considered. All bids will be rejected if there is reason for believing that collusion exists among bidders and no participant in such collusion will be considered in future bids for On Site Facility Maintenance.

1.7.5.2 Bid Evaluation will not be performed for any bidder who is in or appears in default to the City: or has failed to perform faithfully any previous contract with the City.

1.7.6 **REJECTION OR ACCEPTANCE OF BIDS:**

1.7.6.1 At any time prior to the date and time of opening of bids, a bidder may withdraw his/her Invitation and Bid. Withdrawal of a previous Invitation and Bid will not preclude the submission of a substitute bid prior to the time and date of the receipt of bids. After the scheduled time for opening bids, no bidder will be permitted to withdraw his/her bid for a period of sixty (60) days. The submission of a bid will constitute a valid offer, subject to the acceptance by the City for a period of sixty (60) calendar days following the due date of the bid.

1.7.6.2 Any Invitation and Bid package that is incomplete, conditional, ambiguous, obscure, or which contains additions or alterations not called for, or irregularities of any kind may be rejected for such reason.

1.7.7 **WITHDRAWAL OF SELECTION**

1.7.7.1 The City reserves the right to withdraw its selection of any bidder without any liability to the City, at any time before a contract has been fully executed by all parties and approved by the City.

1.7.8 Within each section of these specifications, the City has provided its best estimates of the quantities of materials and frequency of service for specific line items. The City has set as a minimum a mandatory daily staffing level of 46 personnel plus management and supervision. The successful bidder is not allowed to go below this number at any time during the contract period. Bidders may, however, alter the number and type of personnel assigned to each shift upon approval of the Airport Maintenance Manager.

1.7.9 All pre-qualified Prime bidders are required to be cognizant of all pertinent codes, ordinances, national codes, labor agreements, rules and regulations associated with services to be provided and the execution of this contract. The City will not furnish a list of all Local, State and National Codes, rules, regulations. The prospective bidders should contact the appropriate agency office to procure a listing or copy of the required codes, rules and regulations.

1.7.10 The systems to be serviced for the Division of Aviation Airport System:

1.7.10.1 **Mechanical Services:**

Schedule A - Elevator/Escalator/Moving Walkways
Schedule B - Baggage Conveyor System
Schedule C - Passenger Loading Bridges and Gate Systems
Schedule D - Passenger Transfer Vehicles (PTV's)
Schedule E - Storm Water and Sanitary Drainage
Schedule F - Fire Protection Systems
Schedule G - Heating, Ventilation and Air Conditioning (HVAC)

1.7. 10.2 **Electrical Services:**

Schedule H - Facilities Automated Control Systems
Schedule I - Uninterrupted Power Supply
Schedule J - Switch Gear
Schedule K - High Voltage Cable Repair
Schedule L - Fire Alarm Systems

1.7.10.3 **General Services:**

Schedule M -	Fencing and Guiderails
Schedule N -	Bird Control
Schedule O -	Airfield Support Services
Schedule P -	Building Mounted Signage
Schedule Q -	Glass, Plastic Replacement
Schedule R -	Interior Cosmetic Repairs & Exterior Finishes Restoration/Maintenance
Schedule S -	Airport Exhibitions & Decorations
Schedule T -	Specialized Equipment Services
Schedule U -	Roofing
Schedule V -	Landscape Services

1.8 **BID QUESTIONS OR PROBLEMS:**

1.8.1 In preparing a response to this Invitation and Bid, should any bidder need clarification on the bid requirements, identify a discrepancy in the specifications, determine that a specified product has been discontinued or an alternate procedure is advised, etc.; then the bidder is STRONGLY encouraged to bring these issues to the attention of the Procurement Department prior to the bid opening by calling **(215) 686-4720 or 4721**, or by addressing a letter to the Buyer. If it is in the City's best interest to do so, the bid **MAY** be amended to reflect the proposed changes/modifications. Bid specifications and requirements **MAY** be revised prior to bid opening by a bid addendum. Changes can **NOT** be made after the bid opening.

1.9 **BID SUBMISSION:**

1.9.1 A fully executed and sealed bid (which shall consist of the certificates and pricing) information must be submitted to the City of Philadelphia no later than the time and date for the opening.

1.9.1.1 Only bidders who have been pre-qualified and attended the mandatory pre-bid meeting and site inspections are eligible for award of the contract resulting from this Invitation and Bid.

1.9.2 Advertised sealed Invitation and Bid packages will be received and opened publicly on August 16, 2006 at 10:30 AM in Room #170, 1st Floor, Municipal Services Building, 1401 JFK Boulevard, Philadelphia, PA. Any packages received after this time will be returned to the bidder unopened.

1.9.3 The Invitation and Bids should be complete and free from ambiguity, without alterations and erasures; and include ALL information required as described in the various paragraphs of the bid specifications.

1.9.4 **All pricing MUST be completed on the forms provided; be complete; and be in ink or typed.**

1.9.5 The bid **MUST** be complete as to required bid signatures and corporate seal, and fully accept the terms and conditions contained in the bid. No bid shall be conditioned in any manner, and any conditioned bid may be rejected.

1.9.5.1 Bids shall be strictly in accordance with prescribed form. The Bid shall include no alterations or modifications thereof or deviation there from, or riders or qualifications.

1.9.6 The bidder will submit information within thirty (30) days of award regarding technical qualifications for all personnel that will be utilized to perform the required Facilities System Maintenance Services. Personnel listed shall be listed by system and minimum number of 46 service personnel **MUST** be available to support the systems. Technicians can work on or support more than one system as long as they have the appropriate training and their work does not violate any Union agreements (i.e. an electrician could be used on the 400 Hz Ground Power System and the Aircraft Optical Guidance System).

1.9.7 **Cross utilization of employees is encouraged to maximize operational efficiency and may be implemented at the Contractor's discretion.**

1.9.8 **BID PROCESSING FEE:**

1.9.8.1 For the purpose of this bid **ONLY,** bidder shall submit with the bid a non-refundable check or money order payable to the City of Philadelphia in the amount of **$500.00** to cover the bid processing fee. Failure to submit this fee may result in disqualification from further evaluation for this Invitation and Bid.

1.9.9 In accordance with the City of Philadelphia's Regulations Relating to local Bidding Preferences for Procurement Contracts, this bid may be subject to a **5%** local bid preference. In order to determine eligibility to receive the **5%** preference, if applicable, bidder must submit with their bid, the local Business Entity Certification number* as issued by the Procurement Department for the prime contractor or the applicable subcontractor.

1.9.9.1 Further, by submission of this bid, bidder makes the following certification in connection with the grant of any local bidding preference:

"I certify, that if awarded this contract on the basis of application of the LBE preference, my company or my subcontractor, throughout the entirety of this contract, will perform the majority of the work under this contract within the geographic limits of the City of Philadelphia, and I will, or cause my subcontractor to, maintain within the City a majority of the inventory or equipment that will be used on this contract or the amount of inventory that is customary for this industry."

LBE Certification Number(s)_____

***[If you wish to apply for Local Business Entity (LBE) certification, go to www.phil.gov/bids/]**

1.9.10 **CONTACT PERSON (S):**

1.9.10.1 **PRE-AWARD:** Indicate to whom in your firm questions concerning this Invitation and Bid should be directed:

Name:_____
Address:_____
City/State/Zip:_____
Telephone #.:( ) _____ Ext.:
Fax #.:( ) ___
E-mail Address:_____

1.9.10.2 **POST-AWARD:** Indicate to whom in your firm questions concerning this Invitation and Bid should be directed:

Name:_____
Address:_____
City/State/Zip:_____
Telephone #.:( ) _____ Ext.:
Fax #.:( ) ____
E-mail Address:_____

1.9.11 Site Visit Certification forms signed and submitted for Bid No. S6-Z4955-0 will be accepted for Bid No. U5-Z4955-0.

1.9.12 Bidders must bid on all Systems/items to be eligible for an award. This bid shall be awarded as a whole.

1.10 **SYSTEMS TECHNICAL PERSONNEL QUALIFICATIONS:**

1.10.1 After receipt of the Letter of Award, the successful bidder shall provide to the Director of Aviation or designee the name(s) of the Manager, Shift Supervisors, Horticulturist and all regular service technicians, back-up technicians, technical support personnel and service supervisors for approval. The Division of Aviation reserves the right to reject any proposed personnel. The list shall include training and experience credentials of each. Any changes that may occur in personnel during the term of the contract will be made known to the City in writing by the successful bidder.

1.10.1.1 Manager, Assistant Manager and Shift Supervisors/Exhibitions Director

1.10.1.2 The Manager must have a minimum of ten (10) years experience in planning and handling multiple tasks and processing the reports and documentation required for this assignment. (See Para. 2.2.5.1 for requirements)

1.10.1.3 The Assistant Manager must have a minimum of seven (7) years experience in planning and handling multiple tasks and processing the reports and documentation required for this assignment. (See Para. 2.2.5.2 for requirements).

1.10.1.4 The Supervisors must have a minimum of seven (7) years experience in the direction and control of operational employees, and have basic mechanical and electrical hands-on experience. (See para. 2.2.5.3 for requirements).

1.10.1.4 The Director of Exhibitions must have ten (10) years experience as director of a visual arts exhibitions program in a gallery, museum, or other public facility

handling valuable and delicate works of art, packing and unpacking art objects. Picture framing including matting and label fabrication in addition to supervising freelance art handlers and art shippers. (See Para. 2.2.5.7 for requirements).

1.10.2 **Schedule A - Escalator/Elevator/Moving Walkway**

1.10.2.1 The maintenance personnel required should include mechanics, electricians, technicians and helpers. Each repair crew shall include personnel with experience in repairing elevators, escalators and moving walkways.

1.10.3 **Schedule B - Baggage Conveyor System**

1.10.3.1 The successful bidder's maintenance personnel must be experienced in diagnosing causes of equipment failure, troubleshooting, preventive maintenance, and be able to read and interpret schematics.

1.10.4 **Schedule C - Passengers Loading Bridges and Gate Systems**

1.10.4.1 The maintenance personnel required shall include mechanics, electricians, technicians and helpers. Each repair crew shall include personnel with experience in repairing passenger loading bridges, 400 Hz converters, pre-conditioned air units, potable water cabinets, and aircraft parking optical guidance systems. Factory training on these units is recommended with in-depth knowledge of troubleshooting procedures.

1.10.5 **Schedule D – Passenger Transport Vehicles (PTV's)**

1.10.5.1 The personnel shall be qualified operators and mechanics for the maintenance, repair and operation of the equipment specified.

1.10.6 **Schedule E - Storm water and Sanitary Drainage**

1.10.6.1 The maintenance personnel required shall be technicians with experience in clearing stormwater and sanitary drainage.

1.10.7 **Schedule F - Fire Protection Systems**

1.10.7.1 The maintenance personnel required shall be mechanics with experience in testing, maintaining and repairing fire protection systems.

1.10.8 **Schedule G – HVAC Maintenance & Repair**

1.10.8.1 The personnel required shall be HVAC mechanics with field experience in industrial capacity systems. Also having had training with the equipment manufacturer and can demonstrate the proper operation, maintenance, troubleshooting and service of the equipment.

1.10.9 **Schedule H – Facilities Automated Control System**

1.10.9.1 The maintenance personnel required shall be technicians with aptitude for computers, software, networking and experience with data acquisition systems.

1.10.10 **Schedule I - Uninterrupted Power Supply**

1.10.10.1 The maintenance personnel required shall have ectrical/electronic experience and training in the maintenance of UPS systems. Factory training on these UPS systems is recommended. Capable of troubleshooting and installing UPS systems.

1.10.11 **Schedule J - Switchgear**

1.10.11.1 The maintenance personnel required shall be an electrician with experience and training in the maintenance of electrical switchgear and associated test apparatus.

1.10.11.2 The infrared thermal scanning service subcontractor's scanning operator shall be trained in infrared equipment operations, thermographic analysis, and certified by equipment manufacturer or an independent training facility.

1.10.12 **Schedule K - High Voltage Cable Repair**

1.10.12.1 The maintenance personnel required shall be electricians with experience in repair and installation of 15 kV cable, terminations and splices.

1.10.13 **Schedule L – Fire Alarm Systems**

1.10.13.1 The maintenance personnel required shall be qualified and experienced in testing, maintaining and inspecting fire alarm and detection systems.

1.10.14 **Schedule M - Fencing and Guiderails**

1.10.14.1 The maintenance personnel required shall be qualified and experienced with fencing and guiderails.

1.10.15 **Schedule N - Bird Control**

1.10.15.1 The maintenance personnel required shall be experienced in the use of bird control materials and techniques. The technician shall be properly licensed.

1.10.16 **Schedule O - Airfield Support Services**

1.10.16.1 The runway rubber removal maintenance personnel required shall be equipment operators with experience in Airport operations. The lead technician shall be totally familiar with the equipment utilized.

1.10.16.2 Required turf management maintenance personnel shall be laborers, technicians, operators, grounds workers experienced in tree topping, grading, seeding, weed control, and related landscaping services.

1.10.16.3 Required friction measurement equipment maintenance personnel shall be engineering technicians qualified to service such proprietary equipment.

1.10.16.4 The Contractor shall furnish all labor, materials, supervision, expertise, equipment, tools and supplies for the maintenance of Animal Damage Control measures for managing wildlife hazards to aircraft and public safety at the Philadelphia International Airport and Philadelphia Northeast Airport.

1.10.16.5 Required AARFT maintenance personnel shall be OEM trained technicians qualified to service such equipment.

1.10.16.6 The Contractor shall furnish all labor, material, equipment, tools, and incidentals necessary to perform repair of asphalt and concrete pavements in specified areas of the airside operations area. Locations and methods of pavement repair shall be as determined by the Airport Maintenance Manager.

1.10.16.7 The Contractor shall furnish all labor, material, equipment, tools, and incidentals necessary for the removal of pavement markings and line striping in specified areas of the airside operations area. Locations for marking removal and limits of work shall be as determined by the Airport Maintenance Manager or his/her designee.

1.10.17 **Schedule P - Building Mounted Signage**

1.10.17.1 The maintenance personnel required shall be mechanics with electrical knowledge and experience in installing and repairing signage.

1.10.18 **Schedule Q - Glass, Plastic Replacement**

1.10.18.1 The maintenance personnel required shall have experience in the replacement of all types of glass, plastic and mirrors as used at the airport facilities.

1.10.19 **Schedule R - Interior Cosmetic Repairs & Exterior Finishes Restoration/Maintenance**

1.10.19.1 The maintenance personnel required shall be experienced in repairing both exterior and interior metal, wood, stone, as well as various other surface finishes.

1.10.20 **Schedule S - Airport Exhibitions & Decorations**

1.10.20.1 The personnel required shall be experienced in the decoration of large commercial facilities and planning, implementation of a professional art and exhibit program.

1.10.21 **Schedule T – Specialized Equipment Services**

1.10.21.1 The personnel shall be qualified operators of the equipment specified.

1.10.22 **Schedule U - Roofing**

1.10.22.1 The maintenance personnel required shall be mechanics with experience in repairing and replacing the roofing systems required.

1.10.23 **Schedule V - Landscape Services**

1.10.23.1 The maintenance personnel required shall be technicians, gardeners, horticulturists, laborers and group leaders with experience and knowledge of planting, care and maintenance of trees, hedges, shrubs, ornamental plants, flowers, turf, mulch and gravel areas. The group leader shall be licensed to apply all insecticides and pesticides in compliance with Federal and State pesticide acts and registration requirements.

SECTION 2: SPECIFICATIONS

2.1 **STANDARD REQUIREMENTS:**

2.1.1 The successful bidder shall provide preventive maintenance and repair services for the various Airport Terminal Systems listed in para. 1.7.10.

2.1.1.1 Any preventive maintenance work which impedes the normal Airport operation shall be performed on the third shift, or as directed by the Airport's Maintenance Manager.

2.1.2 This Facility Maintenance Contract will provide a single point of contact for maintenance and services required by the Division of Aviation. The work will be coordinated by an FMC Manager in an operations area to be provided by the City. The FMC Manager will direct the Maintenance Shift Supervisors who will control shift crew. The Manager and Assistant Manager shall be on duty during first shift (7 A.M-4 P.M.) Monday through Friday. The shift supervisors shall be assigned to provide 24 hours a day, seven days a week on-site coverage. Shift Supervisor's work day will overlap with the crew shifts to allow for continuity and coordination between shifts. The crews will be described below. The shifts will be from 7:00 A.M. to 3:00 P.M.; 3:00 P.M. to 11:00 P.M.; and 11:00 P.M. to 7:00 A.M.

The minimum daily staffing levels for this contract is the assignment of 46 service personnel to the Airport as follows:

a) Manager
b) Assistant Manager
c) Shift Supervisors

24 hours a day, seven days a week on-site coverage

d) Director of Exhibitions
e) Horticulturist
f) Schedules:

Schedule A - Elevator, Escalator, Moving Sidewalks 8

Schedules B, C, D, & F: 22
Baggage Conveyor, Passenger Loading Bridge,
Passenger Transfer Vehicles, Fire Protection

All Other Schedules: 16

TOTAL MANDATORY ON-SITE CREW 46

N.B. Those personnel not assigned to the site on a full time basis are to be fully qualified to maintain the systems on site and are available to supplement the full time crew or replace personnel for vacations, sick time, etc.

MINIMUM CREW ASSIGNMENTS

Schedule	**Shifts**			**Days per Week**
	1st	2nd	3rd	
Schedule A	2	2	4	per Schedule Specification
Schedules B,C,D,& F	10	6	6	per Schedule Specifications
All Other Schedules	8	2	6	per Schedule Specifications

The personnel that comprise the crew will be selected by the successful bidder and submitted for approval by the City.

2.1.2.1 A total of 3000 square feet of shop and administrative areas and spaces shall be provided by the City and assigned on a rental free, as is basis during the contract period with any fit-up or alteration expense to be borne by the successful bidder. The majority of the space will be in the vicinity of the terminal areas with the balance being at remote locations. An agreement for areas and spaces may be required for administrative and operational purposes.

2.1.3 The successful bidder will assign personnel to the shift crew to support scheduled maintenance/testing, and any schedule additional work requested by the City and have adequate personnel available to handle emergencies.

Airport equipment listed **MUST BE** ninety-five (95%) operational at all times. The assignment of the crews listed above will prevent equipment from being out of service due to lack of technical support. The successful bidder will assign personnel to the shift crew to support.

For example, a baggage conveyor must not be inoperable because an electrician is not available to reset a controller.

2.1.4 The initial minimum crew assignments shall consist of the forty-six (46) service personnel and the shifts detailed above. This is the minimum staffing level required to provide service for the scope of work current at the time of the bid opening. Work identified as **"FUTURE"** may require staffing in addition to the initial minimum crew assignment of forty-six (46). The crew assignments may be adjusted by the City as the contract progresses. Any changes to personnel, whether management, supervisors or crew must be approved by the City.

2.1.4.1 The successful bidder will have representatives on site on a twenty four (24) hour basis, and shall maintain a continuous telephone service where a designated Manager can be reached twenty four (24) hours each day, seven (7) days a week (including Sundays and holidays). The Manager on site and Shift Supervisor must maintain radio communications with the shift Crew, and the Airport.

2.1.5 **Minimum Staffing Requirements:**

2.1.5.1 Successful bidder shall provide service technicians specifically trained and experienced in the care and maintenance of equipment similar to the type covered in this Invitation and Bid and shall be assigned to perform the maintenance stipulated in the following specifications. Service technicians assigned by the successful bidder shall be qualified to perform the maintenance and repairs as needed during the contract period.

2.1.5.2 The successful bidder and his/her subcontractor shall have and maintain backup technicians who are equally qualified in all respects to assume the responsibilities of the maintenance of the systems in the event of sickness or other causes by absence of the assigned technician.

2.1.5.3 The successful bidder shall maintain technical support personnel who are specifically trained and experienced in adjusting, troubleshooting, installing and repairing equipment similar to the type included in these specifications. Personnel shall be available at all times to support or assist assigned technicians.

2.1.5.4 Should the City determine that the successful bidder is not meeting the contract responsibilities with the on site crew, then the City may request that the successful bidder increase the on site crew in order to meet contract obligations.

2.1.5.4.1 The successful bidder understands that the contract responsibilities must be met, and that they are fully responsible to increase the on site crew at no cost to the DOA as required to fulfill the requirements of the contract.

2.1.5.4.2 When requested by the City as a result of failure to satisfactorily provide the service, the successful bidder shall provide additional personnel to resolve immediate problems in addition to increasing the on site crew at no cost to the City.

2.1.6 The successful bidder and all subcontractors (at all tiers) shall at all times be required to comply with the provisions of all current and pertinent Federal/National, State, and Local ordinances, regulations, and codes which may govern the requirements of the work under this contract, and any changes to these that may occur during the life of this contract. This compliance shall apply to all maintenance, repair, testing, inspections, and other types of work otherwise described or outlined as part of this specification."

2.2 **PERSONNEL ASSIGNMENT APPROVAL**

2.2.1 The City will have the authority to instruct the successful bidder to remove undesirable personnel from performance of work for just cause. Personnel removed shall be replaced with equally qualified and experienced personnel. The City's decision will be final in all cases.

2.2.2 Successful bidder shall furnish certification papers and documentation of the assigned personnel's qualifications for on site crew to the City for written approval of acceptance. The successful bidder may change personnel only with equally qualified personnel with approval of the City.

2.2.3 The successful bidder understands and agrees that should the City refuse to approve any personnel assignments or request removal of any of the successful bidder's personnel that the City shall do so in writing stating the reason(s) or cause(s) for not approving or for requesting removal of any personnel on the work.

2.2.4 The successful bidder may reassign personnel between locations and provide temporary personnel assignments with prior approval of the City.

2.2.5 Various position description guidelines are outlined herein. Quality of personnel is an important requirement of this service contract. These descriptions are to be utilized as guidelines and all personnel retained are subject to the approval of the City as referenced in Section 2.2.3. The City will utilize these guidelines during the review and approval process related to personnel assignments.

2.2.5.1 **MANAGER**

Responsible for ensuring that Airport Systems are operated and maintained with the highest levels of safety, security, efficiency, cost effectiveness and in a first class condition. Accountable to the Director of Aviation or designee.

Duties

Communicate operating philosophy, objectives, and expectations to the facility management staff. Responsible for resolving problems and/or conflicts and maintaining open communication with various parties. Assimilate management information and write reports detailing activity for the reporting period. Reviews and approves all expenditures for materials, equipment, tools, supplies, and subcontracts. Prepare proposals for additions, deletions, and changes to the contract scope as requested. Track, analyze, and trend project costs. Prepare regular invoicing based on contract type, terms and conditions.

Prepare goal setting and employee performance reviews as applicable and administers pay for performance program.

Review and recommend staff and employee training programs, workshops, seminars, and classes.

Manage personnel including hiring, firing, and promoting staff. Responsible for the completion of required documentation and forms. Manage the total overall operation of the facility in the areas of safety, comfort, productivity, and efficiency to contract standards.

Requirements

Completion of a Bachelors Degree program. A combination of education and/or work experience equivalent would be considered in meeting the requirements a minimum of 10 years of facility management expertise. Five years of experience is desired in the area of operations and maintenance project management and three years of experience in the construction, renovation, or maintenance of large Airport installations or industrial complexes. Strong organizational, participative management and verbal and written communication skills are required.

2.2.5.2 **ASSISTANT MANAGER**

Responsible for ensuring that Airport Systems are operated and maintained with the highest levels of safety, security, efficiency, cost effectiveness and in a first class condition. Manage turnkey work and other technical or administrative project management functions. Assist the Manager for the facility operations. Assistant Manager is accountable to the Manager for the facility operations.

Duties

Performs the following duties as directed by the Manager. Communicate operating philosophy, objectives, and expectations to the facility management staff. Responsible for resolving problems and/or conflicts and maintaining open communication with various parties. Assimilate management information and write reports detailing activity for the reporting period. Reviews and approves expenditures for materials, equipment, tools, supplies, and subcontracts.

Prepare proposals for additions, deletions, and changes to the contract scope as requested. Track, analyze, and trend project costs. Prepare regular invoicing based on contract type, terms and conditions. Prepare goal setting and employee performance reviews as applicable and

administers pay for performance program. Review and recommend staff and employee training programs, workshops, seminars, and classes.

Manage personnel including hiring, firing, and promoting staff. Responsible for the completion of required documentation and forms. Assist with the total overall management operation of the facility in the areas of safety, comfort, productivity, and efficiency to contract standards.

Requirements

Completion of a Bachelors Degree program. A combination of education and/or work experience equivalent will be considered in meeting the requirement a minimum of 7 years of facility management and/or project management expertise. Experience is desired in the area of operations and maintenance project management, construction, renovation, or maintenance of large Airport installations or industrial complexes. Strong organizational, participative management and verbal and written communication skills are required.

2.2.5.3 **SUPERVISOR**

Responsible for ensuring that the customer's facility is operated and maintained cost effectively, safely, efficiently, and in a first class condition. Accountable to the Manager for the facility operations. Initiate, direct, and monitor the performance of the technical staff.

Duties

Communicate operating philosophy, objectives, and expectations to the technical staff. Order all materials, equipment, tools, and supplies required to perform job tasks.

Prepare goal setting and employee performance reviews as applicable and administers pay for performance program. Review and recommend staff and employee training programs, workshops, seminars, and classes. Manage personnel including scheduling of required manpower. Responsible for the completion of required documentation and forms.

Requirements

High school diploma. Education and/or work experience equivalent to a minimum of 7 years of technical facility management expertise. Three years of experience is desired in the area of operations and maintenance project management. Strong organizational, participative management and verbal and written communications skills are required.

2.2.5.4 **ELEVATOR MECHANIC**

Employees classified as elevator mechanics perform many tasks related to vertical transportation equipment. As a general description areas of expertise include construction, repair, modernization and maintenance of elevators, escalators, dumbwaiters, moving walks and moving ramps. Included are all components of the equipment, mechanical and electrical, with the exception of the physical structure containing the equipment (i.e. building steel, concrete, roofing etc.) and main power supply to the equipment (this work is performed by electricians). Elevator mechanics have completed an accredited apprenticeship program similar to the International Union of Elevator Constructors.

Duties

Elevator mechanics assigned to the maintenance and repair will perform tasks on elevators, escalator, moving walkway, and dumbwaiters. to keep the equipment operating properly, smoothly and efficiently. This includes regular schedules for preventive maintenance examinations covering lubrication, adjustments and observation.

Elevator mechanics shall also respond to "trouble calls" (shut downs, reports of improper operation, etc.) and troubleshoot electrical and mechanical problems to restore operation. Repairs are performed accordingly. Repairs may require a team, which consists of a mechanic and helper.

Maintenance tasks for traction elevators include but are not limited to examination of the operation of motors, generators, and controllers.

Replacement of contacts, cleaning of door and gate switches, cleaning and lubrication of door operator, examination of door hardware, hoist machine, gearbox, and bearings, lubricate governor, check hoist ropes for wear, equalize hoist rope tension, check and replace faulty indicating lights, lanterns and gongs, check hall push button operation, check dispatching operation.

Maintenance tasks for hydraulic elevators include maintaining hydraulic fluid at proper levels, repairing leaks on pump and valves, packing gland, and checking piping for signs of leakage. Maintenance for escalator/and moving walkways include handrail drive adjusting as necessary, operation of stop switches and skirt switches of inner panels and skirt fastenings and trim, comb segments treads, and risers.

Application of lubrication, including ring gear oil level, handrail drive chains, step chains, upper and lower bearings, non-reversing device, and main drive gear bearings. Periodic examination of brake operation for slide per ANSI A17.1 code requirements, step flanges, and general cleaning of the entire escalator/moving walkway assembly.

Additionally, mechanics shall perform safety tests in conjunction with ANSI A17.1 code and local inspection authority. Employees classified as helper or apprentice and in an Apprenticeship Program will work under the direct supervision of an elevator mechanic.

2.2.5.5 **MECHANIC**

Inspect, test, repair and perform preventive maintenance on mechanical systems. Work under general direction; must use personal judgment to analyze and select the appropriate course of action or determine when repair or maintenance is required. Provide guidance and specific direction to other members of the work group.

Duties

Inspect and diagnose complex mechanical systems such as air compressors, jetways, baggage handling systems, etc. Inspect and diagnose mechanical systems using a variety of tools and instruments. Perform specified preventive maintenance including belt adjustments, oiling, greasing, and cleaning of equipment.

Communicate with various parties on the work performed and present status of specialty systems. Interpret engineering drawings in reference to layout, location, and operation of the system(s).

Schedule maintenance tasks to ensure job completion. Assign specific work tasks to work group members.

Requirements

A minimum of three years of industry experience. High school diploma or equivalent. Completion of the required company training. Ability to communicate in both oral and written form.

2.2.5.6 **ELECTRICIAN**

Performs a variety of duties in and around the Terminal building to repair equipment and systems. Repairs, installs, replaces, tests, and troubleshoots electrical circuits, equipment, and appliances using handtools and testing instruments to supply electrical power for equipment operation. Has the ability to work with minimum supervision.

Duties

Inspects and tests electrical lighting, signal, communication and power circuits and equipment in both alternating and direct current applications. Isolates defects in wiring, switches, motors and other electrical equipment. Examines, tests and troubleshoots elements of systems such as distribution panels, controls, circuit fixtures and motors to locate obvious faults such as blown fuses, short circuits, broken wires, and loose connections. Repairs electrical circuits and equipment, replaces faulty switches, sockets, plugs, wiring, etc. and other simple elements of electrical systems, fixtures and appliances. Dismantles equipment, replacing defective parts. Checks clearance of parts with precision instruments. Installs new wiring and electrical equipment. Studies blueprints and diagrams to ascertain layout, location, and specifications of items to be installed. Estimates quantities of materials needed and prepares requisitions, for approval. Cuts and shapes conduit and fastens it in place with brackets or similarly installs armored cable. Records time and material expended on each work order. Assists in the training of others.

Uses electrical repair tool kits, ampmeters, ohmmeters, test lamps, fault meters, watt meters, blueprints, wiring diagrams, specifications, and related hand and power tools.

Requirements

High school or Vocational School graduate with courses in blueprint reading, electricity, and/or mathematics. Four year electrician's apprenticeship or six years verifiable on-the-job training as an electrician. Must have a thorough knowledge of the electrical codes as applied. Must know and apply safety procedures.

2.2.5.7 **DIRECTOR OF EXHIBITIONS**

The Director of Exhibitions, Philadelphia International Airport, is responsible for the visual arts program that sites temporary art exhibitions throughout the Airport facility. The Director is the chief curator and is responsible for the creation and organization of all aspects of the exhibitions program including exhibition space allocation, exhibition planning and design, loan agreements, informational text, art program brochure, budget planning, research, and staff supervision. The Director of Exhibitions reports to the Director of Aviation and works with Airport staff including Deputies, Airport Managers, contractors, and consultants. This position is unique because the individual is responsible for the conceptualization, development, design, and implementation of an airport art program unlike any other in the United States. The programs objectives are continually redefined to remain timely and progressive in terms of procedures, standards, and subject matter.

Knowledge of:

Local, regional, and national artists and arts institutions
Museum and curatorial standards
Presentation of art in Airport facilities
Airport practices and standards
Exhibition planning and design
Interior renovations and space planning
Contemporary public art practices

Ability to:

Organize, curate, and present exhibitions that are appealing to an arts community and general public with a special emphasis on regional arts activities.
Develop and create new exhibition procedures and standards, as this program is unique in its concept.
Consult with Director of Aviation regarding the Airport's community-based initiatives.
Coordinate exhibitions that relate to regional special events.
Interview and meet with radio, television, and print media.
Establish and maintain working relationships with other airport departments, the public, and local, regional, and national artists and arts institutions.
Work with construction contractors and architects

Coordinates design and installation activities with the exhibitions program staff.
Supervises Airport staff and outside Contractors with the fabrication and installation of exhibits to insure that they are completed as conceived and within time and budgetary limitations.
Conceive and design exhibitions with the greatest visual appeal, educational impact, and optimum traffic flow through the exhibition areas.

Determine the artistic importance, the relationships between works, their placement, and the educational benefits of works in the exhibition.
Develops and writes label information and didactic panels for general audience understanding and appeal.
Prepare and edit press releases and brochures that relate to the art program.

Minimum Acceptable Training and Experience:

Education:

Completion of bachelors degree program at an accredited college or university with major in art related field.

General Experience:

Ten years experience as director of a visual arts exhibitions program in a gallery, museum, or other public facility.

Specific Experience:

In addition to the above requirements, individual must also have two years of experience as director of exhibitions program at a major Airport facility.

2.2.5.8 **HORTICULTURIST**

This is supervisory landscape work intended to enhance the aesthetics of the Airport's exterior grounds and interior facilities. The Horticulturist is responsible for ensuring that the appropriate material and labor resources are allocated to maintain the exterior grounds and interior facilities year round. Performs oversight responsibility for daily sub-contractor maintenance functions, establishes work plans and coordinates execution of landscaping activities. Reports to the Airport Maintenance Manager.

Knowledge of:

Principles, practices, materials and instruments used in landscaping work.
Principles and practices of planning and land use.
Principles and practices of horticulture and plant ecology.
Materials and methods used in cultivating and maintaining flowers, shrubs, trees and lawns.
Common insects, fungi and diseases which attack flowers, shrubs, trees and lawns.
Ability to read and interpret architectural plans and specifications.

Duties:

Subcontractor administration – schedules, assigns work areas and supervises the activities of subcontractors.
Reviews site designs, plans, specification and other documents in order to provide cost estimates and time completion schedules.
Inspects landscape installations and recommends appropriate care and maintenance.
Identifies and treats insects, fungi and diseases which attack flowers, shrubs, trees and lawns.
Supports the execution of landscape projects and special Airport events/celebrations (i.e. holiday decorations, new construction openings, etc.)
Provides routine progress reports to Airport's Maintenance Manager.

Requirements:

High School Diploma. Education and/or work experience equivalent to a minimum of 4 years supervising horticultural maintenance at an Airport or industrial complex. Ability to physically perform the duties and to work in the environmental conditions required by this position. Strong organizational, participative supervision, verbal and written communication skills are required. The ability to work with minimum supervision.

2.3 **USE OF ON SITE PERSONNEL - EXTRA WORK:**

2.3.1 For utilization, where applicable, of the successful bidder's on site crew to perform extra or changed work covered by contract extras during normal hours, the successful bidder fully understands that utilization of the on site crew during normal hours with or without approval of the City does not relieve the successful bidder of any responsibilities for operation, preventive or unscheduled maintenance or equipment replacement responsibilities defined in the specifications.

Should the successful bidder find that he/she can fully meet his/her contractual responsibilities during scheduled hours and utilize on site crew for work covered by Contract Extras, they must request in writing the DOA approval prior to proceeding.

2.3.2 When on site personnel are available to perform extra work or emergency work, said work will be performed at no additional labor cost.

2.4 **PREVAILING WAGES AND WORKING CONDITIONS:**

2.4.1 All employees performing work under this contract shall be paid at least the applicable prevailing wages (See attached Attachment B) and shall be given at least the applicable prevailing working conditions during the entire period of work under the contract. Such wages and working conditions are those provided to employees pursuant to a bona fide collective bargaining agreement for the applicable class of employees in the Philadelphia area on the date this Invitation and Bid is issued.

2.4.2 Records of wages and benefits paid or provided to each employee shall be maintained by the successful bidder and all subcontractors (at all tiers) and shall be preserved for at least two (2) years following the City's final payment under this contract. Such records shall be available for inspection and copying by authorized representatives of the City at all reasonable times.

2.4.3 The successful bidder shall require all subcontractors (at all tiers) to comply with the provisions of this paragraph and said provisions shall be included in all subcontracts entered into in connection with this contract.

2.4.4 Contractor's employees need not be represented by a labor organization to meet the requirements of this bid, but wages and working conditions are to be on a level equal to that provided to employees who are covered by a collective bargaining agreement.

2.4.5 For job classifications not covered herein and classification providing service as opposed to construction, minimum basic hourly rates shall be established by the Contractor in conjunction with the Labor Standards Division of the Managing Director's Office. In no event shall any labor rates be below the prevailing rates for position classification recognized by collective bargaining agreements in the Philadelphia area.

2.4.6 Reference shall be made to the Ordinance and to the regulations to be issued from time to time by the Managing Director’s Office, Labor Standards Division of the City of Philadelphia for further information concerning the administration of these requirements. In addition, it shall be the responsibility of all bidders and Contractors to inform themselves as to all prevailing working conditions including, within limitation, length of work day and work week, overtime compensation and holiday and vacation rights.

2.4.7 Each Contractor shall comply with and be bound by all of the provisions of this section of the contract and of Section 17-107 of the Philadelphia Code.

2.4.8 The City may withhold any sums due to the Contractor under each contract so much as may be necessary to pay the employees the difference between the wages required to be paid thereby and the wages actually paid to such employees, and the City may make such payments directly to the employees.

2.5 **UNIFORMS:**

2.5.1 All service technicians assigned to routine maintenance, and repair work shall wear approved uniforms as provided by the successful bidder and at no cost to the City. Uniforms are to bear the successful bidder's emblem and person's name and are to be maintained in a serviceable, neat and clean condition at all times. Uniforms selected by vendor are subject to approval by Airport's Maintenance Manager or his designee.

2.6 **IDENTIFICATION:**

2.6.1 Each employee of the successful bidder is to carry identification as required by the City and paid for by the successful bidder. Identification information will include the employee's full name, photograph (portrait), company name, address, telephone number, employee's identification number, and the signature and title of the employee's immediate supervisor.

2.6.2 Each employee of the successful bidder is to carry the Airport's security identification badge as required by the Airport and FAA and paid for by the successful bidder.

2.7 **FITNESS FOR DUTY:**

2.7.1 The successful bidder affirms that its employees involved in "work" for the City, whether performed on company property, public property, or customer's premises, will comply with the fitness for duty policy as set forth below. The City is not liable for rehabilitation costs or costs involved with termination procedures.

2.7.2 Employee of the successful bidder involved in "work" for the City, whether performed on company property, public property, or customer's premises who appear to be under the influence of or are found to have on their persons, on their desks, tool boxes, vehicles or other such repositories, alcohol or non-prescription drugs; or found to have used or to be using such narcotics on the City's "work", will be removed from the premises immediately pending further investigation.

2.8 **USE OF SITE:**

2.8.1 The normal operating hours for the Terminals are as follows:

Monday through Sunday
5:00 A.M. through 1:00 A.M.

2.8.2 It shall be the responsibility of the successful bidder's personnel to log in and out, where directed each time they visit the site for either a routine or demand service check. A completely filled out computerized maintenance management system (CMMS) work order or PM ticket indicating the work accomplished shall be left with the representative after each visit. All work orders and PM tickets will be entered into the CMMS on a daily basis.

2.8.3 At all times, the service personnel shall upon arrival during normal operating hours, sign in with the Manager/Shift Supervisor.

2.8.4 Upon completion of the work shift, service personnel shall complete inspection log and have it verified by a designated representative. Off going shift personnel will provide a shift turnover briefing to on coming personnel to ensure continuity of work in progress or notification of System status.

2.8.5 All work shall be performed without unnecessary interference to the Owner.

2.8.6 The successful bidder shall confine operations at the site to areas permitted by law, ordinances, permits and the contract documents and shall not unreasonably encumber the site with any materials or equipment.

2.8.7 At the conclusion of each visit, all keys shall be returned to the Operations area.

2.8.8 Authorization for keys shall be approved by the City. Keys shall not be removed from the site.

2.8.9 Limited ramp parking (AOA) will be provided to the Contractor for service and escort vehicles. Personnel parking will be accommodated free of charge at the Airport’s employee parking lot. Zone parking on the AOA will be specified once the contract is awarded. A total of six (6) vehicles will be considered for ramp parking. The Airport cannot guarantee that free parking will be available throughout the term of the contract.

2.9 **WARRANTIES/GUARANTEES:**

2.9.1 New Systems

2.9.1.1 Some systems/equipment will be new during the term of this contract and will be under warranty commencing from Date of Acceptance through twelve (12) months. During all times the successful bidder shall be responsible for maintenance of these units at the same cost as bid herein and will be expected to coordinate with the City and the original equipment manufacturer.

2.10 **REPLACEMENT PARTS**

2.10.1 Inventory

City Supplied (Initial)/Contractor Supplied

The initial inventory will be provided by the City in the form of a transfer of the existing on-hand inventory of the incumbent Contractor. During the term of the contract this initial inventory will be placed in the Contractor's custody and control. Successful bidders must submit listings of spare or replacement parts by system that will be purchased and maintained by Contractor to supplement the initial inventory. These lists will be based on but not be limited to the requirements of the original equipment manufacturer where applicable. Bidders must submit with their bids sufficient information to satisfy the City that there will be an adequate stock of spare or replacement parts on site at the Airport necessary to maintain the equipment specified within the time limits required. All inventory costs with the exception of the initial inventory referenced above will be provided at Contractor's expense. Any additional parts that are to be stored off site must be listed with details as to how they are available to the Contractor's shift crews. Once approved, the lists will be attached and included in System Maintenance manuals. A list of part suppliers that the bidder intends to use to support the inventory will be included with the bid.

A Master Parts List including both the initial inventory (Attachment D) and Contractor's inventory will be submitted which will include each of the system lists. Common use items such as rags and cleaners or general use lubricants are considered as part of the monthly maintenance fee and are not to be included as parts. This list shall be updated semi-annually during the life of the contract.

2.10.2 **Replacement Parts**
Standard

The parts used to replenish and supplement the inventory are to be provided for in the monthly maintenance cost associated with each system.

2.10.2.1 The successful bidder shall certify that it is not financially (or otherwise) encumbered with any vendor supplier in any manner that now or at any time during the term of this contract may limit the successful bidder's ability to obtain original equipment manufacturer's parts relating to equipment covered by this contract. Certification shall be submitted on company letterhead signed by the President, Secretary, or Treasurer of the bidder's company.

2.10.2.2 Any parts supplied shall be new, furnished as originally manufactured, and ready for use. However, as parts become obsolete, secondary/used marketers are acceptable to supply outdated or discontinued products. The Contractor shall promptly notify the City on outdated or discontinued equipment or components that are no longer available as new and are only available from secondary/used sources.

2.10.2.3 The Contractor shall perform and maintain an up-to-date inventory of spare parts. Upon use of spare parts, the Contractor shall provide a report on use and replace the spare parts within a twenty four (24) hour period.

2.10.2.4 The Contractor shall assume the cost of any additional parts or replacement of spare parts.

2.10.3 **Final Inventory**

The initial inventory, which is City property, is to be maintained as per the Master Parts List by the successful bidder. This inventory will be inspected by the City each year of the contract and turned over to the City at the completion of the contract with full documentation of usage and replacement. The Master Parts List is subject to revision annually based upon in service equipment changes. The supplemental inventory purchased by the Contractor at his expense shall be considered the property of the Contractor at the completion of the contract. The DOA shall have the option to buy the supplemental inventory at the completion of the contract.

2.10.4 At the end of the contract, the successful bidder shall submit to the Airport a Condition Code listing of the final inventory indicating for each item whether the following; new part, rebuilt, back ordered, shelf life, etc.

2.11 **SERVICE REPAIR TOOLS - MINIMUM REQUIREMENTS**:

The successful bidder shall have and maintain for the duration of the contract term, a complete compliment of service and repair tools. The tools required will include (but not be limited to) the following: one (1) oscilloscope, one (1) volts ohm meter, one (1) clamp-on ammeter, one (1) tachometer, one (1) megger, adequate test weights, one (1) cable tension adjustment tool, one (1) complete complement of standard hand tools, one (1) electric drill, one (1) electric saw, and all tools needed to replace all bearings and ropes. All such tools will be provided at successful bidder's own expense.

2.12 **PUBLIC RELATIONS**:

It is deemed inappropriate for the successful bidder or any of its personnel to issue any public statements with respect to any incident occurring at the and therefore, the successful bidder and its personnel are specifically Airport prohibited from issuing or making any statements on behalf of the City of any kind except when requested and directed to do so by the City.

2.13 **RULES AND REGULATIONS/OPERATIONS MANUAL**:

The successful bidder shall obey the rules and regulations, as may from time to time be promulgated by the City, or its authorized agents in charge of the Airport, to ensure the safe and orderly conduct of the Airport. The successful bidder agrees to abide and be bound by any and all application rules, regulations, orders, and restrictions which are now in force or which may be adopted by the City with respect to the operation of the Airport, and any and all orders, directives, or conditions issued, given or imposed by the City.

2.14 The Facility Maintenance Contract (FMC) Manager will be responsible to coordinate and complete reports for the City. A point of contact from the City will be assigned for coordination with the FMC Manager. If the successful bidder subcontracts one or more of the systems, the subcontractor's personnel will be considered FMC agents with the FMC Manager coordinating all tasks.

2.15 **FORCE MAJEURE**:

In the event that either of the parties shall be prevented or delayed from performing any obligation under the contract by reason of acts of God, war, civil disturbance, strike, acts of superior governmental authority, or any other cause beyond its or their control affecting the carrying out of the contract in the ordinary course of business, such party shall not be liable by reason thereof.

2.16 **RESPONSE TIME:**

Repairs shall be performed on a twenty four (24) hour, seven (7) days per week basis (Sundays and holidays included) or as ordered by the City in accordance with 2.16.2. Regardless of when repairs are ordered or performed, there shall be no additional cost to the City beyond the monthly Contract price quoted in the successful bidder's quotation unless the repair or replacement is a "Contract Extras" as defined in para. 2.17 below.

2.16.1 When a piece of equipment described in this Invitation and Bid is out of service for a period in excess of twenty four (24) hours due to the successful bidder's neglect or failure to comply with the provisions of this specification, or should the successful bidder fail to respond with a qualified service person within the time frame indicated, it is mutually agreed that the Owner may deduct as liquidated damages the sum of two thousand dollars ($2,000.00) from the succeeding month's billing for each full twenty four (24) hour down time period.

2.16.2 **On-Site Response Times**

SCHEDULE	EQUIPMENT	RESPONSE TIME
A	Escalator/Elevator MSW	15 minutes
B	Baggage Conveyor	15 minutes
C1	Passenger Loading Bridges	15 minutes
C2	400 HZ Ground Power System	15 minutes
C3	Precondition Air Units	15 minutes
C4	Potable Water Cabinets	15 minutes
C5	Aircraft Optical Guidance	15 minutes
D	Passenger Transfer Guidance	IMMEDIATE
E	Storm Water & Sanitary Drainage	1 hour
F	Fire Protection System	15 minutes
G	HVAC Maintenance	4 hours *
H	Facility Automated Control System	24 hours
I	Uninterruptible Power	1 hour

	Supply	
J	Switchgear	1 hour
K	High Voltage Cable Repair	1 hour
L	Fire Alarm Systems	15 minutes
M	Fencing & Guide Rails	2 hours
N	Bird Control	24 hours
O	Airfield Support Services	SCHEDULED
P	Building Mounted Signage	SCHEDULED
Q	Glass, Plastic Replacement	1 hour
R	Interior Cosmetics Repair	SCHEDULED
S	Airport Exhibitions & Decoration	SCHEDULED
T	Specialized Equipment Services	24 hours
U	Roofing	4 hours
V	Landscape Services	SCHEDULED

* Schedules that do not specify a Response Time in the remaining sections of the Bid Document

2.17 **CONTRACT EXTRAS:**

The successful bidder's applicable labor rates and material costs, excluding freight, for repair or replacement of parts damaged by malicious actions of others or Acts of God and for alterations and additions not covered by the contract, but required by the inspecting authorities shall be paid for at the rates specified in para. 5.25 through 5.26. Such costs are subject to the following conditions.

2.17.1 The successful bidder shall include in his monthly maintenance, provisions to provide all labor and materials for unscheduled repairs caused by Acts of God, malicious acts of others, misuse, or abuse of equipment, or the result of water damage, etc. The successful bidder shall include in his maintenance cost, labor and materials, for unscheduled repairs not to exceed a total of $3,000.00 per incident. In each incident, the successful bidder will take appropriate action to return the unit to operation.

2.17.1.1 The successful bidder shall base their bid on the historical data of such repairs over the past 12 months.

2.17.1.2 The estimated number of past incidents requiring contract extra work for unscheduled repairs for an amount greater than $300.00 but less than $3,000.00 were a total of 150.

2.17.1.3 The estimated number of past incidents requiring contract extra work for unscheduled repairs for an amount in excess of $3,000.00 were a total of 10.

2.17.2 The amount in excess of $3,000.00 will be proposed as contract extras submitted for labor and materials, and will either be authorized or bid on a separate contract basis, at the option of the City.

2.18 **COMMUNICATION TOOLS**

2.18.1 The primary communication for work requested and work accomplished is the computerized maintenance management system CMMS. The successful Contractor will be expected to complete training in the use of the computerized maintenance management system to be arranged and paid for through the office of the Airport’s Maintenance Manager or his designee. Minimum training requirements are 1 day for all supervisors and the manager and 3 days for the system support (data entry) person. Mechanics will be trained by their supervisor or manager. Any new people hired into these jobs during the term of this contract will be required to complete training at the Contractor's expense.

2.18.2 The Contractor will be expected to supply, install and maintain a PC and printer to communicate with the maintenance management system. Software interface will be handled by the City's IT department.

2.18.3 The Contractor shall provide Airport Maintenance staff (minimum: 12 – maximum: 20) with cell phones with 2 way radio capability for communication.

2.19 **PRIORITY WORK**

Includes, but is not limited to, work that is immediately required, such as for public safety and for the operation of the Airport, as authorized and approved by the City.

2.19.1 All costs for priority work will be in labor and materials as incurred and invoiced by the successful bidder and any participating subcontractors.

2.19.2 City will pay Contractor mark-up only on materials acquired, not labor, for priority work.

2.19.3 When priority work includes unscheduled repair or replacement of parts damaged by malicious actions of others or Acts of God, or are for alterations and additions not covered by the contract but not covered by the contractor but required by inspecting authorities, the costs for such work may be subject to the conditions set forth in section 2.17 Contract Extras.

2.20 **TURNKEY WORK**

Includes, but is not limited to, work that requires several subcontractors working under the supervision of the successful bidder.

2.20.1 Costs for turnkey work shall be estimated and proposed in accordance with 2.20.1.1 or 2.20.1.2 by the successful bidder to the City for approval to proceed.

2.20.1.1 Estimated turnkey work shall contain labor and material charges. Time or labor costs will be in accordance with the contract. Material charges will be on a cost plus mark up in accordance with the contract. Contractor shall submit labor hour time sheets and actual material invoices on work completed satisfactorily to the City.

2.20.1.2 When the nature of the work is best achieved by collective use of Contractor resources (economy of scale), the estimate will have an attachment indicating the saving. A written justification statement must accompany any increases in this estimate at the time you submit actual costs.

2.20.1.3 Turnkey work must be inspected and approved by the City on completion. Rework required by the City, such as to correct defects or malfunctions, compliance with federal, state or local regulations, and compatibility with Airport environment, shall be performed at no additional cost to the City.

2.21 DRAWINGS AND EXHIBITS

Set forth herein are Schedules A through V which are technical specifications related to the systems and equipment to be maintained. All drawings and exhibits referenced herein are incorporated in Appendix No. 1, which will be distributed to all attendees at the Mandatory Pre-Bid Meeting.

2.22 SCHEDULE A - ELEVATORS/ESCALATORS/MOVING WALKWAYS

2.22.1 SCOPE OF SERVICES TO BE PROVIDED

2.22.1.1 The Elevator/Escalator/Moving Walkway Maintenance includes the furnishing of all necessary supervision, labor, transportation, materials, services and equipment required to provide preventive maintenance and repair services for:

	EXISTING
A EAST TERMINAL:	8 Escalators
	18 Elevators
	1 Moving Walkways
B TERMINAL:	5 Escalators
	14 Elevators
	4 Moving Walkways
C TERMINAL:	9 Escalators
	10 Elevators
	6 Moving Walkways
D TERMINAL:	7 Escalators
	9 Elevators
	2 Moving Walkways
E TERMINAL:	6 Escalators
	14 Elevators
	2 Moving Walkways
F TERMINAL:	7 Elevators
	2 Escalators
A/B LINK:	1 Elevator
	2 Escalators
	4 Moving Walkways
A WEST TERMINAL:	21 Elevators
	19 Escalators
	7 Moving Walkways
OVERSEAS TERMINAL:	1 Elevator

RAMP CONTROL TOWER	1 Elevator
TOTAL UNITS:	178 EXISTING UNITS

2.22.1.1.1 The successful bidder shall "replace" all worn,damaged, or broken items. If equipment is under warrantyand the repair is necessary due to a defective part then the expense of the replaced or repaired part is not the successful bidder's. In all cases where newly installed equipment is within the 12 month Standard Warranty (per 2.22.1.2) it is the responsibility of the successful vendor to contact the manufacturer to receive warranty/service parts. Replacements of the items indicated shall occur during the course of the scheduled preventive maintenance, when such replacement will prevent an unscheduled elevator/escalator/moving walkway shutdown and/or ensure the normal operation of the elevator/escalator/moving walkways or which otherwise will extend the useful life of the equipment. All replacements shall be made using parts supplied by or authorized by the original equipment manufacturer.

2.22.1.1.2 The Successful bidder shall make all repairs necessary due to normal wear and use of the elevator/ escalator/moving walkways system. The successful bidder shall absorb all cost for labor, materials, expenses and supplies, which occur as a result of the stated repair irrespective of the equipment being under warranty or not. Future equipment will be warranted by installer's Standard Warranty from date of Substantial Completion for 12 months.

2.22.1.2 Equipment noted as **"FUTURE"** could be added to the contract. The dates for the contract additions shall be pending construction schedules and manufacturers warranty periods. Contractor shall not perform any work on any item designated "future" unless directed, in writing, by the Airport Maintenance Manager. Future equipment will be warranted by installer's Standard Warranty from date of Substantial Completion for 12 months. Within section 2.22 all references to "shall make (or cause to be made)" means if equipment is under warranty the successful bidder may achieve the specified performance (i.e. repair) through the installer's warranty coverage.

2.22.2 **SUPERVISION AND ADMINISTRATION**

2.22.2.1 All preventive maintenance and repairs executed by routine service and repair personnel shall be under the direct supervision of a full time service and repair supervisor employed by the successful bidder.

2.22.2.2 The successful bidder shall achieve and maintain complete and accurate records of all preventive maintenance, repairs (including trouble calls) and parts for the term of this contract in the DOA Computerized Maintenance Management System (CMMS). These routine records are to be made available at the completion of each job and/or on demand by the City.

2.22.3 **WORK HOURS**

2.22.3.1 All normal elevator/escalator/moving walkway maintenance and repair work shall be performed on shift work as follows:

2.22.3.1.1 Preventive maintenance and repairs shall be provided on 3 shifts, 24 hours per day 7 days per week.

2.22.3.2 The successful bidder shall perform work requested by the Owner at the times designated.

2.22.3.3 For other than emergency work, Preventive Maintenance and Repair Rehabilitation shall be performed as follows:

2.22.3.3.1 Elevators/Escalators/Moving Walkways: Preventive Maintenance/repair work requiring unit shut down shall be performed during the third shift. Work shall be oordinated with the D.O.A. to prevent the unit from being shut down during times when terminal traffic from arriving flights is scheduled. Repair work shall continue on a twenty four (24) hour basis until complete.

2.22.3.4 Emergency Repairs: Unscheduled repairs and callbacks shall be provided at any time they may be requested. See paragraph 2.17 for contract extras.

2.22.4 **PREVENTIVE MAINTENANCE SERVICES TO BE PERFORMED ON ELEVATORS, ESCALATORS AND MOVING WALKWAYS**

2.22.4.1 The successful bidder shall inspect the equipment at specified regular intervals as noted herein. The inspection shall be performed by individuals specifically trained and experienced in the maintenance of equipment similar to the type covered by this specification. All manpower and tools necessary for the inspection of the subject equipment shall be supplied by the Contractor.

2.22.4.2 The inspection shall identify equipment conditions for the purpose of corrective actions required to maintain the normal operation of the equipment.

2.22.4.3 When, as a result of an inspection, corrective action is required, the successful bidder shall immediately make (or cause to be made per 2.22.1.1.2) replacements, repairs and corrections after notifying the City.

2.22.4.4 Items of an emergency nature shall be communicated to the Airport's Maintenance Manager or his designee immediately and followed up in written form, via fax and letter.

2.22.4.5 Inspections of the equipment shall follow the basic procedure recognized by the elevator, escalator, and moving walkway service industry.

2.22.4.6 The successful bidder shall lubricate the equipment. Lubricants shall be applied at intervals recommended by the equipment manufacturer or as dictated through use of the equipment. All lubricants shall be suitable for the purpose intended and shall meet or exceed the minimum requirements specified by the manufacturer of the equipment to which the lubricant is applied. All lubricants shall be applied to equipment in compliance with and consideration of the manufacturer's standards.

2.22.4.7 The successful bidder shall adjust the equipment to maintain performance standards. Adjustments shall be made as necessary and when the operation of the equipment varies from its normal or originally designed performance standards.

2.22.4.8 The successful bidder shall clean equipment, truss pans, machine room, machinery space, hoistway, and pit. The cleaning shall occur at regular intervals sufficient in frequency (as recommended by equipment manufacturer or as dictated through the use of equipment, but at a minimum twice per month) to maintain a professional appearance and preserve the life of the equipment for the duration of the service contract.

2.22.4.9 The successful bidder shall report on the need for cleaning and/or janitorial services for all items. Such reports shall be in written form, dated, and signed by the successful bidder and promptly submitted to the Airport's Maintenance Manager or his designee.

2.22.4.10 The successful bidder shall paint the equipment annually to maintain a professional appearance, prevent rusting, and preserve the equipment for the duration of the service contract.

2.22.4.11 All paint shall be suitable for the purpose intended and be of a high quality. Application of the paint shall, in all circumstances, comply with applicable codes and standards.

2.22.4.12 The successful bidder shall restore finishes of stainless steel surfaces at intervals to maintain a professional

appearance of the equipment included in the service contract.

2.22.5 **PERFORMANCE OF REPAIRS, ADJUSTMENTS AND OTHER MAINTENANCE**

2.22.5.1 When, as a result of an operational examination, performance of preventive maintenance, performance of periodic testing, inspection or observation by the Airport's Maintenance Manager or his designee, the successful bidder, or their representatives, corrective action is found to be necessary, the successful bidder shall proceed immediately to make (or cause to be made) replacements, repairs and corrections necessary to restore the equipment to normal operation.

2.22.6 **MAINTENANCE AND SHUTDOWN**

2.22.6.1 All of the following reports can either be generated by the Division of Aviation Computerized Maintenance Management System (DOA-CMMS) or can be derived from an existing DOA-CMMS report or screen. The DOA-CMMS report writer can accommodate most other reporting requirements. Any specialized custom reports to ease reporting shall be designed at the Contractors expense.

2.22.6.2 A monthly report shall be submitted by the successful bidder containing an overall summary of maintenance work performed, the results of tests conducted, general status of systems and equipment, list of equipment breakdowns, repair time, and projection of major equipment shutdowns required for maintenance.

In addition, a daily log of maintenance performed shall be kept by the successful bidder and this log shall be subject to periodic review by the Airport's Maintenance Manager or his designee or its representative. The successful bidder shall also submit for review a description of the procedure recommended to schedule and report execution of periodic maintenance.

2.22.6.3 The successful bidder shall also provide a monthly report indicating monthly, year-to-date and cumulative cycle totals for comparison of trends with previous years, months, etc. Reports will reflect both PM and remedial repairs in terms of cycles.

2.22.6.3.1 The downtime per unit of the equipment shall be calculated and presented to the Airport's Maintenance Manager or his designee as follows:

2.22.6.3.1.1 % Operational Time: The total monthly hours (TMH) = 100%. Less dedicated scheduled service hours and repairs SSH). Less dedicated unscheduled service hours and repair (USH) ***or*** **100 x (TMH-SSH- USH)/TMH.**

2.22.6.3.1.2 % Down Time: The total number of hours each unit was out of service during the month ***or*** **100 x (SSH + USH)/TMH.**

2.22.6.3.1.3 % Maintenance: The total number of hours each time unit was out of service for scheduled maintenance and repairs ***or*** **100 x SSH/TMH.**

2.22.6.3.1.4 % Emergency: The total number of hours each repair unit was out of service for unscheduled maintenance and repairs ***or*** **100 x USH/TMH.**

2.22.6.3.2 Goals: 95% Aggregate 95% Unit

2.22.6.3.3 Service Interruption Notices

2.22.6.3.3.1 When scheduled maintenance is expected to exceed 72 hours, the Contractor must produce a tenant advisory for D.O.A. approval.

2.22.6.3.3.2 When unscheduled maintenance on an emergency basis is authorized, an "Out of Service Notice" mustfollow immediately. This notice is similar to the tenant advisory in content but is titled Out of Service Notice instead.

2.22.6.4 A monthly inventory report will be submitted by the successful bidder indicating the current

stock level, materials, and parts used during the preceding month and required restocking.

In addition, a daily log record of parts and materials used shall be kept by the successful bidder and shall be subject to periodic review by the City.

2.22.6.5 The successful bidder will deliver maintenance history reports for each elevator/escalator/ moving walkway identified in these specifications. The report(s) developed will provide as a minimum the following information and will be submitted for approval within thirty (30) days of the Notice to Proceed date and on each subsequent month thereafter. Basic information required for each unit identified is as follows:

2.22.6.5.1 Unit number & serial number.

2.22.6.5.2 Type elevator or escalator.

2.22.6.5.3 Date and time technician is notified of a maintenance problem.

2.22.6.5.4 Date and time maintenance repairs are started.

2.22.6.5.5 Date and time maintenance or repairs are completed.

2.22.6.5.6 Description of service.

2.22.6.5.7 Parts replaced shall be described with part number and description, etc.

2.22.6.5.8 Labor hours expended.

2.22.6.5.9 Year-to-date unscheduled maintenance call back and repair hours expended.

2.22.6.5.10 Year-to-date scheduled preventive maintenance and repair hours expended.

2.22.6.6 The successful bidder will be responsible for conveying all reports to the Owner.

2.22.7 **SERVICE CALLS**

2.22.7.1 For the purpose of this specification, a service call is a request to go to a specific elevator/escalator/moving walkway to correct any reported problem and/or condition which, in the City's opinion, requires attention before the next scheduled preventive maintenance visit.

2.22.7.1.1 **Service Calls During Scheduled Working Hours:**

The successful bidder shall without additional charge to the City, provide service calls during the scheduled working hours. The successful bidder shall respond to a service call within a maximum of 15 minutes from the time the request for service is made.

The successful bidder will assist during troubleshooting of fire alarm devices or access control system impacting equipment operations at no cost to the City.

2.22.7.1.2 The successful bidder shall, without additional charge to the City, respond if requested by the D.O.A. to any malfunction of any elevator/escalator/moving walkway, whether under warranty or not, to investigate, repair, and report to the D.O.A. the cause of the malfunction.

2.22.7.1.3 Emergency Call

The successful bidder shall provide immediate response to any emergency call resulting from entrapment of passengers in an elevator or any accident on any elevator/escalator/moving walkway or on any Division of Aviation priority #1 request for service.

2.22.7.1.4 The elevator subcontractor shall have a work order on each service call so the Prime Contractor can sign the ticket. A copy of the ticket will be left with the City representative.

2.22.7.1.5 If the number of callbacks not attributed to negligence, abuse, or misuse on the part of the user exceeds three (3) callbacks per month on any one elevator/escalator/moving walkways, the successful bidder shall apply additional resources for said work.

2.22.7.1.6 The additional effort shall continue until callback frequency has been reduced to three (3) or less incidents per month. Consistent incidents of callbacks will be termed nonperformance on part of the successful bidder.

2.22.7.1.7 Corrective actions due to electrical or mechanical adjustments shall not exceed 24 hours for shut down of the elevator/escalator/moving walkway.

2.22.7.1.8 Under no circumstances will any shutdown last longer than 72 hours. This includes locating the trouble, procurement of parts, the installation of parts and returning the elevator/escalator/moving walkway into safe operation. The reason of not being able to obtain parts, necessary technical and engineering advice, etc., will not be acceptable and the successful bidder will be considered in default, giving sufficient justification to the Owner to obtain these services from other sources who can provide the City with uninterrupted elevator/escalator/ moving walkway service. The only default exception is if the equipment is under warranty and the installer fails to provide warranty parts/service in accordance with the warranty requirements.

2.22.7.1.9 The City may take over the work and execute it to completion by contract or otherwise, and the successful bidder and sureties (if any) shall be liable to the City for any additional cost occasioned by the City to complete the work.

2.22.7.1.10 Monthly, the successful bidder shall review a summary of all callbacks. The successful bidder will then provide this summary to the City. The intent of this monthly summary is to minimize callbacks by keeping the successful bidder and City aware of callback trends.

2.22.8 **WORK ORDER RECORDS**

2.22.8.1 All work shall be coordinated with the Airport Work Control Center. Requests for repairs and emergency services will be documented on written work orders. Emergency service requests with a Priority 1 or 2 will also be communicated by phone and/or radio to the Contractor.

2.22.8.1.1 All labor hours and parts used will be recorded on the work orders. Work orders not completed at the end of the shift will reflect the labor hours and parts used for each shift, and continue daily until complete. All work will be entered into the DOA-CMMS system on a daily basis.

2.22.8.1.2 The Contractor shall submit all proposed Preventive Maintenance procedures, technical information and recommended frequencies on work sheets for approval to proceed from the Airport's Maintenance Manager or his designee.

2.22.9 **PREVENTIVE MAINTENANCE SCHEDULE AND CALLBACK LOG**

2.22.9.1 All preventive maintenance performed by the successful bidder shall be scheduled unit by unit prior to commencement of the work and subject to final approval of the City.

2.22.9.2 The schedule shall show building name, unit identification, examination frequency, examination hours and the equipment manufacturer.

2.22.9.3 The successful bidder shall provide, use and properly maintain a maintenance check chart for each device. The examination charts shall be posted in the respective machine room. Entries for each chart shall be made by service personnel to indicate the status of all scheduled items of maintenance performed and initialed for documentation. In addition, the successful bidder shall provide, use and properly maintain a "callback" log for each device. It shall be kept in the respective machine room.
The log should indicate the reason for call, corrective measures taken and name of person making entry. The City

may inspect the maintenance and copy the log and charts at any time.

2.22.9.4 The successful bidder should provide sufficient tools, materials, and personnel to meet the operational requirements of the airport. First and second shift inspections and testing will be permitted with the approval of the Director of Aviation or Designee.

2.22.10 **INSPECTION AND TESTING SERVICES**

2.22.10.1 The successful bidder shall perform periodic tests of the elevator, escalator and moving walkways components. The periodic tests shall be conducted at the frequency stated in the ASME/ANSI A17.1 Safety Code for Elevators Escalators and Moving Walkways. The periodic tests shall follow the procedures set forth in the ASME/ANSI A17.1 and ASME/ANSI A17.2 Inspectors' Manual. This shall also include the monthly maintenance testing of Firefighters' Service as required by ASME/ANSI A17.1 and maintenance of test log. All test results shall be recorded on forms acceptable to the Division of Aviation. The City may, at its option, observe any testing.

2.22.10.2 The successful bidder shall not be held responsible or liable for any damage to the building or elevator/escalator/moving walkways equipment resulting from the periodic test unless due to their negligence in conducting such test.

2.22.10.3 The successful bidder's maintenance supervisor shall make himself/herself available from Monday through Friday, exclusive of mutually agreed holidays, within twenty-four (24) hours of notification for an inspection tour. The City reserves the right to make or cause to be made, such inspection and tests as deemed advisable to ascertain that the requirements of these specifications are being fulfilled and is in compliance with Federal, state, and local codes.

2.22.11 **OPERATIONAL EXAMINATION**

2.22.11.1 Testing the equipment response to the operation of all controls customarily used by passengers or users of the equipment in normal operation.

2.22.11.2 In carrying out the above test, the examiner shall identify any improper operation in the following items:

2.22.11.2.1 Elevator equipment including but not limited to rotating machinery, suspension system, guides, door operating mechanisms, indicating lights, alarms, control systems, logic of the system and safety functions.

2.22.11.2.2 Escalator equipment including but not limited to rotating machinery and chain systems, combplates, handrails, step-lighting and safety functions.

2.22.11.2.3 Moving Walkway equipment including but not limited to rotating machinery and chain systems, combplates, handrails, pallets, threshold lighting and safety functions.

2.22.11.3 Performing a visual and audible inspection of all system machinery accessible (without disassembly) in machinery rooms, machinery areas, hoistways, wellways, etc.

2.22.11.4 Report completion of operation examination on each unit using a reporting form approved by the City.

2.22.12 **PARTS REQUIREMENTS**

2.22.12.1 Parts installed on existing elevators or escalators or moving walkways covered by this specification, either as preventive maintenance replacements and/or repairs shall be purchased from or authorized by the original equipment manufacturer. The successful bidder is responsible for the inventory expense for all parts, with the exception of those defective parts replaced by the installer under a Standard Warranty.

2.22.12.2 The successful bidder agrees to the terms of this Invitation and Bid, certifies that it recognizes the importance of maintaining the integrity of the escalator, elevator and moving walkways systems and that they will maintain sufficient quantity of the necessary equipment manufacturer's parts on hand to perform this work.

Also, the successful bidder shall certify that it is not financially (or otherwise) encumbered with any vendor supplier in any manner that now or at any time during the term of this contract may limit the successful bidder's ability to obtain equipment manufacturer's parts, lubricants, service schedules and preventive maintenance bulletins relating to the equipment covered by this specification.

2.22.12.3 The successful bidder shall prepare and submit for approval a comprehensive list of manufacturer's spare parts and lubricants for existing equipment. This list of manufacturer's recommended quantities of these items with adjustments made to reflect number of units utilizing the parts. The successful bidder shall maintain the recommended quantities of parts throughout the term of the contract. The successful bidder shall prepare and submit for approval modification to the original approved list as units are modified, renovated, deleted or added. They shall adjust quantities and items accordingly to the changes.

2.22.12.4 The successful bidder shall designate on the parts and lubricant list which parts being submitted shall be maintained at the site and which parts will be available in their warehouse. The list shall also show respective quantities at each location.

The on site list shall contain items most susceptible to replacement, as a result of wear, misuse, and abuse for this facility.

2.22.12.4.1 On site parts and lubricants shall include, but not limited to such items as moveable and stationary contacts, coils, leads, motor and generator brushes, fuses, push buttons, door guides, door hardware, step rollers, step chain rollers, combplates, switches, belts lights, hydraulic oil, lubricants, wiping, cloths, pc boards, timers, power supply boards,etc.

2.22.12.4.2 Warehouse parts are defined as parts retained by the successful bidder at a facility accessible to them and their field personnel, which can assure delivery of the respective part to the job site within four (4) hours of request.

2.22.13 **SPECIAL REQUIREMENTS**

2.22.13.1 The Contractor shall ensure adequate personnel are present during the Airports semi-annual generator test at no cost to the City. Generator tests typically occur on a Sunday between 12:00am and 3:00am.

2.22.13.2 The Contractor shall manage storage, records and hazardous waste disposal activities associated with the work at no cost to the City.

2.22.13.3 The Contractor shall ensure that protective pads are in good condition for use as needed in freight elevators.

2.22.13.4 The Contractor will perform painting of safety caution paint strip on treads as requested.

2.22.14 **CONDITION REPORTS**

2.22.14.1 The Contractor shall prepare and regularly submit written condition reports on all equipment to the City. Condition reports shall be prepared on the successful bidder's letterhead, dated and signed by an authorized representative of the successful bidder.

2.22.14.2 Condition reports shall be submitted at regular intervals not to exceed, but not less than ninety (90) day intervals.

2.22.14.3 The condition reports shall inform the City of the current condition of the equipment and performance measurements relating to criteria specified and make recommendations regarding the need for repairs, alterations and/or modifications to the equipment.

2.22.14.4 All alterations requested by the successful bidder are to be in writing. All requests are to be in triplicate and accompanied by supporting prints, sketches, and/or schematics as required to provide detailed information. Proposed cost for accomplishing the work shall also be included.

2.22.15 **INSTRUCTIONS**

2.22.15.1 The successful bidder shall be required to provide regular instructions to designated employees of the City concerning operational procedures to permit safe operation, i.e., emergency removal of people who may be trapped in any elevator, to cope with other emergencies and simple problems which require proper handling on the part of the City's staff. In addition, general elevator familiarization instructions shall be given to the City's maintenance personnel so as to allow them to evaluate reported failures prior to calling Contractor personnel. Instructions will be given at a time mutually agreeable to the City and the Contractor. Whenever needed, the City will furnish space for these instructions. The City reserves the right to have this procedure held every six (6) months if considered necessary during the life of the contract.

2.22.16 **INFORMATION LIBRARY REQUIREMENTS**

2.22.16.1 The Contractor shall have and maintain, for the duration of the contract, a reference library of information containing (but not limited to) the applicable and current Commonwealth of Pennsylvania Elevator and Escalator Code, current ASME/ANSI A17.1 - Safety Codes for Elevators and Escalators, current ASME/ANSI A17.2 Inspectors' Manual, NEC 1993, manufacturers equipment maintenance schedules, manufacturers' lubrication specifications and schedules, equipment schematics (motion and logic), layouts, parts and component assembly list and other basic information needed to properly test, adjust and maintain the equipment covered by this contract.

If technical documentation unique to the City's installation is not available from the Owner the Contractor shall notify the City and advise and assist in acquiring the information. All information library documentation shall be turned over to the City at the termination of this contract.

2.22.16.2 If this agreement is terminated by either party, the Contractor shall provide City with 10 sets of straight-line wiring diagrams showing as-built conditions as well as all information provided by the City. The City shall become Owner of these as-built drawings.

2.22.17 **SAFETY:**

2.22.17.1 The Contractor shall have a written safety plan and procedure that complies with all applicable Codes, OSHA, EPA, State and Local ordinances and labor agreements. The Contractor shall also make all provisions to insure the safety of the public using the Equipment and the areas under their control. A copy of the safety plan shall be submitted to the Maintenance Manager for review and approval. (Plan must include CAB and PIT relamping.)

2.22.18 **EQUIPMENT INVENTORY**

This inventory consists of existing equipment currently under maintenance, new equipment under manufacturers warranty, equipment under construction, and equipment planned for future construction. Some existing equipment may be removed from service during the contract period for demolition or modernization.

2.22.18.1 **TERMINAL A EAST**

2.22.18.1.1 TERMINAL A EAST ELEVATORS

MFGR.	NO.	TYPE	CAP LBS.	F/M	STOPS/ OPENINGS
MECO	AE-1PK	OH Geared Traction	4000	350	6/6 (F)
MECO	AE-2PK	OH Geared Traction	4000	350	6/6 (F)
MECO	AE-3PK	OH Geared Traction	4000	350	6/6 (F)
MECO	AE-4P	Hydro	2500	125	2/2 (F)
MECO	AE-5P	Hydro	2500	125	2/2 (F&R)
MECO	AE-6P	Hydro	2500	125	2/2 (F&R)
MECO	AE-7F	Hydro	3000	125	2/2 (F)
MECO	AE-8P	Hydro	2500	125	2/2 (F&R)
MECO	AE-9P	Hydro	3000	125	2/2 (F&R)
MECO	AE-10P	Hydro	2500	125	2/2 (F)
MECO	AE-11P	Hydro	2500	125	2/2 (F&R)
MECO	AE-12P	Hydro	2500	125	2/2 (F&R)
MECO	AE-13S	Hydro	4000	125	2/2 (F)
MECO	AE-14P	Hydro	2500	125	2/2 (F&R)
MECO	AE-15F	Hydro Baggage Lift	2500	125	2/2 (F)
MECO	AE25P	Hydro	2500	125	2/2 (F)
MECO	AE26P	Hydro	2500	125	2/2 (F)
	AE-31P				

2.22.18.1.2 TERMINAL A EAST ESCALATORS

MFGR.	NO.	TYPE	RISE	F/M	SERVICE LEVEL
MECO	AE-17E	40" Escal	20'-11"	90	G to T
MECO	AE-18E	40" Escal	20'-11"	90	G to T
MECO	AE-19E	24" Escal	20'-11"	90	G to T
MECO	AE-20E	40" Escal	20'-11"	90	G to T
MECO	AE-21E	40" Escal	20'-11"	90	G to T
MECO	AE-22E	40" Escal	20'-11"	90	G to T
MECO	AE-29E	40" Escal	13'-8"	100	G to T
MECO	AE-30E	40" Escal	13'-8"	100	G to T

2.22.18.1.3 TERMINAL A EAST TERMINAL MOVING WALKWAYS

MFGR.	NO.	TYPE	RISE	F/M	LEVEL
MECO	AE-24	40" Moving Walkway	150'-0"	110	G

2.22.18.2 **TERMINAL B**

2.22.18.2.1 TERMINAL B ELEVATORS

MFGR.	NO.	TYPE	CAP LBS.	F/M	STOPS/ OPENINGS
MECO	B1PK	OH Geared Traction	4000	350	6/6 (F)
MECO	B2PK	OH Geared Traction	4000	350	6/6 (F)
MECO	B3PK	OH Geared Traction	4000	350	6/6 (F)
MECO	B4PK	OH Geared Traction	4000	350	6/6 (F)
MECO	B7P	Hydro	2500	125	2/2 (F&R)
MECO	B9P	Hydro	2500	125	2/2 (F&R)
MECO	B11F	Hydro	3000	75	4/4 (F)
Security	B12P	Hydraulic	2500	125	3/2 (F&R)
MECO	B15P	Hydro	2500	125	2/2 (F)
MECO	B20S	Hydro	5,000	100	2/2 (F&R)
MECO	B22P	Hydro	2500	125	
MECO	B25HP	Holeless Hydraulic	2500	125	2/2 (F&R)
MECO	B26HP	Holeless Hydraulic	2500	125	2/2 (F&R)
Security	B-27P	Hydro	6000	125	3/3 (F&R)

2.22.18.2.2 **TERMINAL B ESCALATORS**

MFGR.	NO.	TYPE	RISE	F/M	SERVICE LEVEL
MECO	B1E	40" Escal	21'-6"	90	G to T
MECO	B2E	40" Escal	21'-6"	90	G to T
MECO	B4E	24" Escal	21'-6"	90	G to T
MECO	B23E	40" Escal	17'-4"	90	G to T
MECO	B24E	40" Escal	17'-4"	90	G to T

2.22.18.2.3 **TERMINAL B MOVING WALKWAYS**

MFGR.	NO.	TYPE	LENGTH	F/M	LEVEL
MECO	B16W	40" Moving Walkway	188'-0"	120	T
MECO	B17W	40" Moving Walkway	188'-0"	120	T
MECO	B18W	40" Moving Walkway	212’	120	T
MECO	B19W	40" Moving Walkway	212’	120	T

2.22.18.3 **TERMINAL C**

2.22.18.3.1 **TERMINAL C ELEVATORS**

MFGR.	NO.	TYPE	LBS.	F/M	STOPS/ OPENINGS
MECO	C5PK	OH Geared Traction	2500	350	6/6 (F)
MECO	C6PK	OH Geared Traction	2500	350	6/6 (F)
MECO	C7PK	OH Geared Traction	2500	350	6/6 (F)
MECO	C7P	Hydro	2500	125	2/2 (F&R)
MECO	C9P	Hydro	2500	125	2/2 (F&R)
MECO	C21F	Hydro	10,000	60	2/2
MECO	C20P	Hydro	2500	125	2/2 (F)
Otis	C23P	Hydro	2500	100	3/3 (F&R)
MECO	C25P	Hydro	2500	125	

2.22.18.3.2 **TERMINAL C ESCALATORS**

MFGR.	NO.	TYPE	RISE	F/M	SERVICE LEVEL
MECO	C1E	40" Escal	20'-0"	90	G to T
MECO	C2E	40" Escal	20'-0"	90	G to T
West.	C4E	24" Escal	20'-6"	90	G to T
MECO	C21E	40" Escal	16'-10"	90	G to T
MECO	C22E	40" Escal	16'-10"	90	G to T
MECO	C23E	40" Escal	17’	90	T to 3rd
MECO	C24E	40" Escal	17’	90	T to 3rd

MECO	C26E	40" Escal	17'-2"	90	G to T
MECO	C27E	40" Escal	17'-2"	90	G to T

2.22.18.3.3 **TERMINAL C MOVING WALKWAYS**

MFGR.	NO.	TYPE	LENGTH	F/M	LEVEL
MECO	C16W	40" Moving Walkway	210'-0"	110	T
MECO	C17W	40" Moving Walkway	210'-0"	110	T
MECO	C18W	40" Moving Walkway	248’	110	T
MECO	C19W	40" Moving Walkway	248’	110	T
MECO	C28W	40" Moving Walkway	364’	110	T
MECO	C29W	40" Moving Walkway	364’	110	T

2.22.18.4 **TERMINAL D**

2.22.18.4.1 **TERMINAL D ELEVATORS**

MFGR.	NO.	TYPE	LBS.	F/M	CAPSTOPS/ OPENINGS
MECO	D8PK	OH Geared Traction	2500	125	6/6 (F)
MECO	D9PK	OH Geared Traction	2500	125	6/6 (F)
MECO	D10PK	OH Geared Traction	2500	125	6/6 (F)
West.	D7P	Hydro	2500	125	2/2 (F&R)
Dover	D8P	Hydro	2500	125	2/2 (F&R)
Security	D9P	Hydro	2500	125	2/2 (F&R)
West.	D10P	Hydro	3000	125	2/2 (F)
MECO	D12F	OH Geared Traction	4000	200	2/2 (F)
Dover	D15S	Hydro	6000	100	2/2(F)

2.22.18.4.2 **TERMINAL D ESCALATORS**

MFGR.	NO.	TYPE	RISE	F/M	LEVEL
MECO	D1E	40" Escal	20'-6"	90	G to T
MECO	D2E	40" Escal	20'-6"	90	G to T
MECO	D3E	24" Escal	20'-6"	90	G to T
MECO	D4E	24" Escal	20'-6"	90	G to T
MECO	D5E	40" Escal	17'-6"	90	G to T
MECO	D6E	40" Escal	17'-6"	90	G to T
MECO/Otis	D11E	24" Escal	13'-6"	90	G to F

2.22.18.3 **TERMINAL D MOVING WALKWAYS**

MFGR.	NO.	TYPE	LENGTH	F/M	LEVEL
MECO	D-13W	40" Moving Walkway	284'-0"	110	T
MECO	D-14W	40" Moving Walkway	284'-0"	110	T

2.22.18.5 **TERMINAL E**

2.22.18.5.1 **TERMINAL E ELEVATORS**

MFGR.	NO.	TYPE	CAP LBS.	F/M	STOPS/ OPENINGS
Fujitech	E1-PK	Traction	3500	350	8/8 (F)
Fujitech	E2-PK	Traction	3500	350	8/8 (F)
Fujitech	E3-PK	Traction	3500	350	8/8 (F)
Fujitech	E4-PK	Traction	3500	350	8/8 (F)
West./Thyssen-Krup	E1-P	Hydro	2000	125	2/2 (F)
MECO	E6-P				
MECO	E7-P	Hydro	2500	125	2/2 (F&R)
MECO	E8-P	Hydro	2500	125	2/2 (F&R)
MECO	E9-P	Hydro	2500	125	2/2 (F&R)
MECO	E10-P	Hydro	3000	125	2/2 (F)
MECO	E11-P	Hydro	3000	125	2/2 (F)
MECO	E12-P	Hydro	3000	125	2/2 (F)
MECO	E13-P	Hydro	2500	100	2/2
West.	E30-S	Hydro	3000	125	2/2 (F)

2.22.18.5.2 TERMINAL E ESCALATORS

MFGR.	NO.	TYPE	RISE	F/M	SERVICE LEVEL
MECO	E-1E	40" Escal	20'-0"	90	C to T
MECO	E-2E	40" Escal	20'-0"	90	C to T
MECO	E-3E	24" Escal	20'-6"	90	C to T
MECO	E-4E	24" Escal	20'-6"	90	G to T
MECO	E-5E	40" Escal	18'-0"	90	C to T
MECO	E-6E	40" Escal	18'-0"	90	G to T

2.22.18.5.3 **TERMINAL E MOVING WALKWAYS**

MFGR.	NO.	TYPE	LENGTH	F/M	LEVEL
MECO	E-15W	40" Moving Walkway	300'	110	T

MECO	E-16W	40" Moving Walkway	300'	110	T

2.22.18.6 **TERMINAL F**

2.22.18.6.1 **TERMINAL F ELEVATORS**

MFGR.	NO.	TYPE	CAP LBS.	F/M	STOPS/ OPENINGS
Kone	F-1P	Ecosystem "Monospace"	2500	200	4/4 (F)
Kone	F-2P	In Ground Hydraulic	2500	100	2/2 (F)
Kone	F-3P	In Ground Hydraulic	4000	80	2/2 (F&R)
Kone	F-4S	In Ground Hydraulic	4000	125	3/3 (F&R)
Kone	F-5P	In Ground Hydraulic	2500	100	2/2 (F)
Fujitech	E-5PK	Traction	3500	350	7/7
Fujitech	E-6PK	Traction	3500	350	7/7

2.22.18.6.2 **TERMINAL F ESCALATORS**

MFGR.	NO.	TYPE	RISE	F/M	SERVICE LEVEL
Kone	F-6E	40" Escal	18'-0"	100	1st to 2nd
Kone	F-7E	40" Escal	18'-0"	100	1st to 2nd

2.22.18.7 **A-B LINK**

2.22.18.7.1 **A-B LINK ELEVATORS**

MFGR.	NO.	TYPE	LENGTH	F/M	LEVEL
Kone	AE-33P	Passenger-Holeless Hydraulic	3500	100	2/2 (F)

2.22.18.7.2 **A-B LINK ESCALATORS**

MFGR.	NO.	TYPE	LENGTH	F/M	LEVEL
Kone	AE-36E	40" Escal	19'-3"	100	G to F
Kone	AE-37E	40" Escal	19'-3"	100	G to F

2.22.18.7.3 **A-B LINK MOVING WALKWAYS**

MFGR.	NO.	TYPE	LENGTH	F/M	LEVEL
MECO	A/B-25W	40" Moving Walkway	150'	110	T
MECO	A/B-26W	40" Moving Walkway	150'	110	T
Kone	AB-38W	48″ Walk	144'-8"	120	2
Kone	AB-39W	48″ Walk	144'-8"	120	2

2.22.18.8 **TERMINAL A WEST**

2.22.18.8.1 **TERMINAL A WEST ELEVATORS**

MFGR.	NO.	TYPE	CAP LBS.	F/M	STOPS/ OPENINGS
Kone	AW-1P	Passenger-Holeless Hydraulic	3500	100	2/2 (F)
Kone	AW-2P	Passenger-Holeless Hydraulic	3500	100	2/2 (F)
Kone	AW-3P	Passenger-Holeless Hydraulic	3500	100	2/2 (F)
Kone	AW-4P	Passenger-Holeless Hydraulic	3500	100	2/2 (F)
Kone	AW-5F	Service In Ground Hydraulic	8000	100	2/2 (F&R)
Kone	AW-6P	Passenger-Holeless Hydraulic	3500	100	2/2 (F)
Kone	AW-7F	Service In Ground Hydraulic	8000	125	4/4 (F&R)
Kone	AW-9P	Passenger-Holeless Hydraulic	3500	100	2/2 (F)
Kone	AW-10P	Passenger-Holeless Hydraulic	3500	100	2/2 (F)
Kone	AW-11P	Passenger-Traction	3500	350	2/2
Kone	AW-12P	Passenger-Holeless Hydraulic	3500	100	2/2 (F)
Kone	AW-13P	Passenger-	3500	100	2/2 (F)

		Holeless Hydraulic			
Kone	AW-14F	Service In Ground Hydraulic	8000	125	4/4
Kone	AW-15F	Service In Ground Hydraulic	8000	125	4/4
Kone	AW-18P	Passenger-Holeless Hydraulic	3500	100	2/2 (F)
Kone	AW-19PK	Passenger Traction	8000	200	7/7 (F)
Kone	AW-20PK	Passenger Traction	8000	200	7/7 (F)
Kone	AW-21PK	Passenger Traction	8000	200	7/7 (F)
Kone	AW-22PK	Passenger Traction	8000	200	7/7 (F)
Kone	AE-32P	Passenger – In Ground Hydraulic	3500	125	2/2
Kone	AE-40P	Passenger – In Ground Hydraulic	3500	125	2/2

2.22.18.8.2 **TERMINAL A WEST ESCALATORS**

MFGR.	NO.	TYPE	RISE	F/M	SERVICE LEVEL
Kone	AW-23E	32" Escal	16’-0”	100	2nd to 3rd
Kone	AW-24E	32" Escal	16’-0”	100	2nd to 3rd
Kone	AW-25E	32" Escal	16’-0”	100	2nd to 3rd
Kone	AW-26E	32" Escal	16’-0”	100	2nd to 3rd
Kone	AW-27E	32" Escal	16’-0”	100	2nd to 3rd
Kone	AW-28E	40" Escal	15’-0”	100	Grnd to 2nd
Kone	AW-29E	40" Escal	15’-0”	100	Grnd to 2nd
Kone	AW-30E	32" Escal	22’-8”	100	2nd to 3rd
Kone	AW-31E	32" Escal	41’-2”	100	2nd to Mezz
Kone	AW-32E	32" Escal	41’-2”	100	2nd to Mezz
Kone	AW-33E	32" Escal	22’-8”	100	2nd to 3rd
Kone	AW-34E	40" Escal	15’-0”	100	Grnd to 2nd
Kone	AW-35E	40" Escal	15’-0”	100	Grnd to 2nd
Kone	AW-36E	40" Escal	20’-11”	100	2nd to 3rd
Kone	AW-37E	40" Escal	20’-11”	100	2nd to 3rd
Kone	AW-38E	40" Escal	20’-11”	100	1st to 2nd
Kone	AW-39E	40" Escal	20’-11”	100	1st to 2nd
Kone	AE-34E	32" Escal	28’-4”	100	1st to 3rd

Kone	AE-35E	32" Escal	28’-4”	100	1st to 3rd

2.22.18.8.3 **TERMINAL A WEST MOVING WALKWAYS**

MFGR.	NO.	TYPE	LENGTH	F/M	LEVEL
Kone	AW-40W	48” Walk	318’-0”	120	2nd
Kone	AW-41W	48" Walk	318'-0"	120	2nd
Kone	AW-42W	48” Walk	140’-0”	120	3rd
Kone	AW-43W	48” Walk	270’-0”	120	3rd
Kone	AW-44W	48” Walk	200’-0”	120	3rd
Kone	AW-45W	48” Walk	140’-0”	120	3rd
Kone	AW-46W	48” Walk	225’-0”	120	3rd

2.22.18.9 **OVERSEAS TERMINAL**

2.22.18.9.1 **OVERSEAS TERMINAL ELEVATORS**

MFGR.	NO.	TYPE	CAP LBS.	F/M	STOPS/ OPENINGS
Energy	OP1	Hydro	2500	90	2/2 (F)

2.22.18.10 **RAMP CONTROL TOWER**

2.22.18.10.1 **RAMP CONTROL TOWER ELEVATORS**

MFGR.	NO.	TYPE	CAP LBS.	F/M	STOPS/ OPENINGS
Thyssen / Security	A-B Tower	Passenger Traction	4000	350	6/6

2.22.19 **GENERAL CONDITIONS**

2.22.19.1 The following specifications cover the maintenance of vertical transportation equipment listed in the bid form.

2.22.19.2 There shall be no additional cost to the City for labor or materials beyond the monthly contract price quoted in the Contractor's bid, except for "Contract Extras". Submit to the Airport Maintenance Manager in writing, proposals for repair or replacement of parts damaged by malicious actions of others, and Acts of God, and for alterations and additions "not covered by the maintenance contract" but required by the inspecting authorities. Such proposals will either be authorized or bid on a separate contract basis, at the option of the City.

2.22.19.3 In all cases where a device or part of equipment is herein referred to in the singular manner, such reference shall apply to as many such devices as are required to complete the work.

2.22.19.4 All terms in the specifications that are not otherwise defined shall have the definitions as given in the current and applicable ANSI Code for elevators, dumbwaiters, escalators and moving walkways.

2.22.19.5 Provide all tools, equipment necessary to perform all work in accordance with the latest requirements of the current ANSI Code for elevators, dumbwaiters, escalators and moving walkways and any other applicable code, requirement, or regulation which may govern the requirements of the work under this contract.

2.22.19.6 **For equipment within warranty period the bidder must comply with the manufacturer's O&M manual requirements. Bidder shall provide all tools, equipment, accessories, and consumables for preventive maintenance for normal operation during the warranty period. Bidder will provide trouble-shooting of equipment during warranty period and report to Airport's Maintenance Manager or his designee.**

2.22.20 **EXISTING EQUIPMENT: EXAMINATION**

2.22.20.1 If, prior to, or during the execution of the work, items are discovered which are unsafe, or which may cause unsatisfactory operation following the completion of the work performed under the contract, bring such matters to the attention of the Airport's Maintenance Manager or his designee without delay.

2.22.21 **OCCUPIED TERMINAL AREAS**

2.22.21.1 In occupied terminal areas, insure that normal public and passenger routines can carry on while work is being performed.

2.22.21.2 Avoid unnecessary noise, clutter or obstruction in the corridors, and store materials and tools where they will cause minimum inconvenience to Airport users.

2.22.21.3 Where excessive noise or obstruction is anticipated and unavoidable, the Contractor shall advise the Airport's Maintenance Manager or his designee, in advance and make suitable arrangements.

2.22.21.4 Obtain permission in writing from the Airport's Maintenance Manager or his designee, at least twenty-four hours in advance for all work which will require a shutdown of all covered equipment in a particular building or area.

2.22.22 **PROTECTION OF WORK AND PROPERTY**

2.22.22.1 Take all necessary precautions to ensure the work covered by these specifications is performed in a manner that does not endanger any person.

2.22.23 **REMOVAL OF EQUIPMENT AND RUBBISH**

2.22.23.1 Store and remove all rubbish as it accumulates, keep the building and premises clean during the progress of the work, and leave the premises at completion in a satisfactory clean condition.

2.22.24 **SPECIFICATION REVISIONS**

2.22.24.1 Report to the Procurement Department prior to submission of bid, any suggested revisions to the specifications, discrepancies or ambiguities found in the specifications.

2.22.25 **CONTRACT EXTRAS**

2.22.25.1 Submit to the Airport's Maintenance Manager or his designee, in writing, proposals for repair or replacement of parts damaged by misuse or malicious action of others, and Acts of God, and for alterations and additions "not covered by the maintenance contract" but required by the inspecting authorities.

2.22.25.2 Such proposals submitted for repairs in excess of the $3,000.00 deductible will either be authorized or bid on a

separate contract basis, at the option of the City.

2.22.26 **PRICE ADJUSTMENT**

2.22.26.1 See Price Adjustment – Elevators, para. 4.2.17.2.

2.22.27 **ALL ELEVATORS, ESCALATORS AND MOVING WALKWAYS SCHEDULED MAINTENANCE**

2.22.27.1 The purpose of the maintenance program is to prolong the life of the equipment, to secure the City of Philadelphia's equity and to provide trouble-free service.

2.22.27.2 Keep the equipment in substantially new condition and maintain performance to meet these specifications.

2.22.27.3 **MAINTENANCE: FREQUENCY**

2.22.27.3.1 Perform routine maintenance inspections a minimum of twice a month.

2.22.27.4 **MAINTENANCE: MINIMUM STANDARD**

2.22.27.4.1 Perform to these specifications as a minimum standard.

2.22.28 **MAINTENANCE: LOG BOOK**

2.22.28.1 In addition to the Work Orders and P.M. tickets to be filled out, the Contractor is to provide a maintenance log in a permanently bound journal having pre-numbered pages.

2.22.28.2 Indicate in the journal the following information: date, time, name of responsible maintenance person, notations of regular maintenance, callbacks, action taken, work completed, and further repairs required.

2.22.28.3 The journal is the property of the City of Philadelphia.

2.22.28.4 Maintain the journal current, on the premises, and available for inspection by the City of Philadelphia at any time.

2.22.28.5 Make all entries in ink, legibly, consecutively and without blanks.

2.22.29 **MAINTENANCE: TIME TICKETS**

2.22.29.1 Show on each regular maintenance Work Orders the division of work and detail the portion of that division completed.

2.22.29.2 Submit Work Orders for each call-back detailing the exact cause and the action taken.

2.22.30 **MAINTENANCE: MANUALS**

2.22.30.1 Provide technicians with a manual describing proper safety and maintenance procedures and methods of maintaining the equipment in proper operating condition.

2.22.30.2 Give 6 copies of this manual to the Airport's Maintenance Manager or his designee, so the staff may better describe and report problems that arise.

It is the Contractor's responsibility to continually update the manuals with all changes made to the equipment.

2.22.31 **MAINTENANCE: PERSONNEL**

2.22.31.1 Supervise technicians so that at all times they present a neat appearance and their movement in the building is within the requirements of their work.

2.22.32 **MAINTENANCE: COORDINATION WITH OWNER**

2.22.32.1 At the commencement of each routine maintenance inspection contact a representative specified by the Airport's Maintenance Manager or his designee.

2.22.32.2 Discuss the operation of the equipment and take immediate action on all problems.

2.22.32.3 Should a problem be of a nature that cannot be satisfactorily resolved during that visit, report back to the Airport's Maintenance Manager or his designee, explaining why it was not possible to correct the problem and when the problem will be resolved.

.22.33 **MAINTENANCE: REPAIRS**

2.22.33.1 The Airport's Maintenance Manager or his designee, must be advised of scheduled repairs under the maintenance contract at least two weeks in advance.

In the case of non-scheduled repairs under the maintenance contract where the equipment is required to be taken out of service, the Airport's Maintenance Manager or his designee must be advised immediately.

2.22.33.2 In all cases communicate the status of repairs to the Airport's Maintenance Manager or his designee, at the beginning and close of the normal working day.

2.22.33.3 Where possible, indicate the time required for completion of repairs.

2.22.34 **MAINTENANCE: SAFETY PROCEDURES**

2.22.34.1 At no time permit the equipment to operate while any of the safety devices, mechanical or electrical are in-operative.

2.22.35 **MAINTENANCE: SAFETY INSPECTIONS**

2.22.35.1 Carry out all instructions of the inspecting authorities including authorized alterations and additions as described in 2.17 "Contract extras", within 30 days of notice of deficiency, or within the time limits set by the inspecting authorities if sooner, except for those items that are the responsibility of the City of Philadelphia and directives resulting from changes to the existing codes.

2.22.36 **MAINTENANCE: ASSISTANCE FOR INSPECTIONS**

2.22.36.1 Provide all necessary co-operation and assistance to allow inspections of the equipment.

2.22.36.2 In the event that this requires the supply of more than one crew for more than 3 hours per year per unit, such supply must be provided to the City at no additional cost beyond the monthly contract price.

2.22.37 **MAINTENANCE: PERFORMANCE STANDARDS - ELEVATORS ONLY**

2.22.37.1 During the first three months of the contract, and for the first three months after a future piece of equipment is added to the bidders maintenance, adjust the equipment to meet the minimum standards of

performance set out below. The Contractor shall maintain these performance standards throughout the term of the contract.

2.22.37.2 Adjust the speed control and dispatching for group supervisory or multi-car installations to operate within original design performance standards.

2.22.37.3 Adjust the acceleration, deceleration and final stopping so no obvious or objectionable bumps are observed during the ride.

2.22.37.4 Adjust the door operation to operate smoothly and quietly with a minimum amount of play between the hall door pick up rollers and car door clutch assembly.

2.22.37.5 Adjust the automatic leveling devices to stop the car at all floors consistently within 1/4 inch of level regardless of load.

2.22.37.6 Passenger elevator door performance not to exceed + 10%.

2.22.37.7 Door Performance schedule:

Door Width	Door Open Time (in seconds)		Door Close Time (in seconds)		Hold Time (in seconds)	
	SIDE SLIDE	CTR. OPNG.	SIDE SLIDE	CTR. OPNG.	SHORT	LONG
32"	2.5	1.8	3.1	2.0	2.0	6.0
40"	3.0	2.0	3.8	2.3	2.0	6.0
42"	3.1	2.1	4.0	2.4	2.0	6.0
48"	3.5	2.2	4.5	2.6	2.0	6.0
54"	3.8	2.4	5.0	2.9	2.0	6.0

2.22.37.8 Door Performance:

2.22.37.8.1 Passenger elevator floor-to-floor time (door starts closing to door 3/4 open) 12"-0" floor height (not to exceed + 10% tolerance).

2.22.37.8.2 Floor Performance Schedule:

Rated Speed (in FPM)	Door Type	Width 12'-0"	Time	Adj./Foot	Avg.
125	Side Slide	40"	14.2	0.5	
125	Side Slide	40"	15.2	0.5	
125	Side Slide	42"	15.5	0.5	

125	Side Slide	48"	16.5	0.5
125	Side Slide	54"	17.5	0.5
125	Center Opening	34"	12.4	0.5
125	Center Opening	40"	12.9	0.5
125	Center Opening	42"	13.0	0.5
125	Center Opening	48"	13.5	0.5
125	Center Opening	54"	14.0	0.5
125	Center Opening	48"	10.6	0.2

2.22.37.9 **CAR SPEED PERFORMANCE STANDARD:**

2.22.37.9.1 Traction Elevators. Car speed shall be maintained at + or - 5% with rated load or under any condition.

2.22.37.9.2 Hydraulic Elevators. Car speed shall be maintained at + or - 10% with full load up, no load down.

2.22.37.10 **FLOOR ACCURACY:**

2.22.37.10.1 Car position shall be maintained at + or - 1/4" under any loading condition.

2.22.37.10.2 In accomplishing the above requirements, the successful bidder shall maintain a comfortable elevator ride with smooth acceleration, retardation and a soft stop. Door operation shall be quiet and positive with smooth checking at the extremes of travel.

2.22.37.10.3 The successful bidder shall check and adjust the group dispatching system and make necessary tests to ensure all circuits and time settings are properly adjusted at least annually and any time proper adjustment is questioned. Adjustment shall minimize response time to registered car and hall calls.

2.22.37.10.4 Adjustments shall be made by qualified individuals properly equipped with all tools and instruments, employed by the successful bidder. Adjustments shall be made at regular intervals frequently enough to maintain the elevator in normal operating condition and to preserve the useful life of the part of assembly for the duration of the contract.

2.22.37.10.5 Parts or assemblies, which have worn or deteriorated beyond "normal" adjustment limits shall be replaced as provided for under the "replace" and/or "repair" section of the specification.

2.22.37.10.6 The successful bidder shall inspect, adjust, shorten and replace all wire ropes whenever prescribed by the requirements of the ASME/ANSI A17.1 Safety Code for Elevators and Escalators and/or ASME/ANSI A17.2 Inspectors' Manual.

2.22.37.10.7 The Contractor shall inspect and repair and/or replace fixed electrical wiring and traveling conductor cables.

2.22.38 **MAINTENANCE PERFORMANCE STANDARDS - ESCALATORS/MOVING WALKWAYS**

2.22.38.1 **ESCALATOR/MOVING WALKWAYS SPEED PERFORMANCE**

2.22.38.1.1 Escalator/Moving Walkways speed shall be maintained at + or - 5% under any loading condition, in both directions.

2.22.38.1.2 Handrail Speed to match escalator

2.22.38.1.3 Stopping Distance

Shall be maintained to comply with the ASME/ANSI A17-1 CODE requirements.

2.22.38.1.4 In accomplishing the above requirements, the successful bidder shall maintain a smooth, quiet ride. Handrail speeds be examined periodically and adjusted to equal step speed.

2.22.38.1.5 Escalators capable of operating in both directions shall be periodically reversed to insure adequate clearances and adjustments for both directions of travel. Stopping distance on all escalators will be tested periodically, brake torques adjusted and recorded to insure proper performance.

2.22.38.1.6 Adjustments shall be made by qualified individuals properly equipped with tools and instruments, employed by the successful bidder. Adjustments shall be made at regular intervals frequent enough to maintain the escalator in normal operating condition and preserve the useful life of the part or assembly for the duration of the contract.

2.22.38.2 **SIGNAGE**

2.22.38.2.1 When an elevator/escalator/moving walkway is taken out of service for inspection or routine maintenance, provide a neatly lettered sign on each entrance with the wording:

ELEVATOR/ESCALATOR/MOVING WALKWAY IS TEMPORARILY OUT OF SERVICE FOR INSPECTION AND ROUTINE MAINTENANCE TO PROVIDE FOR YOUR SAFETY.

2.22.38.2.2 When an elevator/escalator/moving walkway is taken out of service for repairs, provide a professionally produced sign on each entrance with the wording:

"ELEVATOR/ESCALATOR/MOVING WALKWAY IS OUT OF SERVICE FOR REPAIR".

2.22.38.2.3 When any elevator/escalator/moving walkway is taken out of service for maintenance, repair or emergency, provide a neatly lettered sign to direct public to alternate means of access to areas served by the out of service equipment.

All signage will be approved by the Division of Aviation prior to use.

2.22.39 **TRACTION ELEVATORS - MAINTENANCE**

2.22.39.1 MAINTENANCE: RESPONSIBILITY

2.22.39.1.1 Repair or replace as and when required: Machines, motors, printed circuit boards, power supplies, controller parts, bearings, brake coils, brake linings, door hardware and operating equipment and all other mechanical and electrical components required for the operation of the elevators.

2.22.39.1.2 Do not repair or replace: Car enclosure, floor coverings, hoistway enclosure, hoistway door and frame finishes and door sills.

2.22.39.2 MAINTENANCE: SCHEDULE

2.22.39.2.1 Where the applicable equipment has been installed perform all the following duties as described.

2.22.39.2.2 In the course of the examination should faulty parts be discovered, replace them at once. If any unusual operations or noises be observed, take corrective action immediately.

Schedule parts showing excessive wear for replacement no later than the next regular examination.

2.22.39.3 **MAINTENANCE: TWICE A MONTH EXAMINATION**

Perform the following duties twice every month:

2.22.39.3.1 Ride elevator and carefully examine for:

2.22.39.3.1.1 Erratic operation or changes in leveling operation.

2.22.39.3.1.2 Unusual noises.

2.22.39.3.1.3 Changes in door operation.

2.22.39.3.1.4 Test the operation of door protective devices, emergency stop switch, alarm bell, buzzer or other distress signals, door open button and communication devices.

2.22.39.3.2 Examine controller relays, selector or stepping relay contacts and all moving parts.

2.22.39.3.3 Examine operation of machine and brake.

2.22.39.3.4 Examine all position indicators, signal lamps, bulbs, lights, and lense covers. Replace or repair if defective.

2.22.39.3.5 Examine and clean machine and machine room floor.

2.22.39.3.6 Examine car door rollers and eccentrics.

2.22.39.3.7 Clean car door tracks.

2.22.39.3.8 Examine car door clutch assembly and clean.

2.22.39.3.9 Examine door edge reversal device and fastenings for operation and tightness.

2.22.39.3.10 Examine and test all duplex outlets in the elevator cab enclosure, the car top and under the car platform. Repair or replace any defective outlet.

2.22.39.4 **MAINTENANCE: QUARTERLY EXAMINATION AND TESTING**

Perform the following duties once every three months:

2.22.39.4.1 Examine brushes in rotating electrical equipment for freeness and tension. Replace brushes having 40% or less of the original length remaining.

2.22.39.4.2 Thoroughly clean rotating electrical equipment and lubricate bearings.

2.22.39.4.3 Examine rotating electrical equipment connections.

2.22.39.4.4 Examine commutators for oil or foreign matter and take appropriate action to correct unsatisfactory conditions.

2.22.39.4.5 Examine and clean the controller, inspect each component for wear.

2.22.39.4.6 Examine all protective circuits and devices on controller.

2.22.39.4.7 Examine resistors for indications of overheating. If overheating is found, locate and correct the problem.

2.22.39.4.8 Examine operation of hoistway doors and adjust as

2.22.39.4.9 Examine door interlocks, door gibs, door hanger rollers and door relating cables, sheaves and closers, adjust and lubricate as needed.

2.22.39.4.10 Inspect and examine the operation of the limit switches and terminal stopping devices.

2.22.39.4.11 Examine roller guides and adjust as needed.

2.22.39.4.12 Examine hoistway selector tape, fastenings, guides and switches.

2.22.39.4.13 Examine and lubricate the compensating sheave.

2.22.39.4.14 Examine and lubricate the governor tension sheave.

2.22.39.4.15 Examine and lubricate the governor.

2.22.39.4.16 Examine the buffers and the buffer oil.

2.22.39.5 **MAINTENANCE: YEARLY EXAMINATION AND TESTING**

Perform the following duties at least once every year:

2.22.39.5.1 Examine motor starter contacts and replace as needed.

2.22.39.5.2 Examine car operation of motor starter overloads. Adjust if necessary.

2.22.39.5.3 Examine and test car operating station, clean and replace worn parts.

2.22.39.5.4 Examine and adjust door operator, clean and lubricate.

2.22.39.5.5 Examine clean and lubricate door hangers.

2.22.39.5.6 Examine and test call buttons and replace worn parts.

2.22.39.5.7 Examine hoist rope hitches and cable ties.

2.22.39.5.8 Inspect all ropes for wear and adjust tension.

2.22.39.5.9 Clean and examine safety plank. Should it be necessary to alter any adjustment in the car safety plank, the Contractor shall perform a safety test after the adjustment.

2.22.39.5.10 Perform an annual no load safety test. Provide the Airport's Maintenance Manager or his designee a declaration certifying the successful completion of the test.

2.22.39.5.11 Examine all sheaves and shaft bearings for soundness and wear.

2.22.39.5.12 Examine the emergency terminal slowdown device.

2.22.39.5.13 Examine traveling cables for wear.

2.22.39.5.14 Using an event recorder, record data for a complete day of normal operation and submit the recorded data to the Airport's Maintenance Manager or his designee for evaluation.

2.22.39.5.15 Clean hoistway from top to bottom.

2.22.39.6 **MAINTENANCE: TWO YEAR EXAMINATION AND TESTING**

Perform the following duties at least once every two years:

2.22.39.6.1 Fully adjust the equipment for proper slowdown, acceleration and stopping operations.

2.22.39.6.2 Examine junction box wiring connections and adjust as needed.

2.22.39.6.3 Examine guide rail fastenings for change and tightness.

2.22.39.6.4 Review the control system operation with the Airport's Maintenance Manager or his designee and subject to the results of the review, readjust the equipment as may be required.

2.22.39.7 **MAINTENANCE: MANUFACTURERS' PARTS**

2.22.39.7.1 Use original manufacturer's parts where possible.

2.22.39.7.2 When original manufacturers' parts are not available or when a better substitute is available submit the alternate part for the approval of the Airport's Maintenance Manager or his designee.

2.22.39.7.3 All parts shall be stamped with the date of installation by the Contractor.

2.22.39.8 **MAINTENANCE: PARTS IMMEDIATELY AVAILABLE**

2.22.39.8.1 The following spare parts on a per elevator basis, (where applicable) shall be reserved for use of the equipment but stored off-site. They shall be available, on-site, within four hours.

2.22.39.8.2 One set of car door sheave and hall door rollers.

2.22.39.8.3 Door closers: one complete door closer assembly.

2.22.39.8.4 Door gibs: two sets of door gibs for car and hall doors.

2.22.39.8.5 One safety-edge microswitch (if used).

2.22.39.8.6 Three fuses of each size used in the controllers and in the main line disconnect.

2.22.39.8.7 One complete hall station assembly of each type.

2.22.39.8.8 One hall door relating cable sheave.

2.22.39.8.9 Door locks: one complete door interlock assembly.

2.22.39.8.10 Position indicators: 12 signal lamps, of each type and voltage used.

2.22.39.8.11 Relays: one complete relay of each type with spare contacts and coils.

2.22.39.8.12 Controller resistors: one complete set of controller resistors.

2.22.39.8.13 Printed circuit boards. One complete set of each used.

2.22.39.8.14 One of each of springs, stationary contacts and moving contacts for stepping switches or selectors.

2.22.39.8.15 An adequate supply of cleaning solvent, wipers, general purpose oil, buffer oil and door operator oil.

2.22.39.8.16 One emergency stop switch.

2.22.39.8.17 An adequate supply of lamps, bulbs, switches, receptacles and other electrical components.

2.22.39.9 **MAINTENANCE: PARTS READILY AVAILABLE**

2.22.39.9.1 Arrange that the following spare parts (where applicable) are readily available from the Contractor's local office.

2.22.39.9.2 One tachometer motor for each type used.

2.22.39.9.3 One digital encoder for each type used.

2.22.39.9.4 One roll of selector tape of sufficient length to replace the longest tape used on the equipment.

2.22.39.9.5 One complete safety edge assembly.

2.22.39.9.6 One complete infra red door edge detector assembly.

2.22.39.9.7 One complete roller guide assembly of each size used.

2.22.39.9.8 One power supply board and transformer for each size used.

2.22.39.10 **MAINTENANCE: TOOLS ON-SITE**

2.22.39.10.1 Keep the following tools on-site and in good working order. All tools on-site required to maintain and repair all equipment covered in this contract including but not limited to the following:

2.22.39.10.2 Minimum of three electric powered carts to be in service.

2.22.39.10.2.1 Carts must meet Airport requirements for

terminal usage permit.

2.22.39.10.2.2 Carts are to be parked only in designated Terminal parking areas.

2.22.39.10.3 Minimum of three lockable tool chests.

2.22.39.10.4 Safety signs and work barricades required for routine maintenance and repairs shall be approved by the Airport's Maintenance Manager or his designee.

2.22.39.10.5 Safety barricades shall provide protection for public to prevent unauthorized access.

2.22.39.10.6 The barricade shall provide enclosure for the work area.

2.22.39.10.7 All hand tools and diagnostic tools required to perform contract services.

2.22.39.10.8 Inspect all tools regularly and maintain ready in working order.

2.22.39.11 **MAINTENANCE: TOOLS READILY AVAILABLE**

2.22.39.11.1 Arrange that the following tools are readily available, in good working order from the Contractor's local office.

2.22.39.11.2 Babbitting equipment including heater, ladle, for cables and bearings.

2.22.39.11.3 Twelve cable pullers.

2.22.39.11.4 Two chain blocks or lift pulls.

2.22.39.11.5 Two dial gauges (with magnetic base) and motor tramming tools.

2.22.39.11.6 Two sets of feeler gages.

2.22.39.11.7 One F.E.T. volt-ohm-millimeter.

2.22.39.11.8 Four web slings (4000 lb capacity).

2.22.39.11.9 One stop watch.

2.22.39.11.10 One tachometer.

2.22.39.11.11 Six thousand pounds of 50 lb. test weights

and a transport dolly.

2.22.40 **HYDRAULIC ELEVATORS - MAINTENANCE**

2.22.40.1 **MAINTENANCE: RESPONSIBILITY**

2.22.40.1.1 Repair or replace as and when required.

2.22.40.1.2 Pumps, valves, motors, gland packing, controller parts, hydraulic fluid, door equipment and all other mechanical and electrical parts required for the operation of the elevator.

2.22.40.1.3 Do not repair or replace. Car enclosure, floor coverings, hoistway enclosure, hoistway door and frame finishes and door sills.

2.22.40.1.4 Hydraulic cylinder and underground oil lines.

2.22.40.2 **MAINTENANCE: SCHEDULE**

2.22.40.2.1 Where the applicable equipment has been installed perform all the following duties as described.

2.22.40.2.2 In the course of the examination should faulty parts be discovered, replace them at once, if any unusual operations or noises are observed to be found, take corrective action immediately.

2.22.40.2.3 Schedule parts showing excessive wear for replacement no later than the next regular examination.

2.22.40.3 **MAINTENANCE: TWICE PER MONTH EXAMINATIONS**

Perform the following duties at least twice every month:

2.22.40.3.1 Ride elevator and carefully examine for:

2.22.40.3.1.1 Eratic operation or changes in leveling operation.

2.22.40.3.1.2 Unusual noises.

2.22.40.3.1.3 Changes in door operation.

2.22.40.3.1.4 Test the operation of door protective devices, emergency stop switch, alarm bell,

buzzer or other distress signals, door open button and communication devices.

2.22.40.3.1.5 Examine controller relays, selector or stepping relay contacts and moving parts.

2.22.40.3.1.6 Examine operation of machine.

2.22.40.3.1.7 Examine all position indicators, signal lamps, lights, bulbs and lense covers. Replace or repair if defective.

2.22.40.3.1.8 Examine all pumping unit and machine room floor.

2.22.40.3.1.9 Examine car door rollers and eccentric adjustment.

2.22.40.3.1.10 Clean car door tracks.

2.22.40.3.1.11 Examine car door clutch assembly and clean.

2.22.40.3.1.12 Examine door protective device and fastenings for operation and tightness.

2.22.40.4 **MAINTENANCE: QUARTERLY EXAMINATIONS AND TESTING**

Perform the following duties once every three months:

2.22.40.4.1 Examine brushes in door and gate motors. Replace brushes having 40% or less of their original length remaining.

2.22.40.4.2 Thoroughly clean rotating electrical equipment and lubricate bearings.

2.22.40.4.3 Examine rotating electrical equipment connections.

2.22.40.4.4 Examine commutators for oil or foreign matter and take appropriate action to correct unsatisfactory conditions.

2.22.40.4.5 Examine and clean the controller, inspect each component for wear.

2.22.40.4.6 Examine all protective circuits and devices on controller.

2.22.40.4.7 Examine resistors for indications of overheating. If overheating is found, locate and correct the problem.

2.22.40.4.8 Examine operation of hoistway doors and adjust as needed.

2.22.40.4.9 Examine door interlocks, door gibs, door hanger rollers and door relating cables, sheaves and closers.

2.22.40.4.10 Clean hoistways from top to bottom.

2.22.40.4.11 Inspect and examine the operation of the limit switches and terminal stopping devices.

2.22.40.4.12 Examine roller guides and adjust as needed.

2.22.40.4.13 Examine hoistway selector tape, fastenings, guides and switches.

2.22.40.4.14 Examine and lubricate the compensating sheave.

2.22.40.4.15 Examine and lubricate the governor tension sheave.

2.22.40.4.16 Examine and lubricate the governor.

2.22.40.4.17 Examine the buffers and the buffer oil.

2.22.40.5 **MAINTENANCE: YEARLY EXAMINATIONS**

Perform the following duties at least once every year:

2.22.40.5.1 Examine motor starter contacts and replace as needed.

2.22.40.5.2 Examine car operation of motor starter overloads. Adjust if necessary.

2.22.40.5.3 Examine car operating station, clean and replace worn parts.

2.22.40.5.4 Examine door operator, clean and lubricate pivot points.

2.22.40.5.5 Examine clean and lubricate door hangers.

2.22.40.5.6 Examine all call button.

2.22.40.5.7 Perform an annual pressure test. Forward to the Airport's Maintenance Manager or his designee a declaration certifying the successful completion of the test.

2.22.40.5.8 Examine all sheaves and shaft bearings for soundness and wear.

2.22.40.5.9 Examine the emergency terminal slowdown device.

2.22.40.5.10 Examine traveling cables for wear.

2.22.40.5.11 Examine all car frame bolts and tighten as needed.

2.22.40.6 **MAINTENANCE: THREE YEAR EXAMINATIONS**

Perform the following duties at least once every three years:

2.22.40.6.1 Adjust the equipment for proper slowdown, acceleration and stopping operations.

2.22.40.6.2 Examine junction box connections.

2.22.40.6.3 Examine guide rail fastenings.

2.22.40.6.4 Review the control system operation with the Airport's Maintenance Manager or his designee and subject to the results of the review, readjust the equipment as may be required.

2.22.40.7 **MAINTENANCE: MANUFACTURERS' PARTS**

2.22.40.7.1 Use genuine manufacturers' parts where at all possible.

2.22.40.7.2 Where genuine manufacturers' parts are not available or a better substitute is available, submit the alternate part for the approval of the Airport's Maintenance Manager or his designee.

2.22.40.7.3 All parts shall be stamped with the date of installation by the Contractor.

2.22.40.8 **MAINTENANCE: PARTS IMMEDIATELY AVAILABLE**

2.22.40.8.1 The following spare parts on a per elevator basis, (where applicable) shall be reserved for use of the equipment but stored off-site. They shall be available, on-site, within four hours.

2.22.40.8.2 One set of car door sheave and hall door rollers.

2.22.40.8.3 Door closers: one complete door closer assembly.

2.22.40.8.4 Door gibs: two sets of door gibs for car and hall doors.

2.22.40.8.5 One safety-edge microswitch.

2.22.40.8.6 Three fuses of each size used in the controllers and in the main line disconnect.

2.22.40.8.7 One complete hall station assembly of each type.

2.22.40.8.8 One hall door relating cable sheave.

2.22.40.8.9 Door locks: one complete door interlock assembly.

2.22.40.8.10 Position indicators: 12 signal lamps, of each type and voltage used.

2.22.40.8.11 Relays: one complete relay of each type with spare contacts and coils.

2.22.40.8.12 Controller resistors: one complete set of controller resistors.

2.22.40.8.13 Printed circuit boards. One complete set of each used.

2.22.40.8.14 One of each of springs, stationary contacts and moving contacts for stepping switches or selectors.

2.22.40.8.15 An adequate supply of cleaning solvent, wipers, general purpose oil, buffer oil and door operator oil.

2.22.40.8.16 One emergency stop switch.

2.22.40.8.17 An adequate supply of lamps, bulbs, switches, receptacles and other electrical components.

2.22.40.9 **MAINTENANCE: PARTS READILY AVAILABLE**

2.22.40.9.1 Arrange that the following spare parts (where applicable) are readily available from your local office.

2.22.40.9.2 One roll of selector tape of sufficient length to replace the longest tape used on the equipment.

2.22.40.9.3 One complete safety edge assembly.

2.22.40.9.4 One complete infrared door edge detector assembly.

2.22.40.9.5 One complete roller guide assembly of each size used.

2.22.40.10 **MAINTENANCE: TOOLS ON-SITE**

2.22.40.10.1 Keep the following tools on-site and in good working order. All tools on-site required to maintain and repair all equipment covered in this contract including but not limited to the following:

2.22.40.10.2 A minimum of three electric powered service carts. Carts must meet Airport requirements for batteries and battery shields.

2.22.40.10.3 A minimum of two lockable tool chests.

2.22.40.10.4 Signs and barricades required for routine maintenance and repairs.

2.22.40.10.5 All hand tools and diagnostic tools required to perform contract services.

2.22.40.10.6 Inspect all tools regularly and maintain in working order.

2.22.40.11 **MAINTENANCE: TOOLS READILY AVAILABLE**

2.22.40.11.1 Arrange that the following tools are readily available, in good working order from your local office.

2.22.40.11.2 Portable submersible sump pump and hoses.

2.22.40.11.3 Twelve cable pullers.

2.22.40.11.4 Two chain blocks or lift pulls.

2.22.40.11.5 One dial gauge (with magnetic base).

2.22.40.11.6 Two sets of feeler gages.

2.22.40.11.7 One F.E.T. volt-ohm-millimeter.

2.22.40.11.8 Four web slings (4000 lb capacity).

2.22.40.11.9 One stop watch.

2.22.40.11.10 One tachometer.

2.22.40.11.11 Six thousand pounds of 50 lb. test weights and a transport dolly.

2.22.41 **ESCALATORS - SCHEDULED MAINTENANCE**

2.22.41.1 **MAINTENANCE: ESCALATOR PERFORMANCE**

2.22.41.1.1 During the first three months of the contract, adjust the equipment so the minimum standards of performance set out below are met and maintain these standards throughout the term of the contract. Examine all safety circuits for proper functioning. Align all steps to prevent the step treads from hitting the combplate fingers and skirt panels.

2.22.41.1.2 Maintain the clearances in accordance with the requirements of the inspecting authorities. Examine and adjust the step chain tension to prevent sagging or buckling of the chain.

2.22.41.1.3 Prevent the steps from coming in contact with each other.

2.22.41.1.4 Maintain a constant distance between step axles and exposed step. Maintain the handrails at a proper, constant tension, to prevent excessive wear.

2.22.41.1.5 Operate the handrails in synchronism with the moving steps.

2.22.41.1.6 Arrange the equipment so there is no slippage of the handrail.

2.22.41.1.7 Adjust the equipment to be capable of lifting its rated load at its rated speed.

2.22.41.2 **MAINTENANCE: TWICE PER MONTH EXAMINATIONS**

Perform the following duties at least twice per month:

2.22.41.2.1 Ride the escalator and observe the operation of the steps and handrails for smoothness and noise.

2.22.41.2.2 Examine combplates for broken fingers and replace where necessary.

2.22.41.2.3 Examine the clearance between the step

treads and combplate fingers and between the step treads and skirt panels. Should clearances exceed the maximum allowed by the inspection authorities immediate action must be taken to correct the problem.

2.22.41.2.4 Examine all controller relays for proper contact and excessive heating.

2.22.41.2.5 Clean the machine. Examine the machine bearings for excessive heating and observe the brake action. Examine the oil level and examine for oil leaks.

2.22.41.2.6 Ride each step and examine for bumps or broken treads. Replace as required.

2.22.41.2.7 Press each stop button and examine for proper stopping distance. Adjust brake if required.

2.22.41.2.8 Examine step chain for proper tension and lubricate.

2.22.41.2.9 Clean sprockets.

2.22.41.2.10 Clean top and bottom truss pans.

2.22.41.2.11 Examine step demarcation lights. Relamp as required.

2.22.41.2.12 Examine safety signs. Replace as required.

2.22.41.3 **MAINTENANCE - SEMI-ANNUAL EXAMINATIONS AND TESTING**

Perform the following duties at least once every sixm months:

2.22.41.3.1 Trip governor by hand. Examine all parts of the mechanism for freeness. Clean and lubricate as required.

2.22.41.3.2 Remove the machine inspection cover and examine the gear teeth for wear.

2.22.41.3.3 Clean all escalator steps with the appropriate machine designed to clean escalator steps and risers.

2.22.41.4 **MAINTENANCE - ANNUAL EXAMINATIONS AND TESTING**

Perform the following duties at least once every twelve months.

2.22.41.4.1 Thoroughly clean and inspect all step rollers, step chains and handrails for wear and replace as required.

2.22.41.4.2 Thoroughly clean the truss, tracks and entire drip pan.

2.22.41.4.3 Clean and examine all controller equipment for worn parts and replace if required.Examine the power wiring connections for tightness with particular attention to the overload relay wire connections.

2.22.41.5 **MAINTENANCE: SPARE PARTS**

2.22.41.5.1 Keep the following spare parts dedicated to each escalator on site.

2.22.41.5.2 Two step trail rollers.

2.22.41.5.3 Two step chain rollers.

2.22.41.5.4 Two control fuses of each size.

2.22.41.5.5 One complete set of combplate fingers.

2.22.41.5.6 One set of replacement parts for relays.

2.22.41.5.7 All necessary lubricants and cleaning agents.

2.22.42 MOVING WALKWAYS SCHEDULED MAINTENANCE

2.22.42.1 INTRODUCTION

2.22.42.1.1 Scope

The examination of moving walkways included in this section is not only an inspection of all safety related functions, but is also an inspection to determine the condition of the equipment and identify areas that need improvement. Proper maintenance shall be performed to keep the moving walkway operating. Part IV of the ANSI/ASME A17.2 Inspector's Annual for Elevators and Escalators is the criteria for the safety of the inspection of moving walks.

2.22.42.1.2 Performance Criteria

The Contractor shall make an examination for the purpose of inspection to review the entire moving walks installation, including measuring the operation of specific elements of the system against standards that have been established either by national codes or engineering practice common to the moving walk industry. The components of the system selected for testing are those most directly related to safe operation of the moving walk and the overall installation, although some items, such as speed of the moving walks, are related to the efficiency of the operation and grade of service provided. The following are areas to be tested and criteria to use for evaluating performance.

2.22.42.1.3 Moving Walk Operation Speed

Moving Walkway Operating Speed shall be measured with a tachometer held against the deck while riding on the unit. Operating speed should be maintained at level of plus or minus 5% of the rated speed under any load condition in both directions of travel.

2.22.42.1.4 **Balustrades and Guards**

Examine all operating equipment and repair cracked or broken balustrade panels or ceiling intersection guards, if furnished. Also replace any screws or fasteners used to hold panels or moldings that are not flush or have burrs.

2.22.42.1.5 **Handrails**

Examine all operating equipment and repair handrail splices and joints, handrail travel around the newel. Handrail tension shall be properly maintained.

2.22.42.1.6 **Pallet & Treadway**

Examine all operating equipment and repair the pallet grooves and surfaces to maintain good condition, are securely fastened in place and clean and free of debris.

2.22.42.1.7 **Belt**

Examine all operating equipment and repair the exposed portion of the belt and belt splice for breaks and deterioration.

2.22.42.1.8 **Belt Pallet**

Examine all operating equipment and repair belt splice and underside of the belt for breaks and deterioration. The Contractor shall also examine and repair the belt fastenings. They shall not project above the surface of the exposed treadway and the height of the pallets shall not vary more than 1/16 in. (1.6 mm) in respect to one another.

2.22.42.1.9 **Treadway Supports**

Examine all operating equipment and repair as needed.

2.22.42.1.10 **Slider Bed Support Surfaces**

Examine and repair slider bed support surfaces to maintain smooth surface.

2.22.42.1.11 **Roller Bed Support**

Examine and repair roller bed supported treadways so the belt tension shall be such that the deflection of the treadway surface, midway between roller, shall not exceed quantity 0.094 inches plus 0.004 times the center to center distance of rollers in inches, when the treadway surface is loaded midway between rollers, with 25 lbs. weight concentrated on a cylindrical footpiece 2 inches long by 1 inch in diameter and placed with its long axis across the belt.

2.22.42.1.12 **Edge Support**

On edge supported belts, the treadway belt is transversely rigid and is supported by rollers along its edges. With the belt tensioned through the take-up system, the permissible slope of a straight line from the top of a treadway rib adjacent to the centerline of the treadway to the top of a treadway rib adjacent to the balustrade (in a plane perpendicular to the path of the treadway) shall not exceed 3% when the treadway is loaded with a 150 lb. weight on a 6 inch by 10 inch plate located on the centerline of the treadway, with the 10 inch dimension in the direction of treadway travel.

2.22.42.1.13 **Threshold Plates**

Examine and repair the threshold plates. The threshold plate shall maintain a setting to be meshed into the grooves in the treadway surface so the points of the teeth are always below the upper surface of the treadway.

2.22.42.1.14 **Illumination**

Examine and repair the lighting to be adequate and uniform at the landings. Landings shall be illuminated with light intensity of not less than 5 foot candles. The illumination shall be of uniform intensity and shall not contrast materially with that of the surrounding area.

2.22.42.1.15 **Operation**

Examine and adjust the moving walk in each direction of travel for a smooth operation. Correct any excessive noise or vibration. Test each emergency stop button in each direction.

2.22.42.1.16 **Skirt to Treadway Clearance**

Examine the skirt panel for excessive clearance. The clearance between treadway and adjacent skirt panel shall be maintained to be not more than 1/4 inch at either side.

2.22.42.1.17 **Start Switch**

Examine the key-operated switch in the run position. If the key can be left in the run position or removed in the run position, test the emergency stop buttons to determine they will function properly and the moving walkway will not restart when an emergency stop button is released. Where automatic starting devices are provided, they shall be maintained to be nonfunctional after the emergency stop button is released.

2.22.42.2 **PERIODIC INSPECTION AND TESTS**

2.22.42.2.1 **Machinery Space**

The Contractor shall examine and repair the equipment to keep machinery space equipped for illumination of not less than 10 foot candles and clean and free of oil and debris.

2.22.42.2.2 **Control**

Examine controller and repair as needed contacts of relays and all electrical connections, fuses , driving machine, disconnect switch or circuit breaker number to correspond to the number of the driving machine.

2.22.42.2.3 **Wiring**

Examine all electrical wiring for damage. Repair or replace as needed all damaged conductors and conduits.

2.22.42.2.4 **Drive Machine**

Examine the motor to maintain clean, properly lubricated and in good operation condition including the machine fastenings and bearing caps, brake, safety devices. Repair or replace as needed excessive backlash drive gears sprockets and lubrication broken-chain devices and V-belts.

2.22.42.2.5 **Speed Governor**

Examine and adjust or repair as needed, clean and lubricate.

2.22.42.2.6 **Pallet Chain**

Examine and adjust or repair as needed the pallet chain and lubricate.

2.22.42.2.7 **Broken Treadway Device**

Examine and adjust or repair as needed the belt pallet type or pallet type treadways a broken treadway device.

2.22.42.2.8 **Speed Test**

On moving walks with DC driving machine motors perform a speed test with no load on the treadway, measure with a tachometer and record the "no load" speed in feet per minute. Adjust speed as needed to meet rated requirements.

2.22.42.2.9 **Rolling Shutters**

Where rolling shutters are used to protect floor openings, tests the operation of the shutter both manually and automatically. Check the manual means, such as a hand crank and determine that it is readily accessible and visible. If power operated, test the operation of the sensitive leading edge of the shutter to determine that application of a force not exceeding 20 lbs. will stop the shutter and cause it to reverse for a distance of approximately 6 in.; and that following the removal of the force the shutter will resume its closing motion until the opening is fully closed.

On this test, the initial movement of the shutter should cause the power circuit to the moving walk driving motor and brake to open and stop the moving walk and prevent its further operation until the shutter is fully retracted.

2.22.42.2.9.1 **Public Address Warning System**

The public address warning system may or may not be under warranty and consists of a message player, amplifier, loudspeakers and a triggering mechanism to announce messages at each end of the walkway. System shall be examined, tested and repaired for proper operation and audio quality.

2.22.42.3 **MAINTENANCE: MOVING WALKWAY PERFORMANCE**

2.22.42.3.1 During the first three months of the contract, and for the first three months after a future piece of equipment is added to the bidders maintenance, adjust the equipment so the minimum standards of performance set out below are met and maintain these standards throughout the term of the contract. Examine all safety circuits for proper functioning. Align all pallets to prevent the pallet treads from hitting the combplate fingers and skirt panels.

2.22.42.3.2 Maintain the clearances in accordance with the requirements of the inspecting authorities. Examine and adjust the pallet chain tension to prevent sagging or buckling of the chain.

2.22.42.3.3 Prevent the pallets from coming in contact with each other.

2.22.42.3.4 Maintain a constant distance between pallet axles and exposed pallet. Maintain the handrails at a proper, constant tension, to prevent excessive wear.

2.22.42.3.5 Operate the handrails in synchronism with the moving pallets.

2.22.42.3.6 Adjust the equipment so there is no slippage of the handrail.

2.22.42.3.7 Adjust the equipment to be capable of moving its rated load at its rated speed.

2.22.42.4 **MAINTENANCE: FREQUENCY**

2.22.42.4.1 Perform routine maintenance examinations per following minimum schedule.

2.22.42.5 **MAINTENANCE: TWICE PER MONTH EXAMINATIONS**

Perform the following duties at least twice per month:

2.22.42.5.1 Ride the moving walkway and observe the operation of the pallets and handrails for smoothness and noise.

2.22.42.5.2 Examine combplates for broken fingers and replace where necessary.

2.22.42.5.3 Examine the clearance between the pallet treads and combplate fingers and between the pallet treads and skirt panels. Should clearances exceed the maximum allowed by the inspection authorities immediate action must be taken to correct the problem.

2.22.42.5.4 Examine all controller relays for proper contact and excessive heating.

2.22.42.5.5 Clean the glass, stainless steel trimplates and machine parts. Examine the machine bearings for excessive heating and observe the brake action. Examine the oil level and examine for oil leaks.

2.22.42.5.6 Ride each pallet and examine for bumps or broken treads. Replace as required. Pallets and treads are not covered under warranty.

2.22.42.5.7 Press each stop button and examine for proper stopping distance. Adjust brake if required.

2.22.42.5.8 Examine pallet chain for proper tension and lubricate.

2.22.42.5.9 Clean sprockets.

2.22.42.5.10 Clean top and bottom truss pans.

2.22.42.5.11 Examine pallet demarcation lights. Relamp as required.

2.22.42.5.12 Examine safety signs. Replace as required.

2.22.42.5.13 Examine operation of public address warning system. Repair as required.

2.22.42.6 **MAINTENANCE - SEMI-ANNUAL EXAMINATIONS AND TESTING**

Perform the following duties once every six months:

2.22.42.6.1 Trip governor by hand. Examine all parts of the mechanism for freeness. Clean and lubricate as required.

2.22.42.6.2 Remove the machine inspection cover and examine the gear teeth for wear. Adjust as required.

2.22.42.7 **MAINTENANCE - ANNUAL EXAMINATIONS AND TESTING**

Perform the following duties at least once every twelve months.

2.22.42.7.1 Thoroughly clean and inspect all pallet rollers and pallet chains and handrails for wear and replace as needed.

2.22.42.7.2 Thoroughly clean the truss, tracks and entire drip pan.

2.22.42.7.3 Clean and examine all controller equipment for worn parts and replace if required. Examine the power wiring connections for tightness with particular attention to the overload relay wire connections.

2.22.42.8 **MAINTENANCE: SPARE PARTS**

2.22.42.8.1 Keep the following spare parts dedicated to each unit on site.

2.22.42.8.2 Two pallet trail rollers.

2.22.42.8.3 Two pallet chain rollers.

2.22.42.8.4 Two control fuses of each size.

2.22.42.8.5 One complete set of combplate fingers.

2.22.42.8.6 One set of replacement parts for relays.

2.22.42.8.7 All necessary lubricants and cleaning agents.

2.23 SCHEDULE B - BAGGAGE CONVEYOR SYSTEM

2.23.1 SCOPE

2.23.1.1 The Baggage Systems Maintenance for this system is to include the furnishing of all necessary supervision, labor, transportation, materials, services and equipment required to provide preventive maintenance and repair services for:

2.23.2 SYSTEM DESCRIPTION

2.23.2.1 The baggage systems covered by these specifications are listed in the following sections. Equipment noted as **"FUTURE"** could be added to the contract. Contractor shall not perform any work on any item designated "future" unless directed, in writing, by the Airport Maintenance Manager.

2.23.2.2 **A EAST TERMINAL:**

A EAST TERMINAL BAGGAGE CONVEYOR SYSTEM		
Unit No.	**Feeder to Claim Unit Carousel**	**Device Type**
B-1-1	Claim Unit No. 1	N/A
B-1-2	Claim Unit No. 1	N/A
B-1-3	Claim Unit No. 1	N/A
B-1-4	Claim Unit No. 1	N/A
B-1-5	Claim Unit No. 1	N/A
B-1-6	Claim Unit No. 1	N/A
B-2-1	Claim Unit No. 2	N/A
B-2-2	Claim Unit No. 2	N/A
B-2-3	Claim Unit No. 2	N/A
B-2-4	Claim Unit No. 2	N/A
B-2-5	Claim Unit No. 2	N/A
B-2-6	Claim Unit No. 2	N/A
B-3-1	Claim Unit No. 3	N/A
B-3-2	Claim Unit No. 3	N/A
B-3-3	Claim Unit No. 3	N/A
B-3-4	Claim Unit No. 3	N/A
B-3-5	Claim Unit No. 3	N/A
B-3-6	Claim Unit No. 3	N/A

B-3-7	Claim Unit No. 3	N/A
B-4-1	Claim Unit No. 4	N/A
B-4-2	Claim Unit No. 4	N/A
B-4-3	Claim Unit No. 4	N/A
B-4-4	Claim Unit No. 4	N/A
B-4-5	Claim Unit No. 4	N/A
B-4-6	Claim Unit No. 4	N/A
B-7-1	Pass. Assist. Count./Outbound	N/A
B-7-2	Pass. Assist. Count./Outbound	N/A
B-7-3	Pass. Assist. Count./Outbound	N/A
B-7-4	Pass. Assist. Count./Outbound	N/A
B-7-5	Pass. Assist. Count./Outbound	N/A
B-7-6	Pass. Assist. Count./Outbound	N/A
B-7-7	Pass. Assist. Count./Outbound	N/A
B-7-8	Pass. Assist. Count./Outbound	N/A
B-7-9	Pass. Assist. Count./Outbound	N/A
B-7-10	Pass. Assist. Count./Outbound	N/A
B-7-11	Pass. Assist. Count./Outbound	N/A
B-7-12	Pass. Assist. Count./Outbound	N/A
B-7-13	Pass. Assist. Count./Outbound	N/A
B-7-14	Pass. Assist. Count./Outbound	N/A
B-7-15	Pass. Assist. Count./Outbound	N/A
B-7-16	Pass. Assist. Count./Outbound	N/A
B-8-1	Pass. Assist. Count./Outbound	N/A
B-8-2	Pass. Assist. Count./Outbound	N/A
B-8-3	Pass. Assist. Count./Outbound	N/A
B-8-4	Pass. Assist. Count./Outbound	N/A
B-8-5	Pass. Assist. Count./Outbound	N/A
B-8-6	Pass. Assist. Count./Outbound	N/A
B-8-7	Pass. Assist. Count./Outbound	N/A
B-8-8	Pass. Assist. Count./Outbound	N/A
B-8-9	Pass. Assist. Count./Outbound	N/A
B-8-10	Pass. Assist. Count./Outbound	N/A
B-8-11	Pass. Assist. Count./Outbound	N/A
B-8-12	Pass. Assist. Count./Outbound	N/A
B-8-13	Pass. Assist. Count./Outbound	N/A
B-8-14	Pass. Assist. Count./Outbound	N/A
B-8-15	Pass. Assist. Count./Outbound	N/A
B-8-16	Pass. Assist. Count./Outbound	N/A
B-8-17	Pass. Assist. Count./Outbound	N/A
T-1-1	Tkt Bldg Counter/Outbound	N/A
T-1-2	Tkt Bldg Counter/Outbound	N/A
T-1-3	Tkt Bldg Counter/Outbound	N/A
T-1-4	Tkt Bldg Counter/Outbound	N/A
T-1-5	Tkt Bldg Counter/Outbound	N/A

T-2-1	Tkt Bldg Counter/Outbound	N/A
T-2-2	Tkt Bldg Counter/Outbound	N/A
T-2-3	Tkt Bldg Counter/Outbound	N/A
T-2-4	Tkt Bldg Counter/Outbound	N/A
T-2-5	Tkt Bldg Counter/Outbound	N/A
T-3-1	Tkt Bldg Counter/Outbound	N/A
T-3-2	Tkt Bldg Counter/Outbound	N/A
T-3-3	Tkt Bldg Counter/Outbound	N/A
T-3-4	Tkt Bldg Counter/Outbound	N/A
T-3-5	Tkt Bldg Counter/Outbound	N/A
T-4-1	Tkt Bldg Counter/Outbound	N/A
T-4-2	Tkt Bldg Counter/Outbound	N/A
T-4-3	Tkt Bldg Counter/Outbound	N/A
T-4-4	Tkt Bldg Counter/Outbound	N/A
T-4-5	Tkt Bldg Counter/Outbound	N/A

2.23.2.2.1 **TERMINAL A EAST:**

2.1.1 **ARRIVALS BAGGAGE CLAIM SYSTEMS** –

Consists of four inclined articulated plate claim devices identified as Claim Units No's. 1, 4, 5, & 6, fed by a series of conveyer trains consisting of horizontal and inclined slider bed conveyors, inclined powered spiral curves and power turns identified as:

2.23.2.2.1.1.1 **Conveyors**

B-1-1 thru B-1-6 Feeding Claim Unit - No. 6.

2.23.2.2.1.1.2 **Conveyors**

B-2-1 thru B-2-6 Feeding Claim Unit - No. 5.

2.23.2.2.1.1.3 **Conveyors**

B-3-1 thru B-3-7 Feeding Claim Unit – No. 4.

2.23.2.2.1.1.4 **Conveyors**

B-4-1 thru B-4-6 Feeding Claim Unit No.1.

2.23.2.2.1 **OUTBOUND BAGGAGE MAKE-UP**

SYSTEM - Consists of three series of horizontal slider bed conveyors and power turns located in the Ticketing Building connecting the Ticket Counter/Bag Check-in Area to the Outbound Bag Make-up Room. Identified as:

2.23.2.2.1.1 **Conveyors**

T-1-1 thru T-1-5.

2.23.2.2.1.2 **Conveyors**

T-2-1 thru T-2-5.

2.23.2.2.1.3 **Conveyors**

T-3-1 thru T-3-5.

2.23.2.2.1.4 **Conveyors**

T-4-1 thru T-4-5.

2.23.2.3 **A WEST TERMINAL**

A WEST TERMINAL BAGGAGE CONVEYOR SYSTEM				
Unit No.	**Feeder to Claim Unit Carousel**	**Device Type**	**Special Devices**	DRW #
C4-03	N/A	N/A	N/A	B-0120
C4-03A	N/A	N/A	N/A	B-0120
C4-04	N/A	N/A	N/A	B-0120
C4-04A	N/A	N/A	N/A	B-0120
C4-05	N/A	N/A	N/A	B-0120
C4-06	N/A	N/A	N/A	B-0120
C4-07	N/A	N/A	N/A	B-0120
CA/RA2-06	Make-Up Unit 6	N/A	N/A	B-3214
CD-01	Claim Device 1	Claim Device	N/A	B-0309
CD-02	Claim Device 2	Claim Device	N/A	B-0309
CD-03	Claim Device 3	Claim Device	N/A	B-0310
CD-04	Claim Device 4	Claim Device	N/A	B-0310
CD-05	Claim Device 5	Claim Device	N/A	B-0310
CD-06	Claim Device 6	Claim Device	N/A	B-0310
CD-07	Claim Device 7	Claim Device	N/A	B-0311
CD-08	Claim Device 8	Claim Device	N/A	B-0311
CS/CD-1A	Claim Device 1	Claim Device	Control Station	B-3309
CS/CD-1B	Claim Device 1	Claim Device	Control Station	B-3309
CS/CD-1C	Claim Device 1	Claim Device	Control Station	B-3309
CS/CD-1D	Claim Device 1	Claim Device	Control Station	B-3309
CS/CD-1E	Claim Device 1	Claim Device	Control Station	B-3309
CS/CD-1F	Claim Device 1	Claim Device	Control Station	B-3309
CS/CD-2A	Claim Device 2	Claim Device	Control Station	B-3309
CS/CD-2B	Claim Device 2	Claim Device	Control Station	B-3309
CS/CD-2C	Claim Device 2	Claim Device	Control Station	B-3309
CS/CD-2D	Claim Device 2	Claim Device	Control Station	B-3309
CS/CD-2E	Claim Device 2	Claim Device	Control Station	B-3309
CS/CD-2F	Claim Device 2	Claim Device	Control Station	B-3309
CS/CD-3A	Claim Device 3	Claim Device	Control Station	B-3310
CS/CD-3B	Claim Device 3	Claim Device	Control Station	B-3310
CS/CD-3C	Claim Device 3	Claim Device	Control Station	B-3310
CS/CD-3D	Claim Device 3	Claim Device	Control Station	B-3310
CS/CD-3E	Claim Device 3	Claim Device	Control Station	B-3310
CS/CD-3F	Claim Device 3	Claim Device	Control Station	B-3310
CS/CD-4A	Claim Device 4	Claim Device	Control Station	B-3310
CS/CD-4B	Claim Device 4	Claim Device	Control Station	B-3310
CS/CD-4C	Claim Device 4	Claim Device	Control Station	B-3310
CS/CD-4D	Claim Device 4	Claim Device	Control Station	B-3310
CS/CD-4E	Claim Device 4	Claim Device	Control Station	B-3310
CS/CD-4F	Claim Device 4	Claim Device	Control Station	B-3310
CS/CD-5A	Claim Device 5	Claim Device	Control Station	B-3310

CS/CD-5B	Claim Device 5	Claim Device	Control Station	B-3310
CS/CD-5C	Claim Device 5	Claim Device	Control Station	B-3310
CS/CD-5D	Claim Device 5	Claim Device	Control Station	B-3310
CS/CD-5E	Claim Device 5	Claim Device	Control Station	B-3310
CS/CD-5F	Claim Device 5	Claim Device	Control Station	B-3310
CS/CD-6A	Claim Device 6	Claim Device	Control Station	B-3310
CS/CD-6B	Claim Device 6	Claim Device	Control Station	B-3310
CS/CD-6C	Claim Device 6	Claim Device	Control Station	B-3310
CS/CD-6D	Claim Device 6	Claim Device	Control Station	B-3310
CS/CD-6E	Claim Device 6	Claim Device	Control Station	B-3310
CS/CD-6F	Claim Device 6	Claim Device	Control Station	B-3310
CS/CD-7A	Claim Device 7	Claim Device	Control Station	B-3311
CS/CD-7B	Claim Device 7	Claim Device	Control Station	B-3311
CS/CD-7C	Claim Device 7	Claim Device	Control Station	B-3311
CS/CD-7D	Claim Device 7	Claim Device	Control Station	B-3311
CS/CD-7E	Claim Device 7	Claim Device	Control Station	B-3311
CS/CD-7F	Claim Device 7	Claim Device	Control Station	B-3311
CS/CD-8A	Claim Device 8	Claim Device	Control Station	B-3311
CS/CD-8B	Claim Device 8	Claim Device	Control Station	B-3311
CS/CD-8C	Claim Device 8	Claim Device	Control Station	B-3311
CS/CD-8D	Claim Device 8	Claim Device	Control Station	B-3311
CS/CD-8E	Claim Device 8	Claim Device	Control Station	B-3311
CS/CD-8F	Claim Device 8	Claim Device	Control Station	B-3311
CS/CTX1-01	Transfer Conveyor 1	N/A	Control Station	B-3103-P2
CS/CTX1-06	Transfer Conveyor 1	N/A	Control Station	B-3103-P2
CS/CTX1-13	Transfer Conveyor 1	N/A	Control Station	B-3103-P2
CS/CTX1-13B	Transfer Conveyor 1	N/A	Control Station	B-3103-P2
CS/CTX1-15	Transfer Conveyor 1	N/A	Control Station	B-3103-P2
CS/CTX1-15B	Transfer Conveyor 1	N/A	Control Station	B-3103-P2
CS/CTX1-15C	Transfer Conveyor 1	N/A	Control Station	B-3103-P2
CS/CTX1-16	Transfer Conveyor 1	N/A	Control Station	B-3103-P2
CS/CTX1-20	Transfer Conveyor 1	N/A	Control Station	B-3103-P2
CS/CTX1-22	Transfer Conveyor 1	N/A	Control Station	B-3103-P2
CS/CTX2-01	Transfer Conveyor 2	N/A	Control Station	B-3103-P2
CS/CTX2-06	Transfer Conveyor 2	N/A	Control Station	B-3103-P2
CS/CTX2-13	Transfer Conveyor 2	N/A	Control Station	B-3103-P2
CS/CTX2-13B	Transfer Conveyor 2	N/A	Control Station	B-3103-P2
CS/CTX2-15	Transfer Conveyor 2	N/A	Control Station	B-3103-P2
CS/CTX2-15B	Transfer Conveyor 2	N/A	Control Station	B-3103-P2
CS/CTX2-15C	Transfer Conveyor 2	N/A	Control Station	B-3103-P2
CS/CTX2-19	Transfer Conveyor 2	N/A	Control Station	B-3103-P2
CS/CTX2-22	Transfer Conveyor 2	N/A	Control Station	B-3103-P2
CS/CTX3-01	Transfer Conveyor 3	N/A	Control Station	B-3103-P2
CS/CTX3-03	Transfer Conveyor 3	N/A	Control Station	B-3103-P2
CS/CTX3-05	Transfer Conveyor 3	N/A	Control Station	B-3103-P2

CS/CTX3-08	Transfer Conveyor 3	N/A	Control Station	B-3103-P2
CS/CTX3-08B	Transfer Conveyor 3	N/A	Control Station	B-3103-P2
CS/CTX3-10	Transfer Conveyor 3	N/A	Control Station	B-3103-P2
CS/CTX3-10B	Transfer Conveyor 3	N/A	Control Station	B-3103-P2
CS/CTX3-10C	Transfer Conveyor 3	N/A	Control Station	B-3103-P2
CS/CTX3-12A	Transfer Conveyor 3	N/A	Control Station	B-3103-P2
CS/CTX3-12B	Transfer Conveyor 3	N/A	Control Station	B-3103-P2
CS/CTX3-14A	Transfer Conveyor 3	N/A	Control Station	B-3103-P2
CS/CTX3-14B	Transfer Conveyor 3	N/A	Control Station	B-3103-P2
CS/CTX3-17	Transfer Conveyor 3	N/A	Control Station	B-3103-P2
CS/CTX3-19	Transfer Conveyor 3	N/A	Control Station	B-3103-P2
CS/CTX3-P1	Transfer Conveyor 3	N/A	Control Station	B-3103-P2
CS/CTX4-01	Transfer Conveyor 4	N/A	Control Station	B-3103-P2
CS/CTX4-04	Transfer Conveyor 4	N/A	Control Station	B-3103-P2
CS/CTX4-09	Transfer Conveyor 4	N/A	Control Station	B-3103-P2
CS/CTX4-11	Transfer Conveyor 4	N/A	Control Station	B-3103-P2
CS/CTX4-11B	Transfer Conveyor 4	N/A	Control Station	B-3103-P2
CS/CTX4-11C	Transfer Conveyor 4	N/A	Control Station	B-3103-P2
CS/CTX4-12	Transfer Conveyor 4	N/A	Control Station	B-3103-P2
CS/CTX4-16	Transfer Conveyor 4	N/A	Control Station	B-3103-P2
CS/CTX4-18	Transfer Conveyor 4	N/A	Control Station	B-3103-P2
CS/CTX4-9B	Transfer Conveyor 4	N/A	Control Station	B-3103-P2
CS/CTX4-P1	Transfer Conveyor 4	N/A	Control Station	B-3103-P2
CS/EDS1-01	N/A	N/A	Control Station	B-3123-P2
CS/EDS1-04	N/A	N/A	Control Station	B-3123-P2
CS/EDS1-06	N/A	N/A	Control Station	B-3123-P2
CS/EDS1-08A	N/A	N/A	Control Station	B-3123-P2
CS/EDS1-08B	N/A	N/A	Control Station	B-3123-P2
CS/EDS1-10	N/A	N/A	Control Station	B-3123-P2
CS/EDS1-13	N/A	N/A	Control Station	B-3123-P2
CS/EDS2-01	N/A	N/A	Control Station	B-3123-P2
CS/EDS2-04	N/A	N/A	Control Station	B-3123-P2
CS/EDS2-07	N/A	N/A	Control Station	B-3123-P2
CS/EDS2-09	N/A	N/A	Control Station	B-3123-P2
CS/EDS2-10	N/A	N/A	Control Station	B-3123-P2
CS/EDS2-12	N/A	N/A	Control Station	B-3123-P2
CS/EDS2-15	N/A	N/A	Control Station	B-3123-P2
CS/EDS3-01	N/A	N/A	Control Station	B-3123-P2
CS/EDS3-03	N/A	N/A	Control Station	B-3123-P2
CS/EDS3-06	N/A	N/A	Control Station	B-3123-P2
CS/EDS3-09	N/A	N/A	Control Station	B-3123-P2
CS/EDS3-13A	N/A	N/A	Control Station	B-3123-P2
CS/EDS3-13B	N/A	N/A	Control Station	B-3123-P2
CS/EDS3-15	N/A	N/A	Control Station	B-3123-P2

CS/EDS3-17	N/A	N/A	Control Station	B-3123-P2
CS/EDS3-19	N/A	N/A	Control Station	B-3123-P2
CS/EDS3-21	N/A	N/A	Control Station	B-3123-P2
CS/ETD-01	N/A	N/A	Control Station	B-3123-P2
CS/ETD-03	N/A	N/A	Control Station	B-3123-P2
CS/ETD-04	N/A	N/A	Control Station	B-3123-P2
CS/IB1-01A	Claim Device 1	N/A	Control Station	B-3104
CS/IB1-01B	Claim Device 1	N/A	Control Station	B-3104
CS/IB1-01C	Claim Device 1	N/A	Control Station	B-3104
CS/IB1-02	Claim Device 1	N/A	Control Station	B-3104
CS/IB1-05	Claim Device 1	N/A	Control Station	B-3105-P1
CS/IB1-07	Claim Device 1	N/A	Control Station	B-3105-P1
CS/IB1-10	Claim Device 1	N/A	Control Station	B-3104
CS/IB1-12	Claim Device 1	N/A	Control Station	B-3205
CS/IB1-14	Claim Device 1	N/A	Control Station	B-3205
CS/IB1-16	Claim Device 1	N/A	Control Station	B-3209
CS/IB1-17	Claim Device 1	N/A	Control Station	B-3309
CS/IB2-01A	Claim Device 2	N/A	Control Station	B-3104
CS/IB2-01B	Claim Device 2	N/A	Control Station	B-3104
CS/IB2-01C	Claim Device 2	N/A	Control Station	B-3104
CS/IB2-01D	Claim Device 2	N/A	Control Station	B-3104
CS/IB2-02	Claim Device 2	N/A	Control Station	B-3104
CS/IB2-05	Claim Device 2	N/A	Control Station	B-3105-P1
CS/IB2-07	Claim Device 2	N/A	Control Station	B-3105-P1
CS/IB2-10	Claim Device 2	N/A	Control Station	B-3205
CS/IB2-12	Claim Device 2	N/A	Control Station	B-3205
CS/IB2-16	Claim Device 2	N/A	Control Station	B-3205
CS/IB2-18	Claim Device 2	N/A	Control Station	B-3209
CS/IB2-19	Claim Device 2	N/A	Control Station	B-3309
CS/IB3-01A	Claim Device 3	N/A	Control Station	B-3104
CS/IB3-01B	Claim Device 3	N/A	Control Station	B-3104
CS/IB3-01C	Claim Device 3	N/A	Control Station	B-3104
CS/IB3-01D	Claim Device 3	N/A	Control Station	B-3104
CS/IB3-02	Claim Device 3	N/A	Control Station	B-3104
CS/IB3-05	Claim Device 3	N/A	Control Station	B-3105-P1
CS/IB3-10	Claim Device 3	N/A	Control Station	B-3205
CS/IB3-12	Claim Device 3	N/A	Control Station	B-3205
CS/IB3-16	Claim Device 3	N/A	Control Station	B-3206
CS/IB3-20	Claim Device 3	N/A	Control Station	B-3210
CS/IB3-21	Claim Device 3	N/A	Control Station	B-3310
CS/IB4-01A	Claim Device 4	N/A	Control Station	B-3105-P1
CS/IB4-01B	Claim Device 4	N/A	Control Station	B-3105-P1
CS/IB4-01C	Claim Device 4	N/A	Control Station	B-3105-P1
CS/IB4-01D	Claim Device 4	N/A	Control Station	B-3105-P1
CS/IB4-02	Claim Device 4	N/A	Control Station	B-3105-P1

CS/IB4-05	Claim Device 4	N/A	Control Station	B-3105-P1
CS/IB4-09	Claim Device 4	N/A	Control Station	B-3205
CS/IB4-11	Claim Device 4	N/A	Control Station	B-3205
CS/IB4-15	Claim Device 4	N/A	Control Station	B-3206
CS/IB4-19	Claim Device 4	N/A	Control Station	B-3206
CS/IB4-22	Claim Device 4	N/A	Control Station	B-3210
CS/IB4-24	Claim Device 4	N/A	Control Station	B-3310
CS/IB5-01A	Claim Device 5	N/A	Control Station	B-3107-P1
CS/IB5-01B	Claim Device 5	N/A	Control Station	B-3107-P1
CS/IB5-01C	Claim Device 5	N/A	Control Station	B-3107-P1
CS/IB5-01D	Claim Device 5	N/A	Control Station	B-3107-P1
CS/IB5-02	Claim Device 5	N/A	Control Station	B-3107-P1
CS/IB5-04	Claim Device 5	N/A	Control Station	B-3207
CS/IB5-06	Claim Device 5	N/A	Control Station	B-3207
CS/IB5-10	Claim Device 5	N/A	Control Station	B-3206
CS/IB5-14	Claim Device 5	N/A	Control Station	B-3206
CS/IB5-17	Claim Device 5	N/A	Control Station	B-3210
CS/IB5-18	Claim Device 5	N/A	Control Station	B-3310
CS/IB6-01A	Claim Device 6	N/A	Control Station	B-3107-P1
CS/IB6-01B	Claim Device 6	N/A	Control Station	B-3107-P1
CS/IB6-01C	Claim Device 6	N/A	Control Station	B-3107-P1
CS/IB6-01D	Claim Device 6	N/A	Control Station	B-3107-P1
CS/IB6-04	Claim Device 6	N/A	Control Station	B-3107-P1
CS/IB6-07	Claim Device 6	N/A	Control Station	B-3207
CS/IB6-09	Claim Device 6	N/A	Control Station	B-3207
CS/IB6-13	Claim Device 6	N/A	Control Station	B-3206
CS/IB6-15	Claim Device 6	N/A	Control Station	B-3206
CS/IB6-17	Claim Device 6	N/A	Control Station	B-3210
CS/IB6-18	Claim Device 6	N/A	Control Station	B-3310
CS/IB7-06	Claim Device 7	N/A	Control Station	B-3107-P1
CS/IB7-09	Claim Device 7	N/A	Control Station	B-3207
CS/IB7-11	Claim Device 7	N/A	Control Station	B-3207
CS/IB7-15	Claim Device 7	N/A	Control Station	B-3207
CS/IB7-17	Claim Device 7	N/A	Control Station	B-3211
CS/IB7-18	Claim Device 7	N/A	Control Station	B-3311
CS/IB8-06	Claim Device 8	N/A	Control Station	B-3107-P1
CS/IB8-09	Claim Device 8	N/A	Control Station	B-3207
CS/IB8-11	Claim Device 8	N/A	Control Station	B-3207
CS/IB8-13	Claim Device 8	N/A	Control Station	B-3207
CS/IB8-15	Claim Device 8	N/A	Control Station	B-3211
CS/IB8-16	Claim Device 8	N/A	Control Station	B-3311
CS/MCMU1	N/A	N/A	Control Station	B-3102
CS/MCMU2	N/A	N/A	Control Station	B-3102
CS/MCMU3	N/A	N/A	Control Station	B-3102

CS/MCP-CTX1	Transfer Converyor 1	Motor Control Panel	Control Station	B-3102
CS/MCP-CTX2	Transfer Conveyor 2	Motor Control Panel	Control Station	B-3102
CS/MCP-IB1	Claim Device 1	Motor Control Panel	Control Station	B-3104
CS/MCP-IB2	Claim Device 2	Motor Control Panel	Control Station	B-3104
CS/MCP-IB3	Claim Device 3	Motor Control Panel	Control Station	B-3104
CS/MCP-IB4	Claim Device 4	Motor Control Panel	Control Station	B-3105-P1
CS/MCP-IB5	Claim Device 5	Motor Control Panel	Control Station	B-3107-P1
CS/MCP-IB7	Claim Device 7	Motor Control Panel	Control Station	B-3107-P1
CS/MCP-IB8	Claim Device 8	Motor Control Panel	Control Station	B-3107-P1
CS/MCP-MU4	Make-Up Unit	Motor Control Panel	Control Station	B-3101
CS/MCP-MU5	Make-Up Unit	Motor Control Panel	Control Station	B-3101
CS/MCP-OS1	Oversized Baggage	Motor Control Panel	Control Station	B-3106-P1
CS/MCP-RA1	Re-Checked Baggage	Motor Control Panel	Control Station	B-3108
CS/MCP-RC1a	Re-Check Baggage	Motor Control Panel	Control Station	B-3108
CS/MCP-RC1b	Re-Check Baggage	Motor Control Panel	Control Station	B-3121
CS/MCP-RC2	Re-Check Baggage	Motor Control Panel	Control Station	B-3108
CS/MCP-TC2	Ticket Counter 2	Motor Control Panel	Control Station	B-3105-P1
CS/MCP-TC3	Ticket Counter 3	Motor Control Panel	Control Station	B-3105-P1
CS/ME1-01	Manual Encoding 1	N/A	Control Station	B-3103-P1
CS/ME1-03	Manual Encoding 1	N/A	Control Station	B-3103-P1
CS/ME1-05	Manual Encoding 1	N/A	Control Station	B-3103-P1
CS/ME1-07	Manual Encoding 1	N/A	Control Station	B-3103-P1
CS/ME1-09	Manual Encoding 1	N/A	Control Station	B-3103-P1
CS/ME1-17	Manual Encoding 1	N/A	Control Station	B-3103-P1
CS/ME1-18	Manual Encoding 1	N/A	Control Station	B-3103-P1
CS/ME1-21	Manual Encoding 1	N/A	Control Station	B-3103-P1
CS/ME1-24	Manual Encoding 1	N/A	Control Station	B-3103-P1
CS/ME1-P1	Manual Encoding 1	N/A	Control Station	B-3103-P1
CS/ME2-01	Manual Encoding 2	N/A	Control Station	B-3103-P1

CS/ME2-03	Manual Encoding 2	N/A	Control Station	B-3103-P1
CS/ME2-05A	Manual Encoding 2	N/A	Control Station	B-3103-P1
CS/ME2-05B	Manual Encoding 2	N/A	Control Station	B-3103-P1
CS/ME2-07	Manual Encoding 2	N/A	Control Station	B-3103-P1
CS/ME2-09	Manual Encoding 2	N/A	Control Station	B-3103-P1
CS/ME2-16	Manual Encoding 2	N/A	Control Station	B-3103-P1
CS/ME2-18	Manual Encoding 2	N/A	Control Station	B-3103-P1
CS/ME2-20	Manual Encoding 2	N/A	Control Station	B-3103-P1
CS/ME2-24	Manual Encoding 2	N/A	Control Station	B-3103-P1
CS/ME2-P1	Manual Encoding 2	N/A	Control Station	B-3103-P1
CS/ME3-04	Manual Encoding 3	N/A	Control Station	B-3123-P2
CS/ME3-07	Manual Encoding 3	N/A	Control Station	B-3123-P2
CS/ME3-09	Manual Encoding 3	N/A	Control Station	B-3123-P2
CS/ME3-10	Manual Encoding 3	N/A	Control Station	B-3123-P2
CS/ML1-03	Make-Up Units 1 through 5	N/A	Control Station	B-3102
CS/ML1-04	Make-Up Units 1 through 5	N/A	Control Station	B-3102
CS/ML1-05	Make-Up Units 1 through 5	N/A	Control Station	B-3102
CS/ML1-07	Make-Up Units 1 through 5	N/A	Control Station	B-3101
CS/ML1-08	Make-Up Units 1 through 5	N/A	Control Station	B-3101
CS/ML1-09	Make-Up Units 1 through 5	N/A	Control Station	B-3101
CS/ML1-VS	Make-Up Units 1 through 5	N/A	Control Station	B-3103-P2
CS/ML2-01S	Make-Up Units 1 through 5	N/A	Control Station	B-3101
CS/ML2-04	Make-Up Units 1 through 5	N/A	Control Station	B-3102
CS/ML2-05	Make-Up Units 1 through 5	N/A	Control Station	B-3102
CS/ML2-06	Make-Up Units 1 through 5	N/A	Control Station	B-3102
CS/ML2-07	Make-Up Units 1 through 5	N/A	Control Station	B-3101
CS/ML2-08	Make-Up Units 1 through 5	N/A	Control Station	B-3101
CS/ML2-09	Make-Up Units 1 through 5	N/A	Control Station	B-3101
CS/ML2-13	Make-Up Units 1 through 5	N/A	Control Station	B-3101
CS/ML2-VS	Make-Up Units 1 through 5	N/A	Control Station	B-3103-P2
CS/ML3-01A	Make-Up Units 1 through 5	N/A	Control Station	B-3123-P2

CS/ML3-01B	Make-Up Units 1 through 5	N/A	Control Station	B-3123-P2
CS/ML3-07	Make-Up Units 1 through 5	N/A	Control Station	B-3123-P2
CS/ML3-09	Make-Up Units 1 through 5	N/A	Control Station	B-3123-P2
CS/ML3-11	Make-Up Units 1 through 5	N/A	Control Station	B-3123-P2
CS/ML3-12	Make-Up Units 1 through 5	N/A	Control Station	B-3123-P2
CS/ML3-13	Make-Up Units 1 through 5	N/A	Control Station	B-3123-P2
CS/ML3-15	Make-Up Units 1 through 5	N/A	Control Station	B-3123-P2
CS/ML3-17	Make-Up Units 1 through 5	N/A	Control Station	B-3123-P2
CS/ML3-19	Make-Up Units 1 through 5	N/A	Control Station	B-3123-P2
CS/ML3-21A	Make-Up Units 1 through 5	N/A	Control Station	B-3123-P2
CS/ML3-21B	Make-Up Units 1 through 5	N/A	Control Station	B-3123-P2
CS/ML3-24	Make-Up Units 1 through 5	N/A	Control Station	B-3123-P2
CS/ML3-25	Make-Up Units 1 through 5	N/A	Control Station	B-3123-P2
CS/ML3-27	Make-Up Units 1 through 5	N/A	Control Station	B-3123-P2
CS/ML3-30	Make-Up Units 1 through 5	N/A	Control Station	B-3123-P2
CS/ML3-P1	Make-Up Units 1 through 5	N/A	Control Station	B-3123-P2
CS/ML3-P2	Make-Up Units 1 through 5	N/A	Control Station	B-3123-P2
CS/ML3-P3	Make-Up Units 1 through 5	N/A	Control Station	B-3123-P2
CS/ML3-P4	Make-Up Units 1 through 5	N/A	Control Station	B-3123-P2
CS/ML3-P5	Make-Up Units 1 through 5	N/A	Control Station	B-3123-P2
CS/ML3-P6	Make-Up Units 1 through 5	N/A	Control Station	B-3123-P2
CS/ML3-P7	Make-Up Units 1 through 5	N/A	Control Station	B-3123-P2
CS/ML3-P8	Make-Up Units 1 through 5	N/A	Control Station	B-3123-P2
CS/MS1-01	Make-Up Unit 1	N/A	Control Station	B-3102

CS/MS1-02	Make-Up Unit 1	N/A	Control Station	B-3102
CS/MS1-P1	Make-Up Unit 1	N/A	Control Station	B-3102
CS/MS1-P2	Make-Up Unit 1	N/A	Control Station	B-3102
CS/MS2-01	Make-Up Unit 2	N/A	Control Station	B-3102
CS/MS2-02	Make-Up Unit 2	N/A	Control Station	B-3102
CS/MS2-P1	Make-Up Unit 2	N/A	Control Station	B-3102
CS/MS2-P2	Make-Up Unit 2	N/A	Control Station	B-3102
CS/MS3-01	Make-Up Unit 3	N/A	Control Station	B-3102
CS/MS3-02	Make-Up Unit 3	N/A	Control Station	B-3102
CS/MS3-P1	Make-Up Unit 3	N/A	Control Station	B-3102
CS/MS3-P2	Make-Up Unit 3	N/A	Control Station	B-3102
CS/MS4-01	Make-Up Unit 4	N/A	Control Station	B-3101
CS/MS4-02	Make-Up Unit 4	N/A	Control Station	B-3101
CS/MS4-P1	Make-Up Unit 4	N/A	Control Station	B-3101
CS/MS4-P2	Make-Up Unit 4	N/A	Control Station	B-3101
CS/MS5-01	Make-Up Unit 5	N/A	Control Station	B-3101
CS/MS5-02	Make-Up Unit 5	N/A	Control Station	B-3101
CS/MS5-P1	Make-Up Unit 5	N/A	Control Station	B-3101
CS/MS5-P2	Make-Up Unit 5	N/A	Control Station	B-3101
CS/MS6-01	Make-Up Unit 6	N/A	Control Station	B-3123-P2
CS/MS6-04	Make-Up Unit 6	N/A	Control Station	B-3123-P2
CS/MS7-01	Make-Up Unit 7	N/A	Control Station	B-3123-P2
CS/MS7-03	Make-Up Unit 7	N/A	Control Station	B-3123-P2
CS/MS7-05	Make-Up Unit 7	N/A	Control Station	B-3123-P2
CS/MS8-01	Make-Up Unit 8	N/A	Control Station	B-3123-P2
CS/MS8-03	Make-Up Unit 8	N/A	Control Station	B-3123-P2
CS/MU-01A	Make-Up Unit 1	N/A	Control Station	B-3102
CS/MU-01B	Make-Up Unit 1	N/A	Control Station	B-3102
CS/MU-01C	Make-Up Unit 1	N/A	Control Station	B-3102
CS/MU-01D	Make-Up Unit 1	N/A	Control Station	B-3102
CS/MU-01E	Make-Up Unit 1	N/A	Control Station	B-3102
CS/MU-01F	Make-Up Unit 1	N/A	Control Station	B-3102
CS/MU-02A	Make-Up Unit 2	N/A	Control Station	B-3102
CS/MU-02B	Make-Up Unit 2	N/A	Control Station	B-3102
CS/MU-02C	Make-Up Unit 2	N/A	Control Station	B-3102
CS/MU-02D	Make-Up Unit 2	N/A	Control Station	B-3102
CS/MU-02E	Make-Up Unit 2	N/A	Control Station	B-3102
CS/MU-02F	Make-Up Unit 2	N/A	Control Station	B-3102
CS/MU-03A	Make-Up Unit 3	N/A	Control Station	B-3102
CS/MU-03B	Make-Up Unit 3	N/A	Control Station	B-3102
CS/MU-03C	Make-Up Unit 3	N/A	Control Station	B-3102
CS/MU-03D	Make-Up Unit 3	N/A	Control Station	B-3102
CS/MU-03E	Make-Up Unit 3	N/A	Control Station	B-3102
CS/MU-03F	Make-Up Unit 3	N/A	Control Station	B-3102
CS/MU-4A	Make-Up Unit 4	N/A	Control Station	B-3101

CS/MU-4B	Make-Up Unit 4	N/A	Control Station	B-3101
CS/MU-4C	Make-Up Unit 4	N/A	Control Station	B-3101
CS/MU-4D	Make-Up Unit 4	N/A	Control Station	B-3101
CS/MU-4E	Make-Up Unit 4	N/A	Control Station	B-3101
CS/MU-4F	Make-Up Unit 4	N/A	Control Station	B-3101
CS/MU-5A	Make-Up Unit 5	N/A	Control Station	B-3101
CS/MU-5B	Make-Up Unit 5	N/A	Control Station	B-3101
CS/MU-5C	Make-Up Unit 5	N/A	Control Station	B-3101
CS/MU-5D	Make-Up Unit 5	N/A	Control Station	B-3101
CS/MU-5E	Make-Up Unit 5	N/A	Control Station	B-3101
CS/MU-5F	Make-Up Unit 5	N/A	Control Station	B-3101
CS/OS1-01A	Oversized Baggage	N/A	Control Station	B-3106-P1
CS/OS1-01B	Oversized Baggage	N/A	Control Station	B-3106-P1
CS/OS1-01C	Oversized Baggage	N/A	Control Station	B-3106-P1
CS/OS1-03	Oversized Baggage	N/A	Control Station	B-3106-P1
CS/OS1-05	Oversized Baggage	N/A	Control Station	B-3106-P1
CS/RA1-01A	Re-Check Baggage	N/A	Control Station	B-3311
CS/RA1-01B	Re-Check Baggage	N/A	Control Station	B-3311
CS/RA1-02	Re-Check Baggage	N/A	Control Station	B-3311
CS/RA1-03	Re-Check Baggage	N/A	Control Station	B-3211
CS/RA1-04	Re-Check Baggage	N/A	Control Station	B-3213
CS/RA1-07	Re-Check Baggage	N/A	Control Station	B-3213
CS/RA1-12	Re-Check Baggage	N/A	Control Station	B-3213
CS/RA1-17	Re-Check Baggage	N/A	Control Station	B-3102
CS/RA2-02	Make-Up Unit 6	N/A	Control Station	B-3311
CS/RA2-02A	Make-Up Unit 6	N/A	Control Station	B-3311
CS/RA2-02B	Make-Up Unit 6	N/A	Control Station	B-3311
CS/RA2-03	Make-Up Unit 6	N/A	Control Station	B-3211
CS/RA2-04	Make-Up Unit 6	N/A	Control Station	B-3213
CS/RA2-06	Make-Up Unit 6	N/A	Control Station	B-3213
CS/RA2-09	Make-Up Unit 6	N/A	Control Station	B-3214
CS/RA2-11	Make-Up Unit 6	N/A	Control Station	B-3214
CS/RA2-13	Make-Up Unit 6	N/A	Control Station	B-3108
CS/RA2-16A	Make-Up Unit 6	N/A	Control Station	B-3108
CS/RA2-17	Make-Up Unit 6	N/A	Control Station	B-3108
CS/RA2-22	Make-Up Unit 6	N/A	Control Station	B-3123-P2
CS/RA2-24	Make-Up Unit 6	N/A	Control Station	B-3123-P2
CS/RC1-01	Re-Check Baggage	N/A	Control Station	B-3313
CS/RC1-02	Re-Check Baggage	N/A	Control Station	B-3313
CS/RC1-03	Re-Check Baggage	N/A	Control Station	B-3213
CS/RC1-05	Re-Check Baggage	N/A	Control Station	B-3213
CS/RC1-08	Re-Check Baggage	N/A	Control Station	B-3214
CS/RC1-11	Re-Check Baggage	N/A	Control Station	B-3214
CS/RC1-13	Re-Check Baggage	N/A	Control Station	B-3214
CS/RC1-15	Re-Check Baggage	N/A	Control Station	B-3214

CS/RC1-19B	Re-Check Baggage	N/A	Control Station	B-3119
CS/RC1-20A	Re-Check Baggage	N/A	Control Station	B-3119
CS/RC1-21	Re-Check Baggage	N/A	Control Station	B-3119
CS/RC1-23	Re-Check Baggage	N/A	Control Station	B-3119
CS/RC1-25	Re-Check Baggage	N/A	Control Station	B-3120
CS/RC1-27	Re-Check Baggage	N/A	Control Station	B-3120
CS/RC1-29A	Re-Check Baggage	N/A	Control Station	B-3120
CS/RC1-29B	Re-Check Baggage	N/A	Control Station	B-3120
CS/RC1-33	Re-Check Baggage	N/A	Control Station	B-3121
CS/RC1-34	Re-Check Baggage	N/A	Control Station	B-3121
CS/RC1-36	Re-Check Baggage	N/A	Control Station	B-3121
CS/RC1-38	Re-Check Baggage	N/A	Control Station	B-3121
CS/RC1-38A	Re-Check Baggage	N/A	Control Station	B-3121
CS/RC1-38B	Re-Check Baggage	N/A	Control Station	B-3121
CS/RC1-39	Re-Check Baggage	N/A	Control Station	B-3121
CS/RC2-01	Re-Check Baggage	N/A	Control Station	B-3313
CS/RC2-02	Re-Check Baggage	N/A	Control Station	B-3313
CS/RC2-03	Re-Check Baggage	N/A	Control Station	B-3213
CS/RC2-07	Re-Check Baggage	N/A	Control Station	B-3213
CS/RX1-04	Make-Up Units 1 through 5	N/A	Control Station	B-3101
CS/RX1-06	Make-Up Units 1 through 5	N/A	Control Station	B-3101
CS/RX1-07	Make-Up Units 1 through 5	N/A	Control Station	B-3101
CS/RX1-08	Make-Up Units 1 through 5	N/A	Control Station	B-3102
CS/RX1-09	Make-Up Units 1 through 5	N/A	Control Station	B-3102
CS/RX1-10	Make-Up Units 1 through 5	N/A	Control Station	B-3102
CS/RX1-12	Make-Up Units 1 through 5	N/A	Control Station	B-3102
CS/RX1-15	Make-Up Units 1 through 5	N/A	Control Station	B-3102
CS/RX1-19	Make-Up Units 1 through 5	N/A	Control Station	B-3102
CS/TC1-01A	Ticket Counter 1	N/A	Control Station	B-3107
CS/TC1-05A	Ticket Counter 1	N/A	Control Station	B-3105-P1
CS/TC1-05B	Ticket Counter 1	N/A	Control Station	B-3105-P1
CS/TC1-07A	Ticket Counter 1	N/A	Control Station	B-3105-P1
CS/TC1-07B	Ticket Counter 1	N/A	Control Station	B-3105-P1
CS/TC1-07C	Ticket Counter 1	N/A	Control Station	B-3105-P1
CS/TC1-09	Ticket Counter 1	N/A	Control Station	B-3105-P1
CS/TC1-10A	Ticket Counter 1	N/A	Control Station	B-3105-P1
CS/TC1-10B	Ticket Counter 1	N/A	Control Station	B-3105-P1

CS/TC1-11	Ticket Counter 1	N/A	Control Station	B-3105-P1
CS/TC1-14	Ticket Counter 1	N/A	Control Station	B-3105-P1
CS/TC1-19	Ticket Counter 1	N/A	Control Station	B-3105-P1
CS/TC1-21	Ticket Counter 1	N/A	Control Station	B-3105-P1
CS/TC1-23	Ticket Counter 1	N/A	Control Station	B-3105-P1
CS/TC1-25	Ticket Counter 1	N/A	Control Station	B-3105-P1
CS/TC1-28	Ticket Counter 1	N/A	Control Station	B-3105-P1
CS/TC1-34	Ticket Counter 1	N/A	Control Station	B-3104
CS/TC1-36	Ticket Counter 1	N/A	Control Station	B-3104
CS/TC1-P1	Ticket Counter 1	N/A	Control Station	B-3104
CS/TC2-01A	Ticket Counter 2	N/A	Control Station	B-3106
CS/TC2-01B	Ticket Counter 2	N/A	Control Station	B-3106
CS/TC2-04	Ticket Counter 2	N/A	Control Station	B-3106
CS/TC2-05A	Ticket Counter 2	N/A	Control Station	B-3106-P1
CS/TC2-05B	Ticket Counter 2	N/A	Control Station	B-3106-P1
CS/TC2-07	Ticket Counter 2	N/A	Control Station	B-3106
CS/TC2-07A	Ticket Counter 2	N/A	Control Station	B-3106-P1
CS/TC2-07B	Ticket Counter 2	N/A	Control Station	B-3106-P1
CS/TC2-07C	Ticket Counter 2	N/A	Control Station	B-3106-P1
CS/TC2-09	Ticket Counter 2	N/A	Control Station	B-3106
CS/TC2-10	Ticket Counter 2	N/A	Control Station	B-3106-P1
CS/TC2-12A	Ticket Counter 2	N/A	Control Station	B-3106-P1
CS/TC2-12B	Ticket Counter 2	N/A	Control Station	B-3106-P1
CS/TC2-13	Ticket Counter 2	N/A	Control Station	B-3106-P1
CS/TC2-16	Ticket Counter 2	N/A	Control Station	B-3106-P1
CS/TC2-19	Ticket Counter 2	N/A	Control Station	B-3106-P1
CS/TC2-21	Ticket Counter 2	N/A	Control Station	B-3106-P1
CS/TC2-25	Ticket Counter 2	N/A	Control Station	B-3105-P1
CS/TC2-30B	Ticket Counter 2	N/A	Control Station	B-3105-P1
CS/TC2-35	Ticket Counter 2	N/A	Control Station	B-3105-P1
CS/TC3-01A	Ticket Counter 3	N/A	Control Station	B-3106
CS/TC3-01B	Ticket Counter 3	N/A	Control Station	B-3106
CS/TC3-04	Ticket Counter 3	N/A	Control Station	B-3106
CS/TC3-05A	Ticket Counter 3	N/A	Control Station	B-3106-P1
CS/TC3-05B	Ticket Counter 3	N/A	Control Station	B-3106-P1
CS/TC3-07	Ticket Counter 3	N/A	Control Station	B-3106
CS/TC3-07A	Ticket Counter 3	N/A	Control Station	B-3106-P1
CS/TC3-07B	Ticket Counter 3	N/A	Control Station	B-3106-P1
CS/TC3-07C	Ticket Counter 3	N/A	Control Station	B-3106-P1
CS/TC3-09	Ticket Counter 3	N/A	Control Station	B-3106-P1
CS/TC3-11	Ticket Counter 3	N/A	Control Station	B-3106
CS/TC3-11A	Ticket Counter 3	N/A	Control Station	B-3106-P1
CS/TC3-11B	Ticket Counter 3	N/A	Control Station	B-3106-P1
CS/TC3-12	Ticket Counter 3	N/A	Control Station	B-3106
CS/TC3-15	Ticket Counter 3	N/A	Control Station	B-3106

CS/TC3-17	Ticket Counter 3	N/A	Control Station	B-3107-P1
CS/TC3-19	Ticket Counter 3	N/A	Control Station	B-3107-P1
CS/TC3-24	Ticket Counter 3	N/A	Control Station	B-3123-P2
CS/TC3-26	Ticket Counter 3	N/A	Control Station	B-3123-P2
CS/TC3-28	Ticket Counter 3	N/A	Control Station	B-3123-P2
CS/TC4-01A	Ticket Counter 4	N/A	Control Station	B-3106
CS/TC4-01B	Ticket Counter 4	N/A	Control Station	B-3106
CS/TC4-05A	Ticket Counter 4	N/A	Control Station	B-3106-P1
CS/TC4-05B	Ticket Counter 4	N/A	Control Station	B-3106-P1
CS/TC4-07	Ticket Counter 4	N/A	Control Station	B-3106
CS/TC4-07A	Ticket Counter 4	N/A	Control Station	B-3107-P1
CS/TC4-07B	Ticket Counter 4	N/A	Control Station	B-3107-P1
CS/TC4-07C	Ticket Counter 4	N/A	Control Station	B-3107-P1
CS/TC4-08	Ticket Counter 4	N/A	Control Station	B-3107-P1
CS/TC4-10	Ticket Counter 4	N/A	Control Station	B-3106
CS/TC4-10A	Ticket Counter 4	N/A	Control Station	B-3107-P1
CS/TC4-10B	Ticket Counter 4	N/A	Control Station	B-3107-P1
CS/TC4-10C	Ticket Counter 4	N/A	Control Station	B-3107-P1
CS/TC4-12A	Ticket Counter 4	N/A	Control Station	B-3106
CS/TC4-12B	Ticket Counter 4	N/A	Control Station	B-3106
CS/TC4-13	Ticket Counter 4	N/A	Control Station	B-3107-P1
CS/TC4-16	Ticket Counter 4	N/A	Control Station	B-3106
CS/TC4-17	Ticket Counter 4	N/A	Control Station	B-3107-P1
CS/TC4-19	Ticket Counter 4	N/A	Control Station	B-3107-P1
CS/TC4-21	Ticket Counter 4	N/A	Control Station	B-3106
CS/TC4-23B	Ticket Counter 4	N/A	Control Station	B-3123-P2
CS/TC4-30A	Ticket Counter 4	N/A	Control Station	B-3105-P1
CS/TC4-32	Ticket Counter 4	N/A	Control Station	B-3105-P1
CS/TC4-42	Ticket Counter 4	N/A	Control Station	B-3104
CS/TC4-44	Ticket Counter 4	N/A	Control Station	B-3104
CS/TC4-P1	Ticket Counter 4	N/A	Control Station	B-3104
CS/TC5-01A	Ticket Counter 5	N/A	Control Station	B-3106
CS/TC5-01B	Ticket Counter 5	N/A	Control Station	B-3106
CS/TC5-04A	Ticket Counter 5	N/A	Control Station	B-3106-P1
CS/TC5-04B	Ticket Counter 5	N/A	Control Station	B-3106-P1
CS/TC5-05	Ticket Counter 5	N/A	Control Station	B-3106
CS/TC5-07	Ticket Counter 5	N/A	Control Station	B-3106
CS/TC5-07A	Ticket Counter 5	N/A	Control Station	B-3106-P1
CS/TC5-07B	Ticket Counter 5	N/A	Control Station	B-3106-P1
CS/TC5-07C	Ticket Counter 5	N/A	Control Station	B-3106-P1
CS/TC5-09	Ticket Counter 5	N/A	Control Station	B-3106-P1
CS/TC5-11A	Ticket Counter 5	N/A	Control Station	B-3106
CS/TC5-11B	Ticket Counter 5	N/A	Control Station	B-3106
CS/TC5-12	Ticket Counter 5	N/A	Control Station	B-3105-P1
CS/TC5-13	Ticket Counter 5	N/A	Control Station	B-3105-P1

CS/TC5-14	Ticket Counter 5	N/A	Control Station	B-3105-P1
CS/TC5-17	Ticket Counter 5	N/A	Control Station	B-3107
CS/TC5-19	Ticket Counter 5	N/A	Control Station	B-3107
CS/TC6-01B	Ticket Counter 6	N/A	Control Station	B-3106
CS/TC6-04A	Ticket Counter 6	N/A	Control Station	B-3106-P1
CS/TC6-04B	Ticket Counter 6	N/A	Control Station	B-3106-P1
CS/TC6-05	Ticket Counter 6	N/A	Control Station	B-3106
CS/TC6-07	Ticket Counter 6	N/A	Control Station	B-3107
CS/TC6-07A	Ticket Counter 6	N/A	Control Station	B-3106-P1
CS/TC6-07B	Ticket Counter 6	N/A	Control Station	B-3106-P1
CS/TC6-07C	Ticket Counter 6	N/A	Control Station	B-3106-P1
CS/TC6-08	Ticket Counter 6	N/A	Control Station	B-3107
CS/TC6-09	Ticket Counter 6	N/A	Control Station	B-3106-P1
CS/TC6-10A	Ticket Counter 6	N/A	Control Station	B-3107
CS/TC6-10B	Ticket Counter 6	N/A	Control Station	B-3107
CS/TC6-10C	Ticket Counter 6	N/A	Control Station	B-3107
CS/TC6-11	Ticket Counter 6	N/A	Control Station	B-3106-P1
CS/TC6-12	Ticket Counter 6	N/A	Control Station	B-3106-P1
CS/TC6-13	Ticket Counter 6	N/A	Control Station	B-3107
CS/TC6-15	Ticket Counter 6	N/A	Control Station	B-3106-P1
CS/TC6-17	Ticket Counter 6	N/A	Control Station	B-3107
CS/TC6-19	Ticket Counter 6	N/A	Control Station	B-3107
CTX1-01	Transfer Conveyor 1	N/A	N/A	B-2106a-P1/P2
CTX1-02	Transfer Conveyor 1	N/A	N/A	B-2106a-P1/P2
CTX1-06	Transfer Conveyor 1	N/A	N/A	B-2105
CTX1-19	Transfer Conveyor 1	N/A	N/A	B-2105
CTX1-24	Transfer Conveyor 1	N/A	N/A	B-2105
CTX2-01	Transfer Conveyor 2	N/A	N/A	B-2106b-P1/P2
CTX2-02	Transfer Conveyor 2	N/A	N/A	B-2106b-P1/P2
CTX2-03	Transfer Conveyor 2	N/A	N/A	B-2106
CTX2-P1	Transfer Conveyor 2	N/A	N/A	B-2106
EC/ME1-17	Manual Encoding 1	N/A	Encoding Console	B-3103-P1
EC/ME2-16	Manual Encoding 2	N/A	Encoding Console	B-3103-P1
EDS1-01	CTX Machine	Horizontal Conveyor	N/A	B-0123-a
EDS1-02	CTX Machine	45° Powerturn	N/A	B-0123-a
EDS1-03	CTX Machine	45° Powerturn	N/A	B-0123-a
EDS1-04	CTX Machine	45° Powerturn	N/A	B-0123-a
EDS1-05	CTX Machine	45° Powerturn	N/A	B-0123-a
EDS1-06	CTX Machine	Metering	N/A	B-0123-a

		Conveyor		
EDS1-07	CTX Machine	Metering Conveyor	N/A	B-0123-a
EDS1-08	CTX Machine	Metering Conveyor	N/A	B-0123-a
EDS1-09	CTX Machine	CTX Machine	N/A	B-0123-a
EDS1-10	CTX Machine	Incline Conveyor	N/A	B-0123-a
EDS1-11	CTX Machine	Metering Conveyor	N/A	B-0123-a
EDS1-12	CTX Machine	Metering Conveyor	N/A	B-0123-a
EDS1-13	CTX Machine	45° Merge Conveyor	N/A	B-0123-a
EDS2-01	CTX Machine	Horizontal Conveyor	N/A	B-0123-a
EDS2-02	CTX Machine	45° Powerturn	N/A	B-0123-a
EDS2-03	CTX Machine	Incline Conveyor	N/A	B-0123-a
EDS2-04	CTX Machine	Metering Conveyor	N/A	B-0123-a
EDS2-05	CTX Machine	Metering Conveyor	N/A	B-0123-a
EDS2-06	CTX Machine	45° Powerturn	N/A	B-0123-a
EDS2-07	CTX Machine	Metering Conveyor	N/A	B-0123-a
EDS2-08	CTX Machine	Metering Conveyor	N/A	B-0123-a
EDS2-09	CTX Machine	90° Powerturn	N/A	B-0123-a
EDS2-10	CTX Machine	Horizontal Conveyor	N/A	B-0123-a
EDS2-11	CTX Machine	CTX Machine	N/A	B-0123-a
EDS2-12	CTX Machine	Metering Conveyor	N/A	B-0123-a
EDS2-13	CTX Machine	Metering Conveyor	N/A	B-0123-a
EDS2-14	CTX Machine	Incline Conveyor	N/A	B-0123-a
EDS2-15	CTX Machine	45° Merge Conveyor	N/A	B-0123-a
EDS3-01	CTX Machine	Horizontal Conveyor	N/A	B-0123-a
EDS3-02	CTX Machine	90° Powerturn	N/A	B-0123-a
EDS3-03	CTX Machine	Horizontal Conveyor	N/A	B-0123-a
EDS3-04	CTX Machine	Metering Conveyor	N/A	B-0123-a
EDS3-05	CTX Machine	Metering Conveyor	N/A	B-0123-a
EDS3-06	CTX Machine	Metering Conveyor	N/A	B-0123-a

EDS3-07	CTX Machine	45° Powerturn	N/A	B-0123-a
EDS3-08	CTX Machine	Metering Conveyor	N/A	B-0123-a
EDS3-09	CTX Machine	Metering Conveyor	N/A	B-0123-a
EDS3-10	CTX Machine	Metering Conveyor	N/A	B-0123-a
EDS3-11	CTX Machine	45° Powerturn	N/A	B-0123-a
EDS3-12	CTX Machine	45° Spiral Powerturn	N/A	B-0123-a
EDS3-13	CTX Machine	Horizontal Conveyor	N/A	B-0123-a
EDS3-14	CTX Machine	CTX Machine	N/A	B-0123-a
EDS3-15	CTX Machine	Metering Conveyor	N/A	B-0123-a
EDS3-16	CTX Machine	Metering Conveyor	N/A	B-0123-a
EDS3-17	CTX Machine	Incline Conveyor	N/A	B-0123-a
EDS3-18	CTX Machine	45° Spiral Powerturn	N/A	B-0123-a
EDS3-19	CTX Machine	Metering Conveyor	N/A	B-0123-a
EDS3-20	CTX Machine	Metering Conveyor	N/A	B-0123-a
EDS3-21	CTX Machine	45° Merge Conveyor	N/A	B-0123-a
ETD-01	Threat Resolution Room	Horizontal Conveyor	N/A	B-0123-a
ETD-02	Threat Resolution Room	45° Powerturn	N/A	B-0123-a
ETD-03	Threat Resolution Room	Decline Conveyor	N/A	B-0123-a
ETD-04	Threat Resolution Room	Horizontal Conveyor	N/A	B-0123-a
FD/RA1-02	Re-Check Baggage	N/A	N/A	B-0311
FD/RA2-02	Make-Up Unit 6	N/A	N/A	B-0311
FD/RC1-02	Re-Check Baggage	N/A	N/A	B-0313
FD/RC2-02	Re-Check Baggage	N/A	N/A	B-0313
FDOS1-03	Oversized Baggage	N/A	N/A	B-0106-P1
HM/MCP-CTX1	Transfer Conveyor 1	Motor Control Panel	Hour Meter	B-3102
HM/MCP-CTX2	Transfer Conveyor 2	Motor Control Panel	Hour Meter	B-3102
HM/MCP-IB1	Claim Device 1	Motor Control Panel	Hour Meter	B-3104
HM/MCP-IB2	Claim Device 2	Motor Control Panel	Hour Meter	B-3104
HM/MCP-IB3	Claim Device 3	Motor Control Panel	Hour Meter	B-3104
HM/MCP-IB4	Claim Device 4	Motor Control	Hour Meter	B-3105-P1

		Panel		
HM/MCP-IB5	Claim Device 5	Motor Control Panel	Hour Meter	B-3107-P1
HM/MCP-IB7	Claim Device 7	Motor Control Panel	Hour Meter	B-3107-P1
HM/MCP-IB8	Claim Device 8	Motor Control Panel	Hour Meter	B-3107-P1
HM/MCP-MU1	Make-Up Unit 1	Motor Control Panel	Hour Meter	B-3102
HM/MCP-MU2	Make-Up Unit 2	Motor Control Panel	Hour Meter	B-3102
HM/MCP-MU3	Make-Up Unit 3	Motor Control Panel	Hour Meter	B-3102
HM/MCP-MU4	Make-Up Unit 4	Motor Control Panel	Hour Meter	B-3101
HM/MCP-MU5	Make-Up Unit 5	Motor Control Panel	Hour Meter	B-3101
HM/MCP-OS1	Oversized Baggage	Motor Control Panel	Hour Meter	B-3106-P1

HM/MCP-RA1	Re-Checked Baggage	Motor Control Panel	Hour Meter	B-3108
HM/MCP-RC1a	Re-Check Baggage	Motor Control Panel	Hour Meter	B-3108
HM/MCP-RC1b	Re-Check Baggage	Motor Control Panel	Hour Meter	B-3121
HM/MCP-RC2	Re-Check Baggage	Motor Control Panel	Hour Meter	B-3108
HM/MCP-TC2	Ticket Counter 2	Motor Control Panel	Hour Meter	B-3105-P1
HM/MCP-TC3	Ticket Counter 3	Motor Control Panel	Hour Meter	B-3105-P1
IB1-01	Claim Device 1	Horizontal Conveyor	N/A	B-0104
IB1-02	Claim Device 1	Incline Conveyor	N/A	B-0104
IB1-03	Claim Device 1	90° Powerturn	N/A	B-0104
IB1-04	Claim Device 1	Horizontal Conveyor	N/A	B-0104
IB1-05	Claim Device 1	Horizontal Conveyor	N/A	B-0105-P1
IB1-06	Claim Device 1	90° Powerturn	N/A	B-0105-P1
IB1-07	Claim Device 1	Horizontal Conveyor	N/A	B-0105-P1
IB1-08	Claim Device 1	90° Powerturn	N/A	B-0105-P1
IB1-09	Claim Device 1	Horizontal Conveyor	N/A	B-0105-P1
IB1-10	Claim Device 1	Horizontal Conveyor	N/A	B-0205
IB1-11	Claim Device 1	Incline Conveyor	N/A	B-0205
IB1-12	Claim Device 1	Incline Conveyor	N/A	B-0205
IB1-13	Claim Device 1	2 1/2° Tapered Roller	N/A	B-0205
IB1-14	Claim Device 1	Incline Conveyor	N/A	B-0205
IB1-15	Claim Device 1	90° Powerturn	N/A	B-0205
IB1-16	Claim Device 1	Horizontal Conveyor	N/A	B-0209
IB1-17	Claim Device 1	Incline Conveyor	N/A	B-0209
IB2-01	Claim Device 2	Horizontal Conveyor	N/A	B-0104
IB2-02	Claim Device 2	Incline Conveyor	N/A	B-0104
IB2-03	Claim Device 2	90° Powerturn	N/A	B-0104
IB2-04	Claim Device 2	Horizontal Conveyor	N/A	B-0104
IB2-05	Claim Device 2	Horizontal Conveyor	N/A	B-0105-P1
IB2-06	Claim Device 2	90° Powerturn	N/A	B-0105-P1

IB2-07	Claim Device 2	Horizontal Conveyor	N/A	B-0105-P1
IB2-08	Claim Device 2	90° Powerturn	N/A	B-0105-P1
IB2-09	Claim Device 2	Horizontal Conveyor	N/A	B-0105-P1
IB2-10	Claim Device 2	Horizontal Conveyor	N/A	B-0205
IB2-11	Claim Device 2	Incline Conveyor	N/A	B-0205
IB2-12	Claim Device 2	Incline Conveyor	N/A	B-0205
IB2-13	Claim Device 2	2 1/2° Tapered Roller	N/A	B-0205
IB2-14	Claim Device 2	Incline Conveyor	N/A	B-0205
IB2-15	Claim Device 2	Horizontal Conveyor	N/A	B-0205
IB2-16	Claim Device 2	Incline Conveyor	N/A	B-0205
IB2-17	Claim Device 2	90° Powerturn	N/A	B-0205
IB2-18	Claim Device 2	Horizontal Conveyor	N/A	B-0209
IB2-19	Claim Device 2	Incline Conveyor	N/A	B-0209
IB3-01	Claim Device 3	Horizontal Conveyor	N/A	B-0104
IB3-02	Claim Device 3	Incline Conveyor	N/A	B-0104
IB3-03	Claim Device 3	45° Spiral Powerturn	N/A	B-0104
IB3-04	Claim Device 3	45° Powerturn	N/A	B-0104
IB3-05	Claim Device 3	Horizontal Conveyor	N/A	B-0105-P1
IB3-06	Claim Device 3	90° Powerturn	N/A	B-0105-P1
IB3-07	Claim Device 3	Horizontal Conveyor	N/A	B-0105-P1
IB3-08	Claim Device 3	90° Powerturn	N/A	B-0105-P1
IB3-09	Claim Device 3	Horizontal Conveyor	N/A	B-0105-P1
IB3-10	Claim Device 3	Horizontal Conveyor	N/A	B-0205
IB3-11	Claim Device 3	Incline Conveyor	N/A	B-0205
IB3-12	Claim Device 3	Incline Conveyor	N/A	B-0205
IB3-13	Claim Device 3	2 1/2° Tapered Roller	N/A	B-0205
IB3-14	Claim Device 3	Incline Conveyor	N/A	B-0205
IB3-15	Claim Device 3	Horizontal Conveyor	N/A	B-0205
IB3-16	Claim Device 3	Horizontal Conveyor	N/A	B-0205
IB3-17	Claim Device 3	Horizontal Conveyor	N/A	B-0206
IB3-18	Claim Device 3	Decline Conveyor	N/A	B-0206

IB3-19	Claim Device 3	90° Powerturn	N/A	B-0206
IB3-20	Claim Device 3	Horizontal Conveyor	N/A	B-0206
IB3-21	Claim Device 3	Incline Conveyor	N/A	B-0210
IB4-01	Claim Device 4	Horizontal Conveyor	N/A	B-0105-P1
IB4-02	Claim Device 4	Incline Conveyor	N/A	B-0105-P1
IB4-03	Claim Device 4	45° Spiral Powerturn	N/A	B-0105-P1
IB4-04	Claim Device 4	45° Powerturn	N/A	B-0105-P1
IB4-05	Claim Device 4	Horizontal Conveyor	N/A	B-0105-P1
IB4-06	Claim Device 4	90° Powerturn	N/A	B-0105-P1
IB4-07	Claim Device 4	Horizontal Conveyor	N/A	B-0105-P1
IB4-08	Claim Device 4	90° Powerturn	N/A	B-0105-P1
IB4-09	Claim Device 4	Horizontal Conveyor	N/A	B-0205
IB4-10	Claim Device 4	Incline Conveyor	N/A	B-0205
IB4-11	Claim Device 4	Incline Conveyor	N/A	B-0205
IB4-12	Claim Device 4	2 1/2° Tapered Roller	N/A	B-0205
IB4-13	Claim Device 4	Incline Conveyor	N/A	B-0205
IB4-14	Claim Device 4	2 1/2° Tapered Roller	N/A	B-0205
IB4-15	Claim Device 4	Horizontal Conveyor	N/A	B-0205
IB4-16	Claim Device 4	2 1/2° Tapered Roller	N/A	B-0206
IB4-17	Claim Device 4	Horizontal Conveyor	N/A	B-0206
IB4-18	Claim Device 4	2 1/2° Tapered Roller	N/A	B-0206
IB4-19	Claim Device 4	Decline Conveyor	N/A	B-0206
IB4-20	Claim Device 4	90° Powerturn	N/A	B-0206
IB4-21	Claim Device 4	Horizontal Conveyor	N/A	B-0206
IB4-22	Claim Device 4	Horizontal Conveyor	N/A	B-0210
IB4-23	Claim Device 4	Horizontal Conveyor	N/A	B-0210
IB4-24	Claim Device 4	Incline Conveyor	N/A	B-0310
IB5-01	Claim Device 5	Horizontal Conveyor	N/A	B-0107-P1
IB5-02	Claim Device 5	Incline Conveyor	N/A	B-0107-P1
IB5-03	Claim Device 5	90° Spiral Powerturn	N/A	B-2116
IB5-04	Claim Device 5	Incline Conveyor	N/A	B-0207

IB5-05	Claim Device 5	Incline Conveyor	N/A	B-0207
IB5-06	Claim Device 5	Horizontal Conveyor	N/A	B-0207
IB5-07	Claim Device 5	2 1/2° Tapered Roller	N/A	B-0207
IB5-08	Claim Device 5	Horizontal Conveyor	N/A	B-0207
IB5-09	Claim Device 5	2 1/2° Tapered Roller	N/A	B-0207
IB5-10	Claim Device 5	Horizontal Conveyor	N/A	B-0207
IB5-11	Claim Device 5	2 1/2° Tapered Roller	N/A	B-0206
IB5-12	Claim Device 5	Horizontal Conveyor	N/A	B-0206
IB5-13	Claim Device 5	2 1/2° Tapered Roller	N/A	B-0206
IB5-14	Claim Device 5	Decline Conveyor	N/A	B-0206
IB5-15	Claim Device 5	90° Powerturn	N/A	B-0206
IB5-16	Claim Device 5	Horizontal Conveyor	N/A	B-0206
IB5-17	Claim Device 5	Horizontal Conveyor	N/A	B-0210
IB5-18	Claim Device 5	Incline Conveyor	N/A	B-0210
IB6-01	Claim Device 6	Horizontal Conveyor	N/A	B-0107-P1
IB6-02	Claim Device 6	Incline Conveyor	N/A	B-0107-P1
IB6-05	Claim Device 6	45° Powerturn	N/A	B-2117
IB6-06	Claim Device 6	Horizontal Conveyor	N/A	B-0207
IB6-07	Claim Device 6	Incline Conveyor	N/A	B-0207
IB6-08	Claim Device 6	Incline Conveyor	N/A	B-0207
IB6-09	Claim Device 6	Horizontal Conveyor	N/A	B-0207
IB6-10	Claim Device 6	2 1/2° Tapered Roller	N/A	B-0207
IB6-11	Claim Device 6	Horizontal Conveyor	N/A	B-0207
IB6-12	Claim Device 6	2 1/2° Tapered Roller	N/A	B-0207
IB6-13	Claim Device 6	Horizontal Conveyor	N/A	B-0207
IB6-14	Claim Device 6	2 1/2° Tapered Roller	N/A	B-0206
IB6-15	Claim Device 6	Decline Conveyor	N/A	B-0206
IB6-16	Claim Device 6	90° Powerturn	N/A	B-0206
IB6-17	Claim Device 6	Horizontal Conveyor	N/A	B-0206

IB6-18	Claim Device 6	Incline Conveyor	N/A	B-0210
IB7-08	Claim Device 7	Horizontal Conveyor	N/A	B-0207
IB7-09	Claim Device 7	Incline Conveyor	N/A	B-0207
IB7-10	Claim Device 7	Incline Conveyor	N/A	B-0207
IB7-11	Claim Device 7	Horizontal Conveyor	N/A	B-0207
IB7-12	Claim Device 7	2 1/2° Tapered Roller	N/A	B-0207
IB7-13	Claim Device 7	Horizontal Conveyor	N/A	B-0207
IB7-14	Claim Device 7	2 1/2° Tapered Roller	N/A	B-0207
IB7-15	Claim Device 7	Decline Conveyor	N/A	B-0207
IB7-16	Claim Device 7	90° Powerturn	N/A	B-0207
IB7-17	Claim Device 7	Horizontal Conveyor	N/A	B-0211
IB7-18	Claim Device 7	Incline Conveyor	N/A	B-0211
IB8-08	Claim Device 8	Horizontal Conveyor	N/A	B-0207
IB8-09	Claim Device 8	Incline Conveyor	N/A	B-0207
IB8-10	Claim Device 8	Incline Conveyor	N/A	B-0207
IB8-11	Claim Device 8	Horizontal Conveyor	N/A	B-0207
IB8-12	Claim Device 8	2 1/2° Tapered Roller	N/A	B-0207
IB8-13	Claim Device 8	Decline Conveyor	N/A	B-0207
IB8-14	Claim Device 8	90° Powerturn	N/A	B-0207
IB8-15	Claim Device 8	Horizontal Conveyor	N/A	B-0211
IB8-16	Claim Device 8	Incline Conveyor	N/A	B-0211
LS/IB1-17A	Claim Device	N/A	Limit Switch	B-3309
LS/IB1-17B	Claim Device	N/A	Limit Switch	B-3309
LS/IB2-19A	Claim Device	N/A	Limit Switch	B-3309
LS/IB2-19B	Claim Device	N/A	Limit Switch	B-3309
LS/IB3-21A	Claim Device	N/A	Limit Switch	B-3310
LS/IB3-21B	Claim Device	N/A	Limit Switch	B-3310
LS/IB4-24A	Claim Device	N/A	Limit Switch	B-3310
LS/IB4-24B	Claim Device	N/A	Limit Switch	B-3310
LS/IB5-18A	Claim Device	N/A	Limit Switch	B-3310
LS/IB5-18B	Claim Device	N/A	Limit Switch	B-3310
LS/IB6-18A	Claim Device	N/A	Limit Switch	B-3310
LS/IB6-18B	Claim Device	N/A	Limit Switch	B-3310
LS/IB7-18A	Claim Device	N/A	Limit Switch	B-3311
LS/IB7-18B	Claim Device	N/A	Limit Switch	B-3311
LS/IB8-16A	Claim Device	N/A	Limit Switch	B-3311

LS/IB8-16B	Claim Device	N/A	Limit Switch	B-3311
LS/OS1-01A	Oversized Baggage	N/A	Limit Switch	B-3106-P1
LS/OS1-01B	Oversized Baggage	N/A	Limit Switch	B-3106-P1
LS/OS1-03A	Oversized Baggage	N/A	Limit Switch	B-3106-P1
LS/OS1-03B	Oversized Baggage	N/A	Limit Switch	B-3106-P1
LS/RA1-02A	Re-Checked Baggage	N/A	Limit Switch	B-3311
LS/RA1-02B	Re-Checked Baggage	N/A	Limit Switch	B-3311
LS/RA2-02A	Make-Up Unit 6	N/A	Limit Switch	B-3311
LS/RA2-02B	Make-Up Unit 6	N/A	Limit Switch	B-3311
LS/RA2-17A	Make-Up Unit 6	N/A	Limit Switch	B-3108
LS/RA2-17B	Make-Up Unit 6	N/A	Limit Switch	B-3108
LS/RC1-02A	Re-Checked Baggage	N/A	Limit Switch	B-3313
LS/RC1-02B	Re-Checked Baggage	N/A	Limit Switch	B-3313
LS/RC1-29A	Re-Checked Baggage	N/A	Limit Switch	B-3120
LS/RC1-29B	Re-Checked Baggage	N/A	Limit Switch	B-3120
LS/RC1-38A	Re-Checked Baggage	N/A	Limit Switch	B-3121
LS/RC1-38B	Re-Checked Baggage	N/A	Limit Switch	B-3121
LS/RC2-02A	Re-Checked Baggage	N/A	Limit Switch	B-3313
LS/RC2-02B	Re-Checked Baggage	N/A	Limit Switch	B-3313
LS/TC1-10A	Ticket Counter 1	N/A	Limit Switch	B-3105-P1
LS/TC2-12A	Ticket Counter 2	N/A	Limit Switch	B-3106-P1
LS/TC2-12B	Ticket Counter 2	N/A	Limit Switch	B-3106-P1
LS/TC3-11A	Ticket Counter 3	N/A	Limit Switch	B-3106-P1
LS/TC3-11B	Ticket Counter 3	N/A	Limit Switch	B-3106-P1
LS/TC3-11C	Ticket Counter 3	N/A	Limit Switch	B-3106-P1
LS/TC4-10A	Ticket Counter 4	N/A	Limit Switch	B-3107-P1
LS/TC4-10B	Ticket Counter 4	N/A	Limit Switch	B-3107-P1
LS/TC4-12A	Ticket Counter 4	N/A	Limit Switch	B-3106
LS/TC4-12B	Ticket Counter 4	N/A	Limit Switch	B-3106
LS/TC5-09	Ticket Counter 5	N/A	Limit Switch	B-3106
LS/TC5-11A	Ticket Counter 5	N/A	Limit Switch	B-3106
LS/TC5-11B	Ticket Counter 5	N/A	Limit Switch	B-3106
LS/TC5-11C	Ticket Counter 5	N/A	Limit Switch	B-3106
LS/TC6-10A	Ticket Counter 6	N/A	Limit Switch	B-3107
LS/TC6-10B	Ticket Counter 6	N/A	Limit Switch	B-3107
LT/CD-01	Claim Device	N/A	Light	B-3309
LT/CD-02	Claim Device	N/A	Light	B-3309
LT/CD-03	Claim Device	N/A	Light	B-3310
LT/CD-04	Claim Device	N/A	Light	B-3310
LT/CD-05	Claim Device	N/A	Light	B-3310
LT/CD-06	Claim Device	N/A	Light	B-3310
LT/CD-07	Claim Device	N/A	Light	B-3311
LT/CD-08	Claim Device	N/A	Light	B-3311
LT/IB1-01	Claim Device	N/A	Light	B-3104
LT/IB1-11	Claim Device	N/A	Light	B-3205

LT/IB1-16	Claim Device	N/A	Light	B-3209
LT/IB2-01	Claim Device	N/A	Light	B-3104
LT/IB2-11	Claim Device	N/A	Light	B-3205
LT/IB2-18	Claim Device	N/A	Light	B-3209
LT/IB3-01	Claim Device	N/A	Light	B-3104
LT/IB3-11	Claim Device	N/A	Light	B-3205
LT/IB3-16	Claim Device	N/A	Light	B-3205
LT/IB3-20	Claim Device	N/A	Light	B-3210
LT/IB4-01	Claim Device 4	N/A	Light	B-3105-P1
LT/IB4-10	Claim Device 4	N/A	Light	B-3205
LT/IB4-15	Claim Device 4	N/A	Light	B-3205
LT/IB4-21	Claim Device 4	N/A	Light	B-3210
LT/IB5-01	Claim Device 5	N/A	Light	B-3107-P1
LT/IB5-06	Claim Device 5	N/A	Light	B-3207
LT/IB5-08	Claim Device 5	N/A	Light	B-3207
LT/IB5-17	Claim Device 5	N/A	Light	B-3210
LT/IB6-01	Claim Device 6	N/A	Light	B-3107-P1
LT/IB6-08	Claim Device 6	N/A	Light	B-3207
LT/IB6-11	Claim Device 6	N/A	Light	B-3207
LT/IB6-17	Claim Device 6	N/A	Light	B-3210
LT/IB7-10	Claim Device 7	N/A	Light	B-3207
LT/IB7-13	Claim Device 7	N/A	Light	B-3207
LT/IB7-17	Claim Device 7	N/A	Light	B-3211
LT/IB8-10	Claim Device 8	N/A	Light	B-3207
LT/IB8-15	Claim Device 8	N/A	Light	B-3211
LT/MCP-CTX1A	Transfer Conveyor 1	Motor Control Panel	Light	B-3102
LT/MCP-CTX1B	Transfer Conveyor 1	Motor Control Panel	Light	B-3102
LT/MCP-CTX2A	Transfer Conveyor 2	Motor Control Panel	Light	B-3102
LT/MCP-CTX2B	Transfer Conveyor 2	Motor Control Panel	Light	B-3102
LT/MCP-IB1A	Claim Device 1	Motor Control Panel	Light	B-3104
LT/MCP-IB1B	Claim Device 1	Motor Control Panel	Light	B-3104
LT/MCP-IB2A	Claim Device 2	Motor Control Panel	Light	B-3104
LT/MCP-IB2B	Claim Device 2	Motor Control Panel	Light	B-3104
LT/MCP-IB3A	Claim Device 3	Motor Control Panel	Light	B-3104
LT/MCP-IB3B	Claim Device 3	Motor Control Panel	Light	B-3104
LT/MCP-IB4A	Claim Device 4	Motor Control Panel	Light	B-3105-P1

LT/MCP-IB4B	Claim Device 4	Motor Control Panel	Light	B-3105-P1
LT/MCP-IB5A	Claim Device 5	Motor Control Panel	Light	B-3107-P1
LT/MCP-IB5B	Claim Device 5	Motor Control Panel	Light	B-3107-P1
LT/MCP-IB7A	Claim Device 7	Motor Control Panel	Light	B-3107-P1
LT/MCP-IB7B	Claim Device 7	Motor Control Panel	Light	B-3107-P1
LT/MCP-IB8A	Claim Device 8	Motor Control Panel	Light	B-3107-P1
LT/MCP-IB8B	Claim Device 8	Motor Control Panel	Light	B-3107-P1
LT/MCP-MU1A	Make-Up Unit 1	Motor Control Panel	Light	B-3102
LT/MCP-MU1B	Make-Up Unit 1	Motor Control Panel	Light	B-3102
LT/MCP-MU2A	Make-Up Unit 2	Motor Control Panel	Light	B-3102
LT/MCP-MU2B	Make-Up Unit 2	Motor Control Panel	Light	B-3102
LT/MCP-MU3A	Make-Up Unit 3	Motor Control Panel	Light	B-3102
LT/MCP-MU3B	Make-Up Unit 3	Motor Control Panel	Light	B-3102
LT/MCP-MU4A	Make-Up Unit 4	Motor Control Panel	Light	B-3101
LT/MCP-MU4B	Make-Up Unit 4	Motor Control Panel	Light	B-3101
LT/MCP-MU5A	Make-Up Unit 5	Motor Control Panel	Light	B-3101
LT/MCP-MU5B	Make-Up Unit 5	Motor Control Panel	Light	B-3101
LT/MCP-OS1A	Oversized Baggage	Motor Control Panel	Light	B-3106-P1
LT/MCP-OS1B	Oversized Baggage	Motor Control Panel	Light	B-3106-P1
LT/MCP-RA1a	Re-Checked Baggage	Motor Control Panel	Light	B-3108
LT/MCP-RA1aa	Re-Checked Baggage	Motor Control Panel	Light	B-3108
LT/MCP-RA1ab	Re-Checked Baggage	Motor Control Panel	Light	B-3108
LT/MCP-RA1b	Re-Checked Baggage	Motor Control Panel	Light	B-3108
LT/MCP-RC1bA	Re-Checked Baggage	Motor Control Panel	Light	B-3121

LT/MCP-RC1bB	Re-Checked Baggage	Motor Control Panel	Light	B-3121
LT/MCP-RC2a	Re-Checked Baggage	Motor Control Panel	Light	B-3108
LT/MCP-RC2b	Re-Checked Baggage	Motor Control Panel	Light	B-3108
LT/MCP-TC2A	Ticket Counter 2	Motor Control Panel	Light	B-3105-P1
LT/MCP-TC2B	Ticket Counter 2	Motor Control Panel	Light	B-3105-P1
LT/MCP-TC3A	Ticket Counter 3	Motor Control Panel	Light	B-3105-P1
LT/MCP-TC3B	Ticket Counter 3	Motor Control Panel	Light	B-3105-P1
LT/MU-01	Make-Up Unit	N/A	Light	B-3102
LT/MU-02	Make-Up Unit	N/A	Light	B-3102
LT/MU-03	Make-Up Unit	N/A	Light	B-3102
LT/MU-04	Make-Up Unit	N/A	Light	B-3101
LT/MU-05	Make-Up Unit	N/A	Light	B-3101
LT/OS1-05	Oversized Baggage	N/A	Light	B-3106-P1
LT/RA1-01	Re-Checked Baggage	N/A	Light	B-3311
LT/RA2-09	Make-Up Unit 6	N/A	Light	B-3214
LT/RA2-11	Make-Up Unit 6	N/A	Light	B-3214
LT/RC1-02	Re-Checked Baggage	N/A	Light	B-3313
LT/RC1-11	Re-Checked Baggage	N/A	Light	B-3214
LT/RC1-13	Re-Checked Baggage	N/A	Light	B-3214
LT/RC2-02	Re-Checked Baggage	N/A	Light	B-3313
LT/TC2-1	Ticket Counter 2	N/A	Light	B-3106
LT/TC3-1	Ticket Counter 3	N/A	Light	B-3106
LT/TC4-1	Ticket Counter 4	N/A	Light	B-3106
LT/TC5-1	Ticket Counter 5	N/A	Light	B-3106
LT/TC6-1	Ticket Counter 6	N/A	Light	B-3107
MCP-CTX1	Transfer conveyor	Motor Control Panel	N/A	B-0102
MCP-CTX2	Transfer conveyor	Motor Control Panel	N/A	B-0102
MCP-IB1	Claim Device 1	Motor Control Panel	N/A	B-0104
MCP-IB2	Claim Device 2	Motor Control Panel	N/A	B-0104
MCP-IB3	Claim Device 3	Motor Control Panel	N/A	B-0104
MCP-IB4	Claim Device 4	Motor Control Panel	N/A	B-0105-P1
MCP-IB5	Claim Device 5	Motor Control Panel	N/A	B-0107-P1
MCP-IB6	Claim Device 6	Motor Control Panel	N/A	B-0107-P1

MCP-IB7	Claim Device 7	Motor Control Panel	N/A	B-0107-P1
MCP-IB8	Claim Device 8	Motor Control Panel	N/A	B-0107-P1
MCP-MU1	Make-Up Unit 1	Motor Control Panel	N/A	B-0102
MCP-MU2	Make-Up Unit 2	Motor Control Panel	N/A	B-0102
MCP-MU3	Make-Up Unit 3	Motor Control Panel	N/A	B-0102
MCP-MU4	Make-Up Unit 4	Motor Control Panel	N/A	B-0101
MCP-MU5	Make-Up Unit 5	Motor Control Panel	N/A	B-0101
MCP-OS1	Oversized Baggage	Motor Control Panel	N/A	B-0106-P1
MCP-RC1b	Re-Checked Baggage	Motor Control Panel	N/A	B-0121
MCP-TC1	Ticket Counter 1	Motor Control Panel	N/A	B-0105-P1
MCP-TC2	Ticket Counter 2	Motor Control Panel	N/A	B-0105-P1
MCP-TC3	Ticket Counter 3	Motor Control Panel	N/A	B-0105-P1
MCP-TC4	Ticket Counter 4	Motor Control Panel	N/A	B-0105-P1
ME1-01	Manual Encoding 1	Horizontal Conveyor	N/A	B-0103-P1
ME1-02	Manual Encoding 1	Decline Conveyor	N/A	B-0103-P1
ME1-03	Manual Encoding 1	Metering Conveyor	N/A	B-0103-P1
ME1-04	Manual Encoding 1	45° Powerturn	N/A	B-0103-P1
ME1-05	Manual Encoding 1	Horizontal Conveyor	N/A	B-0103-P1
ME1-06	Manual Encoding 1	45° Powerturn	N/A	B-0103-P1
ME1-07	Manual Encoding 1	Horizontal Conveyor	N/A	B-0103-P1
ME1-08	Manual Encoding 1	90° Spiral Powerturn	N/A	B-0103-P1
ME1-09	Manual Encoding 1	Horizontal Conveyor	N/A	B-0103-P1
ME1-10	Manual Encoding 1	90° Spiral Powerturn	N/A	B-0103-P1
ME1-11	Manual Encoding 1	Horizontal Conveyor	N/A	B-0103-P1
ME1-12	Manual Encoding 1	Metering Conveyor	N/A	B-0103-P1
ME1-13	Manual Encoding 1	Metering Conveyor	N/A	B-0103-P1

ME1-14	Manual Encoding 1	Metering Conveyor	N/A	B-0103-P1
ME1-15	Manual Encoding 1	Metering Conveyor	N/A	B-0103-P1
ME1-16	Manual Encoding 1	Metering Conveyor	N/A	B-0103-P1
ME1-17	Manual Encoding 1	Metering Conveyor	N/A	B-0103-P1
ME1-18	Manual Encoding 1	Metering Conveyor	N/A	B-0103-P1
ME1-19	Manual Encoding 1	Metering Conveyor	N/A	B-0103-P1
ME1-20	Manual Encoding 1	90° Powerturn	N/A	B-0103-P1
ME1-21	Manual Encoding 1	Metering Conveyor	N/A	B-0103-P1
ME1-22	Manual Encoding 1	Metering Conveyor	N/A	B-0103-P1
ME1-23	Manual Encoding 1	90° Powerturn	N/A	B-0103-P1
ME1-24	Manual Encoding 1	45° Spiral Powerturn	N/A	B-0103-P1
ME1-P1	Manual Encoding 1	N/A	N/A	B-2106a-P1/P2
ME2-01	Manual Encoding 2	Horizontal Conveyor	N/A	B-0103-P1
ME2-02	Manual Encoding 2	Decline Conveyor	N/A	B-0103-P1
ME2-03	Manual Encoding 2	Metering Conveyor	N/A	B-0103-P1
ME2-04	Manual Encoding 2	45° Powerturn	N/A	B-0103-P1
ME2-05	Manual Encoding 2	Horizontal Conveyor	N/A	B-0103-P1
ME2-06	Manual Encoding 2	45° Powerturn	N/A	B-0103-P1
ME2-07	Manual Encoding 2	Horizontal Conveyor	N/A	B-0103-P1
ME2-08	Manual Encoding 2	90° Spiral Powerturn	N/A	B-0103-P1
ME2-09	Manual Encoding 2	Horizontal Conveyor	N/A	B-0103-P1
ME2-10	Manual Encoding 2	90° Spiral Powerturn	N/A	B-0103-P1
ME2-11	Manual Encoding 2	Decline Conveyor	N/A	B-0103-P1
ME2-12	Manual Encoding 2	Metering Conveyor	N/A	B-0103-P1
ME2-13	Manual Encoding 2	Metering Conveyor	N/A	B-0103-P1
ME2-14	Manual Encoding 2	Metering Conveyor	N/A	B-0103-P1
ME2-15	Manual Encoding 2	Metering Conveyor	N/A	B-0103-P1
ME2-16	Manual Encoding 2	Metering	N/A	B-0103-P1

		Conveyor		
ME2-17	Manual Encoding 2	Metering Conveyor	N/A	B-0103-P1
ME2-18	Manual Encoding 2	Metering Conveyor	N/A	B-0103-P1
ME2-19	Manual Encoding 2	Metering Conveyor	N/A	B-0103-P1
ME2-20	Manual Encoding 2	90° Powerturn	N/A	B-0103-P1
ME2-21	Manual Encoding 2	Metering Conveyor	N/A	B-0103-P1
ME2-22	Manual Encoding 2	Metering Conveyor	N/A	B-0103-P1
ME2-23	Manual Encoding 2	90° Powerturn	N/A	B-0103-P1
ME2-24	Manual Encoding 2	45° Spiral Powerturn	N/A	B-0103-P1
ME2-P1	Manual Encoding 2	Pusher	N/A	B-2106b-P1/P2
ME3-01	Manual Encoding 3	Metering Conveyor	N/A	B-0123-a
ME3-02	Manual Encoding 3	Metering Conveyor	N/A	B-0123-a
ME3-03	Manual Encoding 3	Metering Conveyor	N/A	B-0123-a
ME3-04	Manual Encoding 3	Metering Conveyor	N/A	B-0123-a
ME3-05	Manual Encoding 3	90° Powerturn	N/A	B-0123-a
ME3-06	Manual Encoding 3	Metering Conveyor	N/A	B-0123-a
ME3-07	Manual Encoding 3	Metering Conveyor	N/A	B-0123-a
ME3-08	Manual Encoding 3	45° Powerturn	N/A	B-0123-a
ME3-09	Manual Encoding 3	Horizontal Conveyor	N/A	B-0123-a
ME3-10	Manual Encoding 3	45° Merge Conveyor	N/A	B-0123-a
ML1-01	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0103-P1
ML1-02	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0103-P1
ML1-03	Make-Up Unit 1 through 5	Incline Conveyor	N/A	B-2106a-P1/P2
ML1-04	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0102
ML1-05	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0102
ML1-06	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0102
ML1-07	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0102

ML1-08	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0101
ML1-09	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0101
ML1-2A	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0103-P2
ML1-2B	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0103-P2
ML1-SA	Make-Up Unit 1 through 5	N/A	N/A	B-0103-P1
ML1-VS	Make-Up Unit 1 through 5	N/A	N/A	B-0103-P2
ML2-01	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0103-P1
ML2-02	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0103-P1
ML2-03	Make-Up Unit 1 through 5	Incline Conveyor	N/A	B-2106b-P1/P2
ML2-04	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0102
ML2-05	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0102
ML2-06	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0102
ML2-07	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0102
ML2-08	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0101
ML2-09	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0101
ML2-10	Make-Up Unit 1 through 5	90° Powerturn	N/A	B-0101
ML2-11	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0101
ML2-12	Make-Up Unit 1 through 5	Metering Conveyor	N/A	B-0101
ML2-15	Make-Up Unit 1 through 5	45° Merge Conveyor	N/A	B-0101
ML2-2A	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0103-P2
ML2-2B	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0103-P2
ML2-SA	Make-Up Unit 1 through 5	N/A	N/A	B-2106b-P1/P2
ML2-VS	Make-Up Unit 1 through 5	N/A	N/A	B-2106b-P1/P2
ML3-01	Make-Up Unit 1 through 5	Decline Conveyor	N/A	B-0123-a

ML3-02	Make-Up Unit 1 through 5	45° Powerturn	N/A	B-0123-a
ML3-03	Make-Up Unit 1 through 5	Decline Conveyor	N/A	B-0123-a
ML3-04	Make-Up Unit 1 through 5	45° Powerturn	N/A	B-0123-a
ML3-05	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0123-a
ML3-06	Make-Up Unit 1 through 5	45° Powerturn	N/A	B-0123-a
ML3-07	Make-Up Unit 1 through 5	Incline Conveyor	N/A	B-0123-a
ML3-08	Make-Up Unit 1 through 5	90° Powerturn	N/A	B-0123-a
ML3-09	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0123-a
ML3-10	Make-Up Unit 1 through 5	45° Powerturn	N/A	B-0123-a
ML3-11	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0123-a
ML3-12	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0123-a
ML3-13	Make-Up Unit 1 through 5	Incline Conveyor	N/A	B-0123-a
ML3-14	Make-Up Unit 1 through 5	45° Powerturn	N/A	B-0123-a
ML3-15	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0123-a
ML3-16	Make-Up Unit 1 through 5	90° Powerturn	N/A	B-0123-a
ML3-17	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0123-a
ML3-18	Make-Up Unit 1 through 5	Metering Conveyor	N/A	B-0123-a
ML3-19	Make-Up Unit 1 through 5	Metering Conveyor	N/A	B-0123-a
ML3-20	Make-Up Unit 1 through 5	Decline Conveyor	N/A	B-0123-a
ML3-21	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0123-a
ML3-22	Make-Up Unit 1 through 5	45° Powerturn	N/A	B-0123-a
ML3-23	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0123-a
ML3-24	Make-Up Unit 1 through 5	45° Powerturn	N/A	B-0123-a
ML3-25	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0123-a
ML3-26	Make-Up Unit 1 through 5	45° Powerturn	N/A	B-0123-a

ML3-27	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0123-a
ML3-28	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0123-a
ML3-29	Make-Up Unit 1 through 5	Incline Conveyor	N/A	B-0123-a
ML3-30	Make-Up Unit 1 through 5	Horizontal Conveyor	N/A	B-0123-a
ML3-P1	Make-Up Unit 1 through 5	High Speed Pusher	N/A	B-0123-a
ML3-P2	Make-Up Unit 1 through 5	High Speed Pusher	N/A	B-0123-a
ML3-P3	Make-Up Unit 1 through 5	High Speed Pusher	N/A	B-0123-a
ML3-P4	Make-Up Unit 1 through 5	High Speed Pusher	N/A	B-0123-a
ML3-P5	Make-Up Unit 1 through 5	High Speed Pusher	N/A	B-0123-a
ML3-P6	Make-Up Unit 1 through 5	High Speed Pusher	N/A	B-0123-a

ML3-P7	Make-Up Unit 1 through 5	High Speed Pusher	N/A	B-0123-a
ML3-P8	Make-Up Unit 1 through 5	High Speed Pusher	N/A	B-0123-a
ML3-SA	Make-Up Unit 1 through 5	Scanner Array	N/A	B-0123-a
MS1-01	Make-Up Unit 1	Decline Conveyor	N/A	B-0102
MS1-02	Make-Up Unit 1	Decline Conveyor	N/A	B-0102
MS1-P1	Make-Up Unit 1	Pusher	N/A	B-0102
MS1-P2	Make-Up Unit 1	Pusher	N/A	B-0102
MS2-01	Make-Up Unit 2	Decline Conveyor	N/A	B-0102
MS2-02	Make-Up Unit 2	Decline Conveyor	N/A	B-0102
MS2-P1	Make-Up Unit 2	Pusher	N/A	B-0102
MS2-P2	Make-Up Unit 2	Pusher	N/A	B-0102
MS3-01	Make-Up Unit 3	Decline Conveyor	N/A	B-0102
MS3-02	Make-Up Unit 3	Decline Conveyor	N/A	B-0102
MS3-P1	Make-Up Unit 3	Pusher	N/A	B-0102
MS3-P2	Make-Up Unit 3	Pusher	N/A	B-0102
MS4-01	Make-Up Unit 4	Decline Conveyor	N/A	B-0101
MS4-02	Make-Up Unit 4	Decline Conveyor	N/A	B-0101
MS4-P1	Make-Up Unit 4	Pusher	N/A	B-0101
MS4-P2	Make-Up Unit 4	Pusher	N/A	B-0101
MS5-01	Make-Up Unit 5	Decline Conveyor	N/A	B-0101
MS5-02	Make-Up Unit 5	Decline Conveyor	N/A	B-0101
MS5-P1	Make-Up Unit 5	Pusher	N/A	B-0101
MS5-P2	Make-Up Unit 5	Pusher	N/A	B-0101
MS6-01	Make-Up Unit 6	Horizontal Conveyor	N/A	B-0123-a
MS6-02	Make-Up Unit 6	90° Powerturn	N/A	B-0123-a
MS6-03	Make-Up Unit 6	90° Powerturn	N/A	B-0123-a
MS6-04	Make-Up Unit 6	Decline Conveyor	N/A	B-0123-a
MS7-01	Make-Up Unit 7	Horizontal Conveyor	N/A	B-0123-a
MS7-02	Make-Up Unit 7	90° Powerturn	N/A	B-0123-a
MS7-03	Make-Up Unit 7	Horizontal Conveyor	N/A	B-0123-a
MS7-04	Make-Up Unit 7	90° Powerturn	N/A	B-0123-a
MS7-05	Make-Up Unit 7	Decline Conveyor	N/A	B-0123-a
MS8-01	Make-Up Unit 8	Horizontal Conveyor	N/A	B-0123-a
MS8-02	Make-Up Unit 8	90° Powerturn	N/A	B-0123-a
MS8-03	Make-Up Unit 8	Decline Conveyor	N/A	B-0123-a
MU-01	Make-Up Unit 1	Claim Device	N/A	B-0102
MU-02	Make-Up Unit 2	Claim Device	N/A	B-0102
MU-03	Make-Up Unit 3	Claim Device	N/A	B-0102

MU-05	Make-Up Unit 4	Claim Device	N/A	B-0101
MU-06	Make-Up Unit 6	Claim Device	N/A	B-0123-a
MU-07	Make-Up Unit 7	Claim Device	N/A	B-0123-a
MU-08	Make-Up Unit 8	Claim Device	N/A	B-0123-a
OS1-02	Oversized Baggage	45° Spiral Powerturn	N/A	B-0106-P1
OS1-03	Oversized Baggage	Horizontal Conveyor	N/A	B-0106-P1
OS1-04	Oversized Baggage	45° Powerturn	N/A	B-0106-P1
OS1-05	Oversized Baggage	Horizontal Conveyor	N/A	B-0106-P1
RA1-01	Re-Check Baggage	Horizontal Conveyor	N/A	B-0311
RA1-02	Re-Check Baggage	90° Spiral Powerturn	N/A	B-0211
RA1-03	Re-Check Baggage	Decline Conveyor	N/A	B-0211
RA1-04	Re-Check Baggage	Horizontal Conveyor	N/A	B-0211
RA1-05	Re-Check Baggage	90° Powerturn	N/A	B-0213
RA1-06	Re-Check Baggage	Horizontal Conveyor	N/A	B-0213
RA1-07	Re-Check Baggage	Horizontal Conveyor	N/A	B-0213
RA1-08	Re-Check Baggage	90° Powerturn	N/A	B-0213
RA1-09	Re-Check Baggage	Horizontal Conveyor	N/A	B-0213
RA1-10	Re-Check Baggage	Metering Conveyor	N/A	B-0213
RA1-11	Re-Check Baggage	Metering Conveyor	N/A	B-0213
RA1-12	Re-Check Baggage	45° Merge Conveyor	N/A	B-0213
RA2-01	Make-Up Unit 6	Horizontal Conveyor	N/A	B-0311
RA2-02	Make-Up Unit 6	90° Spiral Powerturn	N/A	B-0211
RA2-03	Make-Up Unit 6	Decline Conveyor	N/A	B-0211
RA2-04	Make-Up Unit 6	Metering Conveyor	N/A	B-0211
RA2-05	Make-Up Unit 6	180° Powerturn	N/A	B-0213
RA2-06	Make-Up Unit 6	Horizontal Conveyor	N/A	B-0213
RA2-07	Make-Up Unit 6	45° Powerturn	N/A	B-0211
RA2-08	Make-Up Unit 6	Decline Conveyor	N/A	B-0211
RA2-09	Make-Up Unit 6	Decline Conveyor	N/A	B-0214
RA2-10	Make-Up Unit 6	Decline Conveyor	N/A	B-0214
RA2-11	Make-Up Unit 6	Decline Conveyor	N/A	B-0214
RA2-12	Make-Up Unit 6	5° Tapered Roller	N/A	B-0214

RA2-13	Make-Up Unit 6	Horizontal Conveyor	N/A	B-0108
RA2-14	Make-Up Unit 6	45° Spiral Powerturn	N/A	B-0108
RA2-15	Make-Up Unit 6	Decline Conveyor	N/A	B-0108
RA2-16	Make-Up Unit 6	Horizontal Conveyor	N/A	B-0108
RA2-17	Make-Up Unit 6	Decline Conveyor	N/A	B-0108
RA2-18	Make-Up Unit 6	Horizontal Conveyor	N/A	B-0123-a
RA2-19	Make-Up Unit 6	45° Powerturn	N/A	B-0123-a
RA2-20	Make-Up Unit 6	Horizontal Conveyor	N/A	B-0123-a
RA2-21	Make-Up Unit 6	90° Powerturn	N/A	B-0123-a
RA2-22	Make-Up Unit 6	Decline Conveyor	N/A	B-0123-a
RA2-23	Make-Up Unit 7	Metering Conveyor	N/A	B-0123-a
RA2-24	Make-Up Unit 6	45° Merge Conveyor	N/A	B-0123-a
RC1-01	Re-Checked Baggage	Horizontal Conveyor	N/A	B-0313
RC1-02	Re-Checked Baggage	Decline Conveyor	N/A	B-0213
RC1-03	Re-Checked Baggage	Metering Conveyor	N/A	B-0213
RC1-04	Re-Checked Baggage	45° Powerturn	N/A	B-0213
RC1-05	Re-Checked Baggage	Horizontal Conveyor	N/A	B-0213
RC1-06	Re-Checked Baggage	90° Powerturn	N/A	B-0213
RC1-07	Re-Checked Baggage	Horizontal Conveyor	N/A	B-0213
RC1-08	Re-Checked Baggage	Horizontal Conveyor	N/A	B-0213
RC1-10	Re-Checked Baggage	Decline Conveyor	N/A	B-0214
RC1-11	Re-Checked Baggage	Decline Conveyor	N/A	B-0214
RC1-12	Re-Checked Baggage	Decline Conveyor	N/A	B-0214
RC1-13	Re-Checked Baggage	Horizontal Conveyor	N/A	B-0214
RC1-14	Re-Checked Baggage	5° Tapered Roller	N/A	B-0214
RC1-15	Re-Checked Baggage	Horizontal Conveyor	N/A	B-0214
RC1-16	Re-Checked Baggage	8° Tapered Roller	N/A	B-0214
RC1-17	Re-Checked Baggage	Horizontal Conveyor	N/A	B-2112
RC1-19	Re-Checked Baggage	Incline Conveyor	N/A	B-0119
RC1-20	Re-Checked Baggage	Horizontal Conveyor	N/A	B-0119
RC1-20A	Re-Checked Baggage	N/A	N/A	B-0119
RC1-20B	Re-Checked Baggage	N/A	N/A	B-0119

RC1-20C	Re-Checked Baggage	N/A	N/A	B-0119
RC1-20D	Re-Checked Baggage	N/A	N/A	B-0119

RC1-21	Re-Checked Baggage	Horizontal Conveyor	N/A	B-0119
RC1-22	Re-Checked Baggage	45° Powerturn	N/A	B-0119
RC1-23	Re-Checked Baggage	Horizontal Conveyor	N/A	B-0119
RC1-24	Re-Checked Baggage	45° Powerturn	N/A	B-0119
RC1-25	Re-Checked Baggage	Horizontal Conveyor	N/A	B-0119
RC1-26	Re-Checked Baggage	45° Powerturn	N/A	B-0120
RC1-27	Re-Checked Baggage	Horizontal Conveyor	N/A	B-0120
RC1-28	Re-Checked Baggage	45° Powerturn	N/A	B-0120
RC1-29	Re-Checked Baggage	Horizontal Conveyor	N/A	B-0120
RC1-30	Re-Checked Baggage	Incline Conveyor	N/A	B-0120
RC1-31	Re-Checked Baggage	Decline Conveyor	N/A	B-0120
RC1-32	Re-Checked Baggage	Horizontal Conveyor	N/A	B-0120
RC1-33	Re-Checked Baggage	Horizontal Conveyor	N/A	B-0120
RC1-34	Re-Checked Baggage	Horizontal Conveyor	N/A	B-0121
RC1-35	Re-Checked Baggage	90° Powerturn	N/A	B-0121
RC1-36	Re-Checked Baggage	Decline Conveyor	N/A	B-0121
RC1-37	Re-Checked Baggage	90° Powerturn	N/A	B-0121
RC1-38	Re-Checked Baggage	Horizontal Conveyor	N/A	B-0121
RC1-38A	Re-Checked Baggage	N/A	N/A	B-0121
RC1-38B	Re-Checked Baggage	N/A	N/A	B-0121
RC1-38C	Re-Checked Baggage	N/A	N/A	B-0121
RC1-39	Re-Checked Baggage	Horizontal Conveyor	N/A	B-0121
RC1-40	Re-Checked Baggage	Horizontal Conveyor	N/A	B-0121
RC1-41	Re-Checked Baggage	Horizontal Conveyor	N/A	B-0122
RC1-42	Re-Checked Baggage	Horizontal Conveyor	N/A	B-0122
RC1-43	Re-Checked Baggage	45° Powerturn	N/A	B-0122
RC1-44	Re-Checked Baggage	Decline Conveyor	N/A	B-0122
RC1-45	Re-Checked Baggage	45° Powerturn	N/A	B-0122
RC1-46	Re-Checked Baggage	Decline Conveyor	N/A	B-0122
RC2-01	Re-Checked Baggage	Horizontal Conveyor	N/A	B-0313

RC2-02	Re-Checked Baggage	Decline Conveyor	N/A	B-0213
RC2-03	Re-Checked Baggage	Horizontal Conveyor	N/A	B-0213
RC2-04	Re-Checked Baggage	90° Powerturn	N/A	B-0213
RC2-05	Re-Checked Baggage	Metering Conveyor	N/A	B-0213
RC2-06	Re-Checked Baggage	Metering Conveyor	N/A	B-0213
RC2-07	Re-Checked Baggage	45° Merge Conveyor	N/A	B-0213
RL/ETD-04	N/A	N/A	Run Lanyard	B-3123-P2
RL/OS1-05	Oversized Baggage	N/A	Run Lanyard	B-3106-P1
RX1-01	Make-Up Units 1 through 5	90° Powerturn	N/A	B-0101
RX1-02	Make-Up Units 1 through 5	Metering Conveyor	N/A	B-0101
RX1-03	Make-Up Units 1 through 5	Metering Conveyor	N/A	B-0101
RX1-04	Make-Up Units 1 through 5	Horizontal Conveyor	N/A	B-0101
RX1-05	Make-Up Units 1 through 5	90° Powerturn	N/A	B-0101
RX1-06	Make-Up Units 1 through 5	Horizontal Conveyor	N/A	B-0101
RX1-07	Make-Up Units 1 through 5	Horizontal Conveyor	N/A	B-0101
RX1-08	Make-Up Units 1 through 5	Horizontal Conveyor	N/A	B-0102
RX1-09	Make-Up Units 1 through 5	Horizontal Conveyor	N/A	B-0102
RX1-10	Make-Up Units 1 through 5	Horizontal Conveyor	N/A	B-0102
RX1-11	Make-Up Units 1 through 5	45° Powerturn	N/A	B-0102
RX1-12	Make-Up Units 1 through 5	Metering Conveyor	N/A	B-0102
RX1-13	Make-Up Units 1 through 5	45° Powerturn	N/A	B-0102
RX1-14	Make-Up Units 1 through 5	Decline Conveyor	N/A	B-0102
RX1-15	Make-Up Units 1 through 5	Horizontal Conveyor	N/A	B-0102
RX1-16	Make-Up Units 1 through 5	45° Spiral Powerturn	N/A	B-0102
RX1-17	Make-Up Units 1 through 5	Incline Conveyor	N/A	B-0102
RX1-18	Make-Up Units 1 through 5	45° Spiral Powerturn	N/A	B-0102
RX1-19	Make-Up Units 1 through	Horizontal	N/A	B-0102

	5	Conveyor		
RX1-20	Make-Up Units 1 through 5	Horizontal Conveyor	N/A	B-0103-P1
RX1-21	Make-Up Units 1 through 5	Horizontal Conveyor	N/A	B-0103-P1
RX1-22	Make-Up Units 1 through 5	90° Powerturn	N/A	B-0103-P1
RX1-23	Make-Up Units 1 through 5	Horizontal Conveyor	N/A	B-0103-P1
RX1-24	Make-Up Units 1 through 5	Metering Conveyor	N/A	B-0103-P1
RX1-25	Make-Up Units 1 through 5	Metering Conveyor	N/A	B-0103-P1
RX1-26	Make-Up Units 1 through 5	45° Powerturn	N/A	B-0103-P1
RX1-27	Make-Up Units 1 through 5	45° Merge Conveyor	N/A	B-0103-P1
SD/C4-04	N/A	N/A	Security Door	B-0120
SD/IB1-17	Claim Device 1	N/A	Security Door	B-2118
SD/IB2-19	Claim Device 2	N/A	Security Door	B-2119
SD/IB3-21	Claim Device 3	N/A	Security Door	B-2120
SD/IB5-18	Claim Device 5	N/A	Security Door	B-2121
SD/RA2-17	Make-Up Unit 6	N/A	Security Door	B-0108
SD/RC1-01	Re-Checked Baggage	N/A	Security Door	B-2123
SD/RC1-20	Re-Checked Baggage	N/A	Security Door	B-0119
SD/RC1-29	Re-Checked Baggage	N/A	Security Door	B-0120
SD/RC1-38	Re-Checked Baggage	N/A	Security Door	B-0121
SD/T1-06	Ticket Counter 1	N/A	Security Door	B-0119
SD/TC1-11	Ticket Counter 1	N/A	Security Door	B-2109
SD/TC4-12	Ticket Counter 4	N/A	Security Door	B-2110
SD/TC5-11	Ticket Counter 5	N/A	Security Door	B-2110
SD/TC6-10	Ticket Counter 6	N/A	Security Door	B-0107-P1
SD/TX1-03	Transfer Conveyor 1	N/A	Security Door	B-0104
SD/TX2-40	Transfer Conveyor 2	N/A	Security Door	B-0104
SG/ME1-17	Manual Encoding 1	N/A	Scanner Gun	B-3103-P1
SG/ME2-16	Manual Encoding 2	N/A	Scanner Gun	B-3103-P1
T1-01	N/A	N/A	N/A	B-0119
T1-02	N/A	N/A	N/A	B-0119
T1-03	N/A	N/A	N/A	B-0119
T1-04	N/A	N/A	N/A	B-0119
T1-05	N/A	N/A	N/A	B-0119
T1-06	N/A	N/A	N/A	B-0119
T4-04	N/A	N/A	N/A	B-0120
T4-05	N/A	N/A	N/A	B-0120
T4-06	N/A	N/A	N/A	B-0120
T4-07	N/A	N/A	N/A	B-0120

TC1-01	Ticket Counter 1	Horizontal Conveyor	N/A	B-2109
TC1-05	Ticket Counter 1	90° Spiral Powerturn	N/A	B-0105-P1
TC1-06	Ticket Counter 1	Metering Conveyor	N/A	B-0105-P1
TC1-07	Ticket Counter 1	45° Powerturn	N/A	B-0105-P1
TC1-08	Ticket Counter 1	Decline Conveyor	N/A	B-0105-P1
TC1-09	Ticket Counter 1	Metering Conveyor	N/A	B-0105-P1
TC1-10	Ticket Counter 1	Metering Conveyor	N/A	B-0105-P1
TC1-11	Ticket Counter 1	Horizontal Conveyor	N/A	B-0105-P1
TC1-12	Ticket Counter 1	45° Powerturn	N/A	B-0105-P1
TC1-13	Ticket Counter 1	Metering Conveyor	N/A	B-0105-P1
TC1-14	Ticket Counter 1	45° Powerturn	N/A	B-0105-P1
TC1-15	Ticket Counter 1	Incline Conveyor	N/A	B-0105-P1
TC1-16	Ticket Counter 1	Horizontal Conveyor	N/A	B-0105-P1
TC1-17	Ticket Counter 1	Horizontal Conveyor	N/A	B-0105-P1
TC1-18	Ticket Counter 1	45° Powerturn	N/A	B-0105-P1
TC1-19	Ticket Counter 1	Decline Conveyor	N/A	B-0105-P1
TC1-20	Ticket Counter 1	Horizontal Conveyor	N/A	B-0105-P1
TC1-21	Ticket Counter 1	45° Powerturn	N/A	B-0105-P1
TC1-22	Ticket Counter 1	Horizontal Conveyor	N/A	B-0105-P1
TC1-23	Ticket Counter 1	Horizontal Conveyor	N/A	B-0105-P1
TC1-24	Ticket Counter 1	Metering Conveyor	N/A	B-0105-P1
TC1-25	Ticket Counter 1	Metering Conveyor	N/A	B-0105-P1
TC1-26	Ticket Counter 1	Metering Conveyor	N/A	B-0105-P1
TC1-27	Ticket Counter 1	Horizontal Conveyor	N/A	B-0105-P1
TC1-28	Ticket Counter 1	Incline Conveyor	N/A	B-0105-P1
TC1-29	Ticket Counter 1	45° Powerturn	N/A	B-0105-P1
TC1-30	Ticket Counter 1	Horizontal Conveyor	N/A	B-0104
TC1-31	Ticket Counter 1	Metering Conveyor	N/A	B-0104
TC1-38	Ticket Counter 1	N/A	N/A	B-0104
TC1-39	Ticket Counter 1	N/A	N/A	B-0104

TC1-40	Ticket Counter 1	N/A	N/A	B-0104
TC1-41	Ticket Counter 1	N/A	N/A	B-0104
TC1-42	Ticket Counter 1	N/A	N/A	B-0103-P1
TC1-43	Ticket Counter 1	N/A	N/A	B-0103-P1
TC1-44	Ticket Counter 1	N/A	N/A	B-0103-P1
TC1-45	Ticket Counter 1	N/A	N/A	B-2106a-P1/P2
TC1-46	Ticket Counter 1	N/A	N/A	B-2106a-P1/P2
TC2-05	Ticket Counter 2	90° Spiral Powerturn	N/A	B-0106-P1
TC2-06	Ticket Counter 2	45° Powerturn	N/A	B-0106-P1
TC2-07	Ticket Counter 2	Horizontal Conveyor	N/A	B-0106-P1
TC2-08	Ticket Counter 2	45° Powerturn	N/A	B-0106-P1
TC2-09	Ticket Counter 2	Horizontal Conveyor	N/A	B-0106-P1
TC2-10	Ticket Counter 2	Horizontal Conveyor	N/A	B-0106-P1
TC2-11	Ticket Counter 2	45° Powerturn	N/A	B-0106-P1
TC2-12	Ticket Counter 2	Horizontal Conveyor	N/A	B-0106-P1
TC2-13	Ticket Counter 2	45° Powerturn	N/A	B-0106-P1
TC2-14	Ticket Counter 2	Horizontal Conveyor	N/A	B-0106-P1
TC2-15	Ticket Counter 2	Horizontal Conveyor	N/A	B-0106-P1
TC2-16	Ticket Counter 2	Decline Conveyor	N/A	B-0106-P1
TC2-17	Ticket Counter 2	Metering Conveyor	N/A	B-0106-P1
TC2-18	Ticket Counter 2	Metering Conveyor	N/A	B-0106-P1
TC2-19	Ticket Counter 2	Horizontal Conveyor	N/A	B-0106-P1
TC2-20	Ticket Counter 2	Horizontal Conveyor	N/A	B-0106-P1
TC2-21	Ticket Counter 2	Incline Conveyor	N/A	B-0106-P1
TC2-22	Ticket Counter 2	Horizontal Conveyor	N/A	B-0106-P1
TC2-23	Ticket Counter 2	Horizontal Conveyor	N/A	B-0106-P1
TC2-24	Ticket Counter 2	45° Powerturn	N/A	B-0105-P1
TC2-25	Ticket Counter 2	Decline Conveyor	N/A	B-0105-P1
TC2-26	Ticket Counter 2	Horizontal Conveyor	N/A	B-0105-P1
TC2-27	Ticket Counter 2	45° Powerturn	N/A	B-0105-P1
TC2-28	Ticket Counter 2	Horizontal Conveyor	N/A	B-0105-P1

TC2-29	Ticket Counter 2	Horizontal Conveyor	N/A	B-0105-P1
TC2-30	Ticket Counter 2	Metering Conveyor	N/A	B-0105-P1
TC2-31	Ticket Counter 2	Metering Conveyor	N/A	B-0105-P1
TC2-32	Ticket Counter 2	Metering Conveyor	N/A	B-0105-P1
TC2-33	Ticket Counter 2	Metering Conveyor	N/A	B-0105-P1
TC2-34	Ticket Counter 2	Horizontal Conveyor	N/A	B-0105-P1
TC2-35	Ticket Counter 2	Horizontal Conveyor	N/A	B-0105-P1
TC3-05	Ticket Counter 3	Horizontal Conveyor	N/A	B-0106-P1
TC3-06	Ticket Counter 3	Horizontal Conveyor	N/A	B-0106-P1
TC3-07	Ticket Counter 3	Horizontal Conveyor	N/A	B-0106-P1
TC3-08	Ticket Counter 3	Horizontal Conveyor	N/A	B-0106-P1
TC3-09	Ticket Counter 3	Horizontal Conveyor	N/A	B-0106-P1
TC3-10	Ticket Counter 3	10° Tapered Roller	N/A	B-0106-P1
TC3-11	Ticket Counter 3	Horizontal Conveyor	N/A	B-0106-P1
TC3-12	Ticket Counter 3	Horizontal Conveyor	N/A	B-0106-P1
TC3-13	Ticket Counter 3	10° Tapered Roller	N/A	B-0106-P1
TC3-14	Ticket Counter 3	Decline Conveyor	N/A	B-0107-P1
TC3-15	Ticket Counter 3	Horizontal Conveyor	N/A	B-0107-P1
TC3-16	Ticket Counter 3	Metering Conveyor	N/A	B-0107-P1
TC3-17	Ticket Counter 3	Metering Conveyor	N/A	B-0107-P1
TC3-18	Ticket Counter 3	Metering Conveyor	N/A	B-0107-P1
TC3-19	Ticket Counter 3	Horizontal Conveyor	N/A	B-0107-P1
TC3-20	Ticket Counter 3	90° Powerturn	N/A	B-0107-P1
TC3-21	Ticket Counter 3	Horizontal Conveyor	N/A	B-2111
TC3-22	Ticket Counter 3	Incline Conveyor	N/A	B-2111
TC3-23	Ticket Counter 3	Metering Conveyor	N/A	B-0123-a
TC3-24	Ticket Counter 3	Metering Conveyor	N/A	B-0123-a

TC3-25	Ticket Counter 3	45° Spiral Powerturn	N/A	B-0123-a
TC3-26	Ticket Counter 3	Metering Conveyor	N/A	B-0123-a
TC3-27	Ticket Counter 3	Metering Conveyor	N/A	B-0123-a
TC3-28	Ticket Counter 3	45° Merge Conveyor	N/A	B-0123-a
TC4-01	Ticket Counter 4	Horizontal Conveyor	N/A	B-2110
TC4-04	Ticket Counter 4	90° Spiral Powerturn	N/A	B-0106-P1
TC4-05	Ticket Counter 4	Tapered Roller	N/A	B-0106-P1
TC4-06	Ticket Counter 4	Incline Conveyor	N/A	B-0107-P1
TC4-07	Ticket Counter 4	Tapered Roller	N/A	B-0107-P1
TC4-08	Ticket Counter 4	Horizontal Conveyor	N/A	B-0107-P1
TC4-09	Ticket Counter 4	Horizontal Conveyor	N/A	B-0107-P1
TC4-10	Ticket Counter 4	Horizontal Conveyor	N/A	B-0107-P1
TC4-11	Ticket Counter 4	10° Tapered Roller	N/A	B-0107-P1
TC4-12	Ticket Counter 4	Decline Conveyor	N/A	B-0107-P1
TC4-13	Ticket Counter 4	Horizontal Conveyor	N/A	B-0107-P1
TC4-14	Ticket Counter 4	10° Tapered Roller	N/A	B-0107-P1
TC4-15	Ticket Counter 4	Decline Conveyor	N/A	B-0107-P1
TC4-16	Ticket Counter 4	Metering Conveyor	N/A	B-0107-P1
TC4-17	Ticket Counter 4	Metering Conveyor	N/A	B-0107-P1
TC4-18	Ticket Counter 4	Metering Conveyor	N/A	B-0107-P1
TC4-19	Ticket Counter 4	Horizontal Conveyor	N/A	B-0107-P1
TC4-20	Ticket Counter 4	Horizontal Conveyor	N/A	B-0107-P1
TC4-21	Ticket Counter 4	90° Powerturn	N/A	B-2111
TC4-23	Ticket Counter 4	Incline Conveyor	N/A	B-0123-a
TC4-24	Ticket Counter 4	Metering Conveyor	N/A	B-0123-a
TC4-25	Ticket Counter 4	Metering Conveyor	N/A	B-0123-a
TC4-26	Ticket Counter 4	90° Powerturn	N/A	B-0123-a
TC5-01	Ticket Counter 5	N/A	N/A	B-2110
TC5-04	Ticket Counter 5	N/A	N/A	B-0106-P1
TC5-05	Ticket Counter 5	N/A	N/A	B-0106-P1
TC5-06	Ticket Counter 5	N/A	N/A	B-0106-P1

TC5-07	Ticket Counter 5	N/A	N/A	B-0106-P1
TC5-08	Ticket Counter 5	N/A	N/A	B-0106-P1
TC5-09	Ticket Counter 5	N/A	N/A	B-0106-P1
TC5-10	Ticket Counter 5	N/A	N/A	B-0106-P1
TC5-11	Ticket Counter 5	N/A	N/A	B-0105-P1
TC5-12	Ticket Counter 5	N/A	N/A	B-0105-P1
TC5-13	Ticket Counter 5	N/A	N/A	B-0105-P1
TC5-14	Ticket Counter 5	N/A	N/A	B-0105-P1
TC6-01	Ticket Counter 6	N/A	N/A	B-2111
TC6-04	Ticket Counter 6	N/A	N/A	B-0106-P1
TC6-05	Ticket Counter 6	N/A	N/A	B-0106-P1
TC6-06	Ticket Counter 6	N/A	N/A	B-0106-P1
TC6-07	Ticket Counter 6	N/A	N/A	B-0106-P1
TC6-08	Ticket Counter 6	N/A	N/A	B-0106-P1
TC6-09	Ticket Counter 6	N/A	N/A	B-0106-P1
TC6-10	Ticket Counter 6	N/A	N/A	B-0106-P1
TC6-11	Ticket Counter 6	N/A	N/A	B-0106-P1
TC6-12	Ticket Counter 6	N/A	N/A	B-0106-P1
TC6-13	Ticket Counter 6	N/A	N/A	B-0106-P1
TC6-14	Ticket Counter 6	N/A	N/A	B-0106-P1
TC6-15	Ticket Counter 6	N/A	N/A	B-0106-P1
TX1-02	Transfer Conveyor 1	Horizontal Conveyor	N/A	B-0104
TX1-03	Transfer Conveyor 1	Incline Conveyor	N/A	B-0104
TX1-04	Transfer Conveyor 1	90° Spiral Powerturn	N/A	B-0104
TX1-05	Transfer Conveyor 1	Horizontal Conveyor	N/A	B-0104
TX1-06	Transfer Conveyor 1	45° Powerturn	N/A	B-0104
TX1-07	Transfer Conveyor 1	Horizontal Conveyor	N/A	B-0104
TX1-08	Transfer Conveyor 1	Metering Conveyor	N/A	B-0104
TX1-09	Transfer Conveyor 1	Metering Conveyor	N/A	B-0104
TX1-10	Transfer Conveyor 1	45° Merge Conveyor	N/A	B-0104
TX2-03	Transfer Conveyor 2	Incline Conveyor	N/A	B-0104
TX2-04	Transfer Conveyor 2	135° Powerturn	N/A	B-0104
TX2-05	Transfer Conveyor 2	Horizontal Conveyor	N/A	B-0104
TX2-06	Transfer Conveyor 2	Metering Conveyor	N/A	B-0104
TX2-07	Transfer Conveyor 2	Metering Conveyor	N/A	B-0104
TX2-08	Transfer Conveyor 2	45° Merge Conveyor	N/A	B-0104

WA/CD-01	Claim Device 1	Claim Device	Warning Alarm	B-3309
WA/CD-02	Claim Device 2	Claim Device	Warning Alarm	B-3309
WA/CD-03	Claim Device 3	Claim Device	Warning Alarm	B-3310
WA/CD-04	Claim Device 4	Claim Device	Warning Alarm	B-3310
WA/CD-05	Claim Device 5	Claim Device	Warning Alarm	B-3310
WA/CD-06	Claim Device 6	Claim Device	Warning Alarm	B-3310
WA/CD-07	Claim Device 7	Claim Device	Warning Alarm	B-3311
WA/CD-08	Claim Device 8	Claim Device	Warning Alarm	B-3311
WA/IB1-01	Claim Device 1	N/A	Warning Alarm	B-3104
WA/IB1-11	Claim Device 1	N/A	Warning Alarm	B-3205
WA/IB1-16	Claim Device 1	N/A	Warning Alarm	B-3209
WA/IB2-01	Claim Device 2	N/A	Warning Alarm	B-3104
WA/IB2-11	Claim Device 2	N/A	Warning Alarm	B-3205
WA/IB2-18	Claim Device 2	N/A	Warning Alarm	B-3209
WA/IB3-01	Claim Device 3	N/A	Warning Alarm	B-3104
WA/IB3-11	Claim Device 3	N/A	Warning Alarm	B-3205
WA/IB3-16	Claim Device 3	N/A	Warning Alarm	B-3205
WA/IB3-20	Claim Device 3	N/A	Warning Alarm	B-3210
WA/IB4-04	Claim Device 4	N/A	Warning Alarm	B-3105-P1
WA/IB4-10	Claim Device 4	N/A	Warning Alarm	B-3205
WA/IB4-15	Claim Device 4	N/A	Warning Alarm	B-3205
WA/IB4-21	Claim Device 4	N/A	Warning Alarm	B-3210
WA/IB5-01	Claim Device 5	N/A	Warning Alarm	B-3107-P1
WA/IB5-06	Claim Device 5	N/A	Warning Alarm	B-3207
WA/IB5-08	Claim Device 5	N/A	Warning Alarm	B-3207
WA/IB5-17	Claim Device 5	N/A	Warning Alarm	B-3210
WA/IB6-01	Claim Device 6	N/A	Warning Alarm	B-3107-P1
WA/IB6-08	Claim Device 6	N/A	Warning Alarm	B-3207
WA/IB6-11	Claim Device 6	N/A	Warning Alarm	B-3207
WA/IB6-17	Claim Device 6	N/A	Warning Alarm	B-3210
WA/IB7-10	Claim Device 7	N/A	Warning Alarm	B-3207
WA/IB7-13	Claim Device 7	N/A	Warning Alarm	B-3207
WA/IB7-17	Claim Device 7	N/A	Warning Alarm	B-3211
WA/IB8-10	Claim Device 8	N/A	Warning Alarm	B-3207
WA/IB8-15	Claim Device 8	N/A	Warning Alarm	B-3211
WA/MU-01	Make-Up Unit 1	N/A	Warning Alarm	B-3102
WA/MU-02	Make-Up Unit 2	N/A	Warning Alarm	B-3102
WA/MU-03	Make-Up Unit 3	N/A	Warning Alarm	B-3102
WA/MU-04	Make-Up Unit 4	N/A	Warning Alarm	B-3101
WA/MU-05	Make-Up Unit 5	N/A	Warning Alarm	B-3101
WA/OS1-05	Oversized Baggage	N/A	Warning Alarm	B-3106-P1
WA/RA1-01	Re-Check Baggage	N/A	Warning Alarm	B-3311
WA/RA2-09	Re-Check Baggage	N/A	Warning Alarm	B-3214
WA/RA2-11	Re-Check Baggage	N/A	Warning Alarm	B-3214
WA/RC1-02	Re-Check Baggage	N/A	Warning Alarm	B-3313

WA/RC1-11	Re-Check Baggage	N/A	Warning Alarm	B-3214
WA/RC1-13	Re-Check Baggage	N/A	Warning Alarm	B-3214
WA/RC2-02	Re-Check Baggage	N/A	Warning Alarm	B-3313
WA/TC2-1	Ticket Counter 2	N/A	Warning Alarm	B-3106
WA/TC3-1	Ticket Counter 3	N/A	Warning Alarm	B-3106
WA/TC4-1	Ticket Counter 4	N/A	Warning Alarm	B-3106
WA/TC5-1	Ticket Counter 5	N/A	Warning Alarm	B-3106
WA/TC6-1	Ticket Counter 6	N/A	Warning Alarm	B-3107

2.23.2.4 **FUTURE B/C TERMINAL**

FUTURE B/C TERMINAL BAGGAGE CONVEYOR SYSTEM		
B/C Terminal Bag Make-Up System		
Unit No.	**Device Type**	**Special Devices**
CS1-1	60" Center Drive	CS, PE A, PE B,
CS1-2	60" Center Drive Incline	CS, PE, LS
CS1-3	45° Powerturn	N/A
CS1-4	60" Puller Drive Decline	PE
CS1-5	60" Puller Drive	N/A
CS1-6A	45° Powerturn	CS, PE
CS1-6B	60" Puller Drive	CS, PE
CS1-6C	90° Powerturn	N/A
CS1-6D	24" Puller Drive Decline	N/A
CS1-6E	90° Powerturn	N/A
CS1-6F	90° Spiral Decline	N/A
CS1-6G	60" Center Drive	N/A
CS1-6H	Metering Conveyor	N/A
EDS8	EDS	N/A
EDS8A	Metering Conveyor	N/A
EDS8B	Metering Conveyor	N/A
EDS8C	24" Puller Drive	N/A
EDS8D	45° Powerturn	N/A
EDS9	EDS	N/A
EDS9A	Metering Conveyor	N/A
EDS9B	Metering Conveyor	N/A
EDS9C	24" Center Drive Incline	N/A
EDS9D	24" Center Drive	PE

FUTURE B/C TERMINAL BAGGAGE CONVEYOR SYSTEM		
B/C Terminal Bag Make-Up System		
Unit No.	**Device Type**	**Special Devices**
EDS9E	Merge	N/A
CS1-12	24" Center Drive Incline	CS, PE
CS1-13	90° Powerturn	N/A
CS2-1	60" Center Drive	CS, PE, PE, LS
CS2-2	60" Center Drive Incline	CS, PE
CS2-3	90° Spiral Incline	N/A
CS2-4	60" Puller Drive Decline	PE
CS2-5	60" Center Drive	CS, LS, PE
CS2-6	90° Powerturn	N/A
CS2-7	24" Puller Drive Incline	CS, PE
CS2-8	45° Powerturn	N/A
CS2-9	24" Puller Drive	PE
CS2-10	Metering Conveyor	PE
CS2-11	Metering Conveyor	PE
CS2-12	Metering Conveyor	PE
CS2-13	Metering Conveyor	PE
CS2-14	Merge	CS, PE
TX1-1	60" Center Drive	N/A
TX1-2	60" Puller Drive Incline	N/A
TX1-3	60" Puller Drive	N/A
TX1-4	60" Puller Drive	N/A
TX1-5	Metering Conveyor	N/A
TX1-6	Metering Conveyor	N/A
TX1-7	45° Powerturn	N/A
TX1-8	Merge	N/A
TX2-1	60" Center Drive	N/A
TX2-2	60" Center Drive Incline	N/A
TX2-3	180° Powerturn	N/A
TX2-4	60" Puller Drive	N/A
TX2-5	45° Powerturn	N/A
TX2-6	45° Powerturn	N/A
TX2-7	Metering Conveyor	N/A
TX2-8	Metering Conveyor	N/A
TX2-9	Metering Conveyor	N/A
TX2-10	Merge	N/A

FUTURE B/C TERMINAL BAGGAGE CONVEYOR SYSTEM		
B/C Terminal Bag Make-Up System		
Unit No.	**Device Type**	**Special Devices**
OS1-1	60" Center Drive Incline/Decline	LS, PE, PE, PE, PE, CS, CS
OS2-1	60" Puller Drive	N/A
OS2-4	Slide (Below)	N/A
CS3-1	60" Center Drive	N/A
CS3-2	60" Center Drive Incline	SD
CS3-3	45° Powerturn	N/A
CS3-4	60" Center Drive Incline	N/A
CS3-5	45° Powerturn	N/A
CS3-6	60" Center Drive	FD
CS3-7	90° Power Turn	N/A
CS3-8	24" Center Drive Incline	N/A
CS3-10	60" Center Drive	N/A
CS3-11	60" Puller Drive Incline	N/A
CS3-12	60" Center Drive Incline	N/A
CS3-13	90° Powerturn	N/A
CS3-14	60" Puller Drive Incline	N/A
CS3-15	60" Puller Drive	N/A
CS3-16	60" Center Drive Incline	N/A
CS3-17	90° Powerturn	N/A
TC3-1	60" Center Drive	N/A
TC3-2	60" Center Drive	N/A
TC3-3	90° Spiral Incline	N/A
TC3-4	24" Center Drive Incline	N/A
TC3-5	90° Powerturn	N/A
TC3-6	60" Puller Drive	PE
TC3-7	60" Puller Drive	PE, PE
TC3-8	24" Center Drive Incline	CS, PE
TC3-8A	24" Puller Drive	N/A
TC3-9	45° Powerturn	N/A
TC3-10	24" Puller Drive	CS, PE
TC3-11	45° Powerturn	N/A
TC3-12	60" Center Drive	PE, PE

FUTURE B/C TERMINAL BAGGAGE CONVEYOR SYSTEM		
B/C Terminal Bag Make-Up System		
Unit No.	**Device Type**	**Special Devices**
TC3-13	60" Center Drive	CS, PE
TC3-13A	45° Powerturn	N/A
TC3-13B	60" Puller Drive	N/A
TC3-13C	45° Spiral Decline	N/A
TC3-13D	60" Puller Drive Incline	N/A
TC3-15	60" Puller Drive	PE, PE, CS
TC3-16	90° Spiral Incline	N/A
TC3-17	for EDS	N/A
TC4-1	60" Center Drive	N/A
TC4-2A	90° Spiral Incline	N/A
TC4-2B	60" Center Drive	N/A
TC4-3	90° Spiral Incline	SF
TC4-4	24" Puller Drive Incline	N/A
TC4-5	90° Spiral Incline	N/A
TC4-6	60" Center Drive Incline	N/A
TC4-7	Metering Conveyor	N/A
TC4-8	Metering Conveyor	N/A
TC4-9	45° Powerturn	N/A
TC4-10	24" Center Drive	N/A
TC4-11	Merge	N/A
TC5-1	60" Center Drive	N/A
TC5-2	60" Center Drive	N/A
TC5-3	60" Center Drive	SF
TC5-4	90o Power Turn	N/A
TC5-5	Metering Conveyor	N/A
ML1-1	Metering Conveyor	PE
ML1-2	Metering Conveyor	PE, CS
ML1-3	Return Roller	PE
ATR1-1	Automatic Tag Reader	N/A
ML1-4	60" Puller Drive	N/A
ML1-5	60" Center Drive	N/A
ML1-6	60" Center Drive	N/A
ML1-7	60" Center Drive	N/A
ML1-8	60" Puller Drive	N/A
ML1-9	60" Center Drive	N/A

FUTURE B/C TERMINAL BAGGAGE CONVEYOR SYSTEM		
B/C Terminal Bag Make-Up System		
Unit No.	**Device Type**	**Special Devices**
ML1-10	60" Center Drive	N/A
ML2-1	24" Puller Drive	N/A
ML2-2	Metering Conveyor	N/A
ML2-3	Metering Conveyor	N/A
ML2-4	Metering Conveyor	N/A
ATR2-1	Automatic Tag Reader	N/A
ML2-5	60" Puller Drive	N/A
ML2-6	60" Center Drive	N/A
ML2-7	60" Center Drive	N/A
ML2-8	60" Puller Drive	N/A
ML2-9	60" Puller Drive	N/A
ML2-10	60" Center Drive	N/A
ML2-11	60" Puller Drive	N/A
ML3-1	60" Puller Drive	N/A
ML3-2	Metering Conveyor	N/A
ML3-3	Metering Conveyor	N/A
ATR3-1	Automatic Tag Reader	N/A
ML3-4	60" Puller Drive	N/A
ML3-5	60" Center Drive	N/A
ML3-6	60" Center Drive	N/A
ML3-7	60" Puller Drive	N/A
ML3-8	60" Puller Drive	N/A
ML3-9	90° Spiral Decline	N/A
ML3-10	24" Puller Drive	N/A
ML3-11	60" Puller Drive	N/A
MP3-1	Bumper	N/A
ML3-12	30° Powerturn	N/A
ML3-13	Metering Conveyor	N/A
ML3-14	30° Powerturn	N/A
ML3-15	24" Center Drive	N/A
ML3-16	90° Powerturn	N/A
ML3-17	60" Center Drive Incline	N/A
ML3-18	90° Powerturn	N/A
ML3-19	60" Center Drive	N/A
ME1-1	60" Center Drive Incline	N/A
ME1-2	60" Center Drive Incline	N/A
ME1-3	90° Powerturn	N/A
ME1-4	Metering Conveyor	N/A

FUTURE B/C TERMINAL BAGGAGE CONVEYOR SYSTEM		
B/C Terminal Bag Make-Up System		
Unit No.	**Device Type**	**Special Devices**
ME1-5	90° Powerturn	N/A
ME1-6	Metering Conveyor	N/A
ME1-7	Metering Conveyor	N/A
ME1-8	Metering Conveyor	N/A
ME1-9	Metering Conveyor	N/A
ME1-10	Metering Conveyor	N/A
ME1-11	Metering Conveyor	N/A
ME1-12	60" Center Drive Decline	N/A
ME1-13	60" Center Drive Decline	N/A
ME1-14	90° Powerturn	N/A
ME1-15	60" Center Drive Decline	N/A
ME1-16	90° Powerturn	N/A
ME1-17	24" Puller Drive	N/A
ME1-18	Metering Conveyor	N/A
ME1-19	45° Powerturn	N/A
ME1-20	Metering Conveyor	N/A
ME1-21	Metering Conveyor	N/A
ME1-22	Merge	N/A
ME2-1	45° Powerturn	N/A
ME2-2	24" Center Drive	N/A
ME2-3	45° Powerturn	N/A
ME2-4	60" Center Drive	N/A
ME2-5	60" Puller Drive Incline	N/A
ME2-6	Tap. Roller	N/A
ME2-7	60" Puller Drive	N/A
ME2-8	180° Powerturn	N/A
ME2-9	Metering Conveyor	N/A
ME2-10	Metering Conveyor	N/A
ME2-11	Metering Conveyor	N/A
ME2-12	Metering Conveyor	N/A
ME2-13	Metering Conveyor	N/A
ME2-14	Metering Conveyor	N/A
ME2-15	60" Center Drive Incline	N/A
ME2-16	60" Center Drive	N/A
ME2-17	90° Powerturn	N/A
ME2-18	60" Puller Drive	N/A

FUTURE B/C TERMINAL BAGGAGE CONVEYOR SYSTEM		
B/C Terminal Bag Make-Up System		
Unit No.	**Device Type**	**Special Devices**
	Incline	
ME2-19	Metering Conveyor	N/A
ME2-20	Metering Conveyor	N/A
ME2-21	90° Powerturn	N/A
ME2-22	Metering Conveyor	N/A
ME2-23	45° Powerturn	N/A
ME2-24	Merge	PE
MP3-1	Bumper	N/A
ME3-1	60" Puller Drive	N/A
ME3-2	Metering Conveyor	N/A
ME3-3	Metering Conveyor	N/A
ME3-4	Metering Conveyor	N/A
ME3-5	Metering Conveyor	N/A
ME3-6	Metering Conveyor	N/A
ME3-7	90° Spiral Incline	N/A
ME3-8	24" Puller Drive Incline	N/A
ME3-9	Metering Conveyor	N/A
ME3-10	45° Powerturn	N/A
ME3-11	Merge	N/A
PM1-3	Bumper	N/A
MU1-30	60" Puller Drive	N/A
MU1-31	90° Powerturn	N/A
MU1-32	24" Puller Drive Incline	N/A
MU1-33	24" Puller Drive Incline	N/A
PM1-1	Bumper	N/A
MU1-10	60" Puller Drive Incline	N/A
MU1-11	90° Powerturn	N/A
MU1	Carousel	N/A
PM1-2	Bumper	N/A
MU1-20	60" Puller Drive Incline	N/A
MU1-21	90° Powerturn	N/A
MU2	Carousel	N/A
PM2-1	Bumper	N/A
MU2-10	60" Puller Drive	N/A
MU2-11	90° Powerturn	N/A
PM2-2	Bumper	N/A

FUTURE B/C TERMINAL BAGGAGE CONVEYOR SYSTEM		
B/C Terminal Bag Make-Up System		
Unit No.	**Device Type**	**Special Devices**
MU2-20	60" Puller Drive	N/A
MU2-21	90° Powerturn	N/A
PM2-3	Bumper	N/A
MU2-30	60" Puller Drive	N/A
MU2-31	90° Powerturn	N/A
MU2-32	24" Puller Drive Incline	N/A
MU2-33	24" Puller Drive Incline	N/A
PM3-1	Bumper	N/A
MU3-10	60" Puller Drive Incline	N/A
MU3-11	90° Powerturn	N/A
PM3-2	Bumper	N/A
MU3-20	60" Puller Drive Incline	N/A
MU3-21	90° Powerturn	N/A
PM3-3	Bumper	N/A
MU3-30	60" Puller Drive Incline	N/A
MU3-31	90° Powerturn	N/A
MU3-32	24" Puller Drive Incline	N/A
MU3-33	24" Puller Drive Incline	N/A
PM4-1	Bumper	N/A
MU4-10	60" Puller Drive Incline	N/A
MU4-11	90° Powerturn	N/A
PM4-2	Bumper	N/A
MU4-20	60" Puller Drive Incline	N/A
MU4-21	90° Powerturn	N/A
PM4-3	Bumper	N/A
MU4-30	24" Puller Drive	N/A
MU4-31	30° Powerturn	N/A
MU4-32	Metering Conveyor	N/A
MU4-33	45° Powerturn	N/A
MU4-34	24" Puller Drive Incline	N/A
MU4-35	24" Puller Drive Incline	N/A

FUTURE B/C TERMINAL BAGGAGE CONVEYOR SYSTEM		
B/C Terminal Bag Make-Up System		
Unit No.	**Device Type**	**Special Devices**
EDS1	EDS	N/A
EDS2	EDS	N/A
EDS3	EDS	N/A
EDS4	EDS	N/A
EDS5	EDS	N/A
EDS6	EDS	N/A
EDS7	EDS	N/A
MU5	Carousel	N/A
RC1-42	60" Puller Drive Incline	N/A
RC1-43	90° Powerturn	N/A
RC1-44	24" Puller Drive	N/A
RC1-45	90° Powerturn	N/A
RC1-46	60" Center Drive	N/A
RC1-47	60" Center Drive	N/A
RC1-48	60" Center Drive	N/A
RC1-49	60" Center Drive	N/A
MU-4	Carousel	N/A
TC2-1	60" Center Drive	N/A
TC2-2	90° Spiral Incline	N/A
TC2-3	24" Puller Drive Incline	N/A
TC2-4	45° Spiral Incline	N/A
TC2-5	Merge	N/A
TC1-1	60" Puller Drive	N/A

FUTURE B/C TERMINAL BAGGAGE CONVEYOR SYSTEM		
B/C Terminal Baggage Claim		
Unit No.	**Device Type**	**Special Devices**
OF1-2	60" center drive incline	N/A
OF1-3	90° powerturn w/ drive	N/A
OF1-4	60" center drive incline	N/A
OF1-5	Fire Door	N/A
OF1-6	Oversize bags (end of line)	N/A
CF1-1	60" center drive	N/A

FUTURE B/C TERMINAL BAGGAGE CONVEYOR SYSTEM		
B/C Terminal Baggage Claim		
Unit No.	**Device Type**	**Special Devices**
CF1-2	60" center drive	N/A
CF1-3	24" mini-puller drive incline	N/A
CF1-4	45o w/ drive powerturn	N/A
CF1-4A	Metering conveyor	N/A
CF1-5	60" center drive incline	N/A
CF1-6	45° w/ drive powerturn	N/A
CF1-7	Metering conveyor	N/A
CF1-9	Fire Door	N/A
CF1-10	60" center drive incline	N/A
CF1-11	90° powerturn w/ drive	N/A
CU1-1	Bag carousel	N/A
CF2-1	60" puller drive	N/A
CF2-2	60" center drive	N/A
CF2-3	60" center drive incline	N/A
CF2-4	45° w/ drive powerturn	N/A
CF2-5	Metering conveyor	N/A
CF2-6	45° w/ drive powerturn	N/A
CF2-7	24" mini-center drive	N/A
CF2-8	45° w/ drive powerturn	N/A
CF2-9	60" puller drive	N/A
CF2-10	45o w/ drive powerturn	N/A
CF2-11	60" puller drive	N/A
CF2-12	Fire Door	N/A
CF2-13	60" center drive incline	N/A
CF2-14	90° powerturn w/ drive	N/A
CU2-1	Bag carousel	N/A
CF3-1	60" puller drive	N/A
CF3-2	24" mini-puller drive incline	N/A

FUTURE B/C TERMINAL BAGGAGE CONVEYOR SYSTEM		
B/C Terminal Baggage Claim		
Unit No.	**Device Type**	**Special Devices**
CF3-3	60" puller drive incline	N/A
CF3-4	90° powerturn w/ drive	N/A
CF3-5	Fire Door	N/A
CF3-6	60" center drive incline	N/A
CF3-7	90° powerturn w/ drive	N/A
CU3-1	Bag carousel	N/A
CF4-1	60" center drive	N/A
CF4-2	60" center drive incline	N/A
CF4-3	90o powerturn w/ drive	N/A
CF4-4	Fire Door	N/A
CF4-5	60" center drive incline	N/A
CF4-6	90° powerturn w/ drive	N/A
CU4-1	Bag carousel	N/A
CF5-1	60" center drive	N/A
CF5-2	24" mini-center drive incline	N/A
CF5-3	Tap Roller	N/A
CF5-4	24" mini-puller drive incline	N/A
CF5-5	90° spiral powerturn w/ drive	N/A
CF5-6	Metering conveyor	N/A
CF5-7	90° powerturn w/ drive	N/A
CF5-8	Metering conveyor	N/A
CF5-9	90° powerturn w/ drive	N/A
CF5-10	Metering conveyor	N/A
CF5-11	Fire Door	N/A
CF5-12	60" center drive incline	N/A
CF5-13	90° powerturn w/ drive	N/A
CU5-1	Bag carousel	N/A
CF6-1	60" center drive	N/A

FUTURE B/C TERMINAL BAGGAGE CONVEYOR SYSTEM		
B/C Terminal Baggage Claim		
Unit No.	**Device Type**	**Special Devices**
CF6-2	60" center drive	N/A
CF6-3	60" center drive incline	N/A
CF6-4	Metering conveyor	N/A
CF6-5	90° spiral powerturn w/ drive	N/A
CF6-6	Metering conveyor	N/A
CF6-7	90° powerturn w/ drive	N/A
CF6-8	Metering conveyor	N/A
CF6-9	90° powerturn w/ drive	N/A
CF6-10	Metering conveyor	N/A
CF6-11	Fire Door	N/A
CF6-12	60" center drive incline	N/A
CF6-13	90° powerturn w/ drive	N/A
CU6-1	Bag carousel	N/A
CF7-8	24" mini-center drive incline	N/A
CF7-9	Fire Door	N/A
CF7-10	60" center drive incline	N/A
CF7-11	90° powerturn w/ drive	N/A
CU7-1	Bag carousel	N/A

2.23.2.5 **D TERMINAL**

D TERMINAL BAGGAGE CONVEYOR SYSTEM			
Unit No.	**Feeder to Claim Unit Carousel**	**Device Type**	**Special Devices**
CF1-01	Claim Device 1	Horizontal Conveyor	Overheight Bag Sensor, 2 Control Stations
CF1-02	Claim Device 1	Incline Conveyor	Last Bag Detector
CF1-03	Claim Device 1	90° Spiral Powerturn	Control Station

CF1-04	Claim Device 1	Incline Conveyor	Door Clear Sensor
CF1-05	Claim Device 1	Horizontal Conveyor	N/A
CF1-06	Claim Device 1	45° Powerturn	N/A
CF1-07	Claim Device 1	Horizontal Conveyor	N/A
CL1-01	Claim Device 1	Claim Device - Incline Plate	4 Control Stations

2.23.2.6 **F TERMINAL**

F TERMINAL BAGGAGE CONVEYOR SYSTEM			
Unit No.	**Feeder to Claim Unit Carousel**	**Device Type**	**Special Devices**
IB1-1	Claim Device 1	Horizontal Conveyor	Tall Bag/ Bag Jam Sensor, 2 Control Stations
IB1-2	Claim Device 1	70° Spiral Powerturn	N/A
IB1-3	Claim Device 1	Horizontal Conveyor	Bag Jam Sensor, Control Station
IB1-4	Claim Device 1	90° Powerturn	N/A
IB1-5	Claim Device 1	Horizontal Conveyor	Bag Jam Sensor, Control Station
IB1-6	Claim Device 1	Incline Conveyor	Door Open/ Door Closed Sensors, Bag Jam Sensor, Control Station
MCP-IB1	Claim Device 1	Motor Control Panel	N/A
CL1-1	Claim Device 1	Claim Device	4 Control Stations
IB2-1	Claim Device 2	Horizontal Conveyor	Tall Bag/ Bag Jam Sensor, 2 Control Stations
IB2-2	Claim Device 2	90° Spiral Powerturn	N/A
IB2-3	Claim Device 2	Horizontal Conveyor	N/A
IB2-4	Claim Device 2	Horizontal Conveyor	Bag Jam Sensor, Control Station
IB2-5	Claim Device 2	90° Powerturn	N/A
IB2-6	Claim Device 2	Horizontal Conveyor	Bag Jam Sensor, Control Station
IB2-7	Claim Device 2	Incline Conveyor	Door Open/ Door Closed Sensors, Bag Jam Sensor, Control Station
MCP-IB2	Claim Device 2	Motor Control Panel	N/A
CL2-1	Claim Device 2	Claim Device	4 Control Stations
OB1-1	Ticketing/Make-Up Unit 1	Horizontal Conveyor	Control Station
OB1-2	Ticketing/Make-Up Unit 1	Horizontal Conveyor	Tall Bag/ Open Door, Last Bag/ Door Closed, Bag Jam Sensors, 2 Control Stations
OB1-3	Ticketing/Make-Up	Decline	Bag Jam Sensor,

F TERMINAL BAGGAGE CONVEYOR SYSTEM			
Unit No.	**Feeder to Claim Unit Carousel**	**Device Type**	**Special Devices**
	Unit 1	Conveyor	Control Station
OB1-4	Ticketing/Make-Up Unit 1	Horizontal Conveyor	Bag Jam Sensor, Control Station
OB1-5	Ticketing/Make-Up Unit 1	Incline Conveyor	Bag Jam Sensor, Control Station
OB1-6	Ticketing/Make-Up Unit 1	Horizontal Conveyor	Bag Jam/ Merge Control Sensor, Control Station
MCP-OB1	Ticketing/Make-Up Unit 1	Motor Control Panel	N/A
CS1-1	Ticketing/Make-Up Unit 1	Decline Conveyor	Tall Bag/ Open Door, Last Bag/ Door Closed, Bag Jam Sensors, 2 Control Stations
CS1-2	Ticketing/Make-Up Unit 1	45° Spiral Powerturn	Bag Jam Sensor, Control Station
CS1-3	Ticketing/Make-Up Unit 1	Horizontal Conveyor	Queue Control Sensor
CS1-4	Ticketing/Make-Up Unit 1	Queue	Queue Control/ Bag Jam Sensor, Control Station
CS1-5	Ticketing/Make-Up Unit 1	Queue	Queue Control Sensor
CS1-6	Ticketing/Make-Up Unit 1	Queue	Queue Control/ Bag Jam Sensor, Control Station
CS1-7	Ticketing/Make-Up Unit 1	45° Merge Conveyor	Bag Jam/ Merge Control Sensor, Control Station
MU1-1	Make-Up Unit 1	Horizontal Conveyor	Control Station
MU1-2	Make-Up Unit 1	Incline Conveyor	Control Station, Bag Jam Sensor
MU1-3	Make-Up Unit 1	90° Powerturn	Control Station
MU1-4	Make-Up Unit 1	Horizontal Conveyor	Control Station, Bag Jam Sensor
MU1-5	Make-Up Unit 1	90° Powerturn	Control Station
MU1-6	Make-Up Unit 1	Decline Conveyor	Control Station
MK1-1	Make-Up Unit 1	Claim Device	4 Control Stations

2.23.3 **DEFINITIONS**

2.23.3.1 **CONVEYOR FRAMES (CONVEYOR BED)**- The base component of the conveyor fabricated of sheet metal on which the conveyor belting slides.

2.23.3.2 **SIDE RAILS** - Continuous sides of the conveyor fabricated of sheet metal and reinforced with steel angles which confine the baggage on the conveyor bed.

2.23.3.3 **FLOOR SUPPORTS** - Formed steel channel leg assemblies for the support of the conveyors on the floor.

2.23.3.4 **HANGERS** - Vertical threaded steel rods or equivalent for the support of the conveyor from overhead structures.

2.23.3.5 **HEADERS** - Horizontal structural steel members used to span overhead building conditions/beams from which hangers are hung to support the conveyors.

2.23.3.6 **DRIVES** - An assembly of mechanical, electrical and structural parts to provide the driving power to the conveyor belt.

2.23.3.7 **PULLEY-LAGGED** - A cylindrical steel roller with a surface treatment to provide greater driving traction.

2.23.3.8 **PULLEY-END** - A non-driven cylindrical steel roller with a crowned surface mounted in flanged bearings with adjusting bolts to allow for belt tracking.

2.23.3.9 **PULLEY-TAIL** - Same as pulley-end.

2.23.3.10 **PULLEY-SNUB** - A non-driven cylindrical steel roller used to change the direction of the belt, to provide tension to the belt, or to increase the belt wrap on the drive pulley.

2.23.3.11 **PULLEY-DRIVE** - A cylindrical steel roller, normally lagged, mounted on a revolving shaft with or without a crown face for driving the conveyor belt.

2.23.3.12 **PULLEY-RETURN** - A cylindrical steel roller with internal bearings on a fixed shaft used on the underside of the conveyor frame to support the return run of conveyor belting.

2.23.3.13 **UNIT-BACKUP PROTECTIVE DEVICE** - A device to prevent reversal of a loaded inclined belt when power is shut off. Usually the drive is equipped with a brake motor.

2.23.3.14 **ANTI-OVERRUNNING DEVICE** - Same as Anti-Backup Protective Device for decline conveyors.

2.23.3.15 **HORIZONTAL BELT CURVE** - A curved conveyor section equipped with a curved belt used to change direction of the conveyor path.

2.23.3.16 **SPIRAL BELT CURVE** - A curved conveyor section equipped with a curved belt used to change direction of the path and elevation of the conveyor.

2.23.3.17 **METERING CONVEYOR** - A short powered conveyor whose speed and motion are controlled to release baggage at a predetermined rate.

2.23.3.18 **NOSE-OVER** - A curved frame section to provide a transition from an incline to a level plane.

2.23.3.19 **TAKE UP** - An adjustable pulley or roller to compensate for belt wear or stretch.

2.23.3.20 **TRACKING** - A term used for steering the belt to hold or maintain the desired path.

2.23.3.21 **BELTING**

2.23.3.21.1 **BARE BACK BELT** - A belt in which at least one side has an expose fabric surface free of any covering. Generally supplied on the non-carrying side to reduce sliding friction.

2.23.3.21.2 **CARCASS**-The fabric reinforcing section of a conveyor belt, as distinguished from the cover.

2.23.3.21.3 **CLEATED BELT** - A belt having raised sections spaced uniformly to stabilize flow of material on belts operating on inclines.

2.23.3.21.4 **COVERS** - Material applied to the outer surfaces

of a conveyor belt for protection of the carcass and, where required, to provide special load-carrying characteristics.

2.23.3.21.5 **DUCK** - A term applied to a wide range of medium and heavy weight fabrics, commonly made of cotton or synthetic material, used to construct a conveyor belt carcass.

2.23.3.21.6 **EDGE -**

2.23.3.21.6.1 **CEMENTED** - An application of rubber cement or other sealant over the raw or cut edge of a belt.

2.23.3.21.6.2 **FOLDED** - A belt construction wherein an outer ply is folded around a carcass to cover the edges.

2.23.3.21.6.3 **RAW** - The uncovered square edge of a belt created by cutting after vulcanization.

2.23.3.21.7 **FRICTION SURFACE-**A rubber adhesive compound applied to and impregnating a conveyor belt fabric, to provide greater than normal traction.

2.23.3.21.8 **PLY** - A single layer of fabric.

2.23.3.21.9 **SKIM OR SKIM COAT -**A layer of material laid on the fabric but not forced into the weave.

2.23.3.21.10 **SPLICE - MECHANICAL** - a joint made by fastening two ends of belting together by means of metal hooks or plates.

2.23.3.21.11 **SOLID WOVEN COTTON** - Layers of warp threads are woven with layers of filler threads and bound together in the loom with binder threads. There are no distinct plies, but the layers of warp threads are often counted as plies. They may be used with or without treatment or impregnation.

2.23.3.21.12 **SOLID WOVEN PVC** - Single-ply, solid-woven carcass made from nylon, polyester, or combinations thereof, impregnated and coated with PVC (polyvinyl-chloride) plastic.

2.23.3.21.13 **STITCHED CANVAS** - Separate plies of fabrics (usually cotton duck) are stitched together and normally treated by immersion in special compounds.

2.23.3.21.14 **MULTIPLE-PLY** - Carcass is usually made with three or more plies of fabric bonded together by elastomeric material. May be furnished smooth covers top and bottom, rough top, friction-surface, bareback, or combinations using one type of surface for one side of the belt and another type of surface for the other side.

2.23.3.21.15 **REDUCED-PLY** – The necessary carcass characteristics are obtained using fewer plies than comparable multiple-ply belts.

2.23.3.21.15.1 The carcass may be made as a single unit or from plies, usually two of nylon, polyester, or combination of these synthetics. When more than one ply is used, they are bonded together as in multiple-ply belts but with heavier skim coats between the plies. Covers available are similar to those for multiple-ply belts.

2.23.3.22 **CLAIM UNIT** - A canted surface closed loop conveyor in an oval configuration consisting of rectangular stainless steel plates riding on rubber tired wheels in lower and upper tracks.

2.23.3.23 **BUMPERS** - Rubber 'D' shaped cushions on the periphery of the Claim Unit acting as a bumper for baggage.

2.23.3.24 **MOTOR CONTROL PANEL (MCP)** - an electric control panel which contains starters, fuses, relay logic, timers, transformer, disconnect switch, fault alarm, hour meter, system start and stop buttons, and other necessary control elements for a complete workable system.

2.23.3.25 **PHOTOCELL** - Light energized switches to control the operation of the conveyor.

2.23.3.26 **MOTOR SAFETY DISCONNECT SWITCH** - a lockable motor

safety cut-off switch at each motor location for safety when performing maintenance.

2.23.3.26.1 **SYSTEM START** - A momentary pressure push button to initiate start up of a conveyor system.

2.23.3.27 **STOP BUTTON** - A momentary pressure push button to provide a normal shutdown of the conveyor system.

2.23.3.28 **EMERGENCY STOP BUTTON** (E-STOP) - Lighted push-to-stop/pull-to-reset button to stop the conveyor systems in the event of an emergency.

2.23.3.29 **KEY OPERATED SWITCH** - a two position 'on-off' selector switch operated by key for security control of the conveyor system.

2.23.3.30 **REVERSE-JOG PUSH BUTTON** - a constant pressure push button to cause the conveyor to run in the reverse direction.

2.23.3.31 **JAM DETECTION** - A photo electric switch to monitor baggage flow on a conveyor section and to shut down the conveyor system if baggage fails to move on a conveyor.

2.23.3.32 **AUDIO ALARM** - An audible warning device to indicate conveyor inoperative due to a jam condition.

2.23.3.33 **AUDIO VISUAL ALARM** - A warning device to indicate the conveyor system is armed to start.

2.23.3.34 **INDEXING CONVEYOR** - A conveyor, which runs automatically only long enough to accept a full piece of baggage on a conveyor.

2.23.3.5 **FIRE DOOR** - Fire rated rolling steel power operated doors interlocked with the conveyor to automatically close in the event of a fire.

2.23.4 **TECHNICAL REQUIREMENTS**

2.23.4.1 **DAILY MAINTENANCE**

2.23.4.1.1 To minimize down time and increase life expectancy of the various conveyor components, maintenance personnel must be familiar with the system components and required servicing.

2.23.4.1.2 A daily walk thru visual inspection of each conveyor system can reduce downtime and improve the operating efficiency of the systems.

2.23.4.1.3 **BELT TRACKING** - Shall be checked daily for proper operating position. Probable causes of improper belt tracking are:

2.23.4.1.3.1 **BELT TENSION** - loose end, requires retracking of belt and locking tension adjustment bolts.

2.23.4.1.3.2 **PULLEY BEARING** - worn or failed, requires replacement.

2.23.4.1.3.3 **BELT STRETCH** - Re-tension as required to recenter shall be checked daily as tension varies with humidity and load conditions.

2.23.4.1.3.4 **BELT WEAR** - Shall be checked daily and may be due to poor belt tracking.

2.23.4.1.3.5 **BELT TEAR DAMAGE** - All tears and damaged sections of belting shall be removed and replaced.

2.23.4.1.3.6 **BELT LACING** - Failed belt lacing shall be replaced; may be cause of excessive need for belt tensioning.

2.23.4.1.4 **HOUSEKEEPING** – Baggage claim area carousel shall be cleaned daily and all bag tags, etc., shall be kept clear of the system. Stainless steel surface shall be wiped down daily with a stainless steel cleaner and polish. Belt surfaces shall be cleaned and all debris under the belt removed.

2.23.4.1.5 **PUSH BUTTONS, SELECTOR SWITCH, INDICATOR LAMPS, PHOTO CELLS** - Shall be replaced where defective, damaged or inoperable.

2.23.4.2 **MONTHLY MAINTENANCE**

2.23.4.2.1 **BEARINGS** - All bearings shall be checked after conveyor has been in operation at least 1/2 hour for heat build-up or noise indicating lack of lubricant. Hot bearings shall be lubricated and/or replaced.

2.23.4.2.2 **REDUCERS** - All reducers shall be checked monthly for leakage at seals. Tighten seals and check oil level. Fill as required.

2.23.4.2.3 **CLAIM UNIT DRIVE CHAIN** - Shall be inspected for proper tension and lubricated monthly.

2.23.4.2.4 **PHOTO CELL LENS AND REFLECTORS** - Shall be properly cleaned and focused.

2.23.4.2.5 **MOTOR CONTROL PANELS** - Shall be opened and visually inspected for proper mounting; loose cables/wires; loose cable clamps/harness; evidence of excessive heat or burning; burned, scorched, or frayed insulation; broken or damaged wires, connectors, terminals or components.

2.23.4.2.6 **PROGRAMMABLE CONTROLLER (P.C.)** - Check indicators on power supply, replace battery when 'battery low' light is on. Replace the power supply when the 'DC:ON' indicator fails to light.

2.23.4.3 **QUARTERLY MAINTENANCE**

2.23.4.3.1 **CHAINS AND SPROCKETS** - Belts and Sheaves shall be inspected quarterly. Excessively worn chain or sprockets shall be replaced. All chains shall be "wetted" monthly with recommended lubricant.

2.23.4.3.2 **MOTORS/REDUCERS** - Shall be inspected quarterly.

2.23.4.3.3 All electrical components, i.e., motor control panels, push bottoms, photo cells, reflectors shall be checked to insure proper mounting

2.23.4.3.4 All electrical component boxes, cabinets shall be securely closed.

2.23.4.3.5 Flexible cables to drive motors, photo cells, limit switches shall be visually inspected for physical damage.

2.23.4.4 **SEMI-ANNUAL MAINTENANCE**

2.23.4.4.1 **MOTORS/REDUCERS** - Shall be inspected and lubricated.

2.23.4.4.2 **CLAIM UNIT MAIN CHAIN** - Shall be inspected for roller operation and wear. Replace as required.

2.23.4.4.3 **CLAIM UNIT WHEELS** - Shall be checked for wear; undersized wheels shall be replaced.

2.23.4.4.4 **ELECTRICAL CONTACTORS** - Shall be more thoroughly inspected for contact pitting, corrosion and wear.

2.23.5 **MAINTENANCE TOOLS**

2.23.5.1 Keep the following tools on-site and in good working order.
All tools on-site required to maintain and repair all equipment covered in this contract including but not limited to the following:

2.23.5.1.1 One electric powered cart.

2.23.5.1.1.1 Carts must meet airport requirements for batteries and battery shields.

2.23.5.1.1.2 Carts are to be parked only in designated Terminal parking areas

2.23.5.1.1.3 Two lockable tool chests.

2.23.5.1.2 Safety signs and work barricades required for routine maintenance and repairs.

2.23.5.1.2.1 Safety barricades shall provide protection for the public to prevent unauthorized access. Such barricades shall be approved for use by the Airport's Maintenance Manager or his designee.

2.23.5.1.2.2 The barricade shall provide enclosure for the work area.

2.23.5.1.3 All hand tools and diagnostic tools required to perform contract services.

2.23.5.2 Inspect all tools regularly and maintain ready in working order.

2.23.5.2.1 Arrange that the following tools are readily available, in good working order from the Contractor's local office.

2.23.5.2.2 Gear pullers

2.23.5.2.3 Cable pullers

2.23.5.2.4 Two chain blocks or lift pulls.

2.23.5.2.5 Two dial gauges (with magnetic base) and motor tramming tools.

2.23.5.2.6 Two sets of feeler gages.

2.23.5.2.7 One F.E.T. volt-ohm-millimeter.

2.23.5.2.8 Four web slings (4000 lb capacity).

2.23.5.2.9 One stop watch.

2.23.5.2.10 One tachometer.

2.23.5.3 The mechanics shall carry all hand tools required to perform assigned tasks when performing required duties.

2.23.6 **SPARE PARTS REQUIREMENTS**

2.23.6.1 The Contractor shall be responsible for accepting and inspecting all spare Parts prior to storage. Defective parts shall be rejected or returned to supplier for replacement.

2.23.6.2 The Contractor shall be responsible for ordering additional spare parts or replacement parts in a timely manner so as not to jeopardize the operation of the equipment.

2.23.6.3 The Contractor shall be responsible for good housekeeping of the assigned area.

2.23.7 **RECORDS**

2.23.7.1 Requests for repairs and emergency services will be issued by written work orders. Emergency service requests with a Priority 1 will also be communicated by phone and/or radio to the contractor.

2.23.7.2 All labor hours and parts used will be recorded on the work orders. Work orders not completed at the end of the shift will reflect the labor hours and parts used for each shift, and continue daily until complete.

2.23.7.3 The contractor shall submit all proposed Preventive Maintenance procedures, technical information and recommended frequencies on work sheets and approved by the Manager of Maintenance after submittal.

2.23.7.4 The Contractor shall be fully responsible for all record keeping associated with the maintenance of the Baggage Conveyor System.

2.23.7.5 The Contractor shall maintain a current inventory of all Spare Parts and their condition.

2.23.7.6 The Contractor shall maintain a record of all new parts received as well as parts withdrawn from inventory.

2.23.7.7 The Contractor shall be responsible for receiving and maintaining all maintenance manual and drawings in a current "As-Built" condition.

The Contractor shall prepare daily, monthly, quarterly, semi-annually, and yearly maintenance reports in the following format for each item of equipment.

This report can either be generated by the DOA-CMMS Standard Report or can be derived from the existing DOA-CMMS Report or screen. In many cases a customized report can be designed in the DOA-CMMS Report writer at no charge by the Contractor's own personnel. Specialized custom reports to ease in reporting can be designed at the Contractor's expense.

Item No.	Description	Date	Repaired Serviced/ Condition	Lubricated	Time Spent for Service	Mechanic

2.23.7.8 The Contractor shall be responsible for proper training and education of all assigned maintenance personnel in the use, operations and maintenance of the equipment. Maintenance personnel shall be properly trained to diagnose and troubleshoot the cause of failure and affect repair/replacement with minimum downtime of the equipment.

2.23.7.9 The Contractor shall adequately staff the installation seven days per week and will provide the City with the names and telephone numbers of personnel for emergency operation and maintenance of the equipment available 24 hours per day, 7 days per week, with a response time of 15 minutes.

2.23.7.10 In combination with the personnel required to maintain baggage-handling systems in the facility, the configuration of baggage handling equipment installed and in operation in Terminal A West Sector 23 requires daily dedicated staffing. This required staffing shall consist of a bag jammer/manual encoder, a computer control room technician, and an equipment mechanic. The individuals staffing these positions shall all be familiar with the operation, maintenance, use, and trouble shooting of problems with equipment in use in Sector 23. Staffing shall be available and on site 7 days per week, 20 hours per day.

2.24 **SCHEDULE C - PASSENGER LOADING BRIDGES AND GATE SYSTEMS**

2.24.1 **SCOPE**

2.24.1.1 The Contractor shall furnish all supervision, labor, transportation, equipment, services, and materials as required to provide preventive maintenance and repair services on Passenger Loading Bridges, 400 Hz Ground Power Systems, Pre-Conditioned Air Units, Potable Water Cabinets, and Aircraft Parking Optical Guidance Controls.

2.24.1.2 Equipment noted as "FUTURE" could be added to the contract. Contractor shall not perform any work on any item designated "future" unless directed, in writing, by the Airport Maintenance Manager.

	Passenger Loading Bridges		400 Hz Ground Power Units		Pre-Conditioned Air Units		Potable Water Cabinets		Aircraft Optical Parking Units	
Terminal	Existing	Future	Existing	Future	Existing	Future	Existing	Future	Existing	Future
A EAST	7	4	7	4	0	0	7	3	7	0
A WEST	13	0	13	0	13	0	13	0	13	0
B	0	15	0	15	0	15	0	8	0	0
C	0	15	0	15	0	15	0	8	0	0
D	4	12	4	12	4	11	2	6	0	0
E	0	11	0	7	0	4	0	5	0	0
F	24	0	15	0	0	0	0	0	0	0
TOTAL	48	57	39	53	17	45	22	30	20	0

2.24.2 **PASSENGER LOADING BRIDGES**

2.24.2.1 The Passenger Loading Bridges (Jetways) Maintenance for this system is to include the furnishing of all necessary supervision, labor, transportation, materials, services and equipment required to provide preventive maintenance and repair services for:

PASSENGER LOADING BRIDGES				
Gate Number	Existing/ Future/NA	Make/ Model	Manufacturer	Operating Limits
A1	NA	NA	NA	NA
A2	Existing	AD3-58/110	FMC Jetway Systems	110'-max. 58'-min.
A3	Future	SA2-85/119	FMC Jetway Systems	119'-max. 85'-min.

PASSENGER LOADING BRIDGES				
Gate Number	Existing/ Future/NA	Make/ Model	Manufacturer	Operating Limits
A4	Existing	AD3-60/119	FMC Jetway Systems	119'-max. 60'-min.
A5	NA	NA	NA	NA
A6	Existing	AD3-58/110	FMC Jetway Systems	110'-max. 58'-min.
A7	Future	SA-77/111	FMC Jetway Systems	111'-max. 77'-min.
A8	Existing	A3-68/141	FMC Jetway Systems	141'-max. 68'-min.
A9	Future	AD3-58/110	FMC Jetway Systems	110'-max. 58'-min.
A10	Existing	AD3-60/119	FMC Jetway Systems	119'-max. 60'-min.
A11	Future	SA2-85/119	FMC Jetway Systems	119'-max. 85'-min.
A12	Existing	A3-68/141	FMC Jetway Systems	141'-max. 68'-min.
A13	Existing	AD3-58/110	FMC Jetway Systems	110'-max. 58'-min.
A14	Existing	AD3-68/141-125R	FMC Jetway Systems	141'-max. 68'-min.
A15	Existing	AD3-60/119-125R	FMC Jetway Systems	119'-max. 60'-min.
A16	Existing	AD3-60/119-125R	FMC Jetway Systems	119'-max. 60'-min.
A17	Existing	AD3-68/141-125R	FMC Jetway Systems	141'-max. 68'-min.
A18	Existing	AD3-68/141-125R	FMC Jetway Systems	141'-max. 68'-min.
A19	Existing	AD3-60/119-125R	FMC Jetway Systems	119'-max. 60'-min.
A20	Existing	AD3-68/141-125R	FMC Jetway Systems	141'-max. 68'-min.
A21	Existing	AD3-64/131-125R	FMC Jetway Systems	131'-max. 64'-min.
A22	Existing	AD3-68/141-125R	FMC Jetway Systems	141'-max. 68'-min.
A23	Existing	AD3-	FMC Jetway	141'-max.

PASSENGER LOADING BRIDGES				
Gate Number	Existing/ Future/NA	Make/ Model	Manufacturer	Operating Limits
		68/141-125R	Systems	68'-min.
A24	Existing	AD3-60/119-125R	FMC Jetway Systems	119'-max. 60'-min.
A25	Existing	AD3-64/131-125R	FMC Jetway Systems	131'-max. 64'-min.
A26	Existing	AD3-68/141-125R	FMC Jetway Systems	141'-max. 68'-min.
B1	Future	A2-41/56	FMC Jetway Systems	56' max 41' min
B2	Future	A3-58/110-125R	FMC Jetway Systems	110' max 58' min
B3	Future	A2-59/87	FMC Jetway Systems	87' max 59' min
B4	Future	A3-58/110	FMC Jetway Systems	110' max 58' min
B5	Future	A2-59/87	FMC Jetway Systems	87' max 59' min
B6	Future	A3-58/110-125R	FMC Jetway Systems	110' max 58' min
B7	Future	A3-60/119	FMC Jetway Systems	119' max 58' min
B8	Future	A3-58/110	FMC Jetway Systems	110' max 58' min
B9	Future	A3-58/110-125R	FMC Jetway Systems	110' max 58' min
B10	Future	A3-58/110	FMC Jetway Systems	110' max 58' min
B11	Future	A3-58/110	FMC Jetway Systems	110' max 58' min
B12	NA	NA	NA	NA
B13	Future	A3-58/110	FMC Jetway Systems	110' max 58' min
B14	Future	A3-58/110	FMC Jetway Systems	110' max 58' min
B15	Future	A3-58/110	FMC Jetway Systems	110' max 58' min
B16	Future	A3-58/110	FMC Jetway Systems	110' max 58' min
C16	NA	NA	NA	NA

PASSENGER LOADING BRIDGES				
Gate Number	Existing/ Future/NA	Make/ Model	Manufacturer	Operating Limits
C17	Future	A3-67/125	FMC Jetway Systems	125' max 67' min
C18	Future	A3-58/110-125R	FMC Jetway Systems	110' max 58' min
C19	Future	A3-58/110	FMC Jetway Systems	110' max 58' min
C20	Future	TB 29/15.5-3	Thyssen Stearns	29' max 15.5' min
C21	Future	A3-58/110	FMC Jetway Systems	110' max 58' min
C22	Future	A3-58/110-125R	FMC Jetway Systems	110' max 58' min
C23	Future	A3-58/110	FMC Jetway Systems	110' max 58' min
C24	Future	A2-59/87	FMC Jetway Systems	87' max 59' min
C25	Future	A2-47/66	FMC Jetway Systems	66' max 47' min
C26	Future	SA2-107/141	Abex Jetway Division	141' max 107' min
C27	Future	A3-58/110-125R	FMC Jetway Systems	110' max 58' min
C28	Future	SA2-107/141	Abex Jetway Division	141' max 107' min
C29	Future	A3-58/110-125R	FMC Jetway Systems	110' max 58' min
C30	Future	TB 29/15.5-3	Thyssen Stearns	29' max 15.5' min
C31	Future	A3-58/110-125R	FMC Jetway Systems	110' max 58' min
D1	Future	See 2.24.1.2		
D2	Future	See 2.24.1.2		
D3	Future	See 2.24.1.2		
D4	Future	See 2.24.1.2		
D5	Future	See 2.24.1.2		
D6	Future	See 2.24.1.2		

PASSENGER LOADING BRIDGES				
Gate Number	Existing/ Future/NA	Make/ Model	Manufacturer	Operating Limits
D7	Future	See 2.24.1.2		
D8	Future	See 2.24.1.2		
D9	Future	See 2.24.1.2		
D10	Future	See 2.24.1.2		
D11	Future	See 2.24.1.2		
D12	Existing	AD3-68/141-125R	FMC Jetway Systems	141'-max. 68'-min.
D13	Future	See 2.24.1.2		
D14	Existing	AD3-68/141-125R	FMC Jetway Systems	141'-max. 68'-min.
D15	Existing	AD3-68/141-125R	FMC Jetway Systems	141'-max. 68'-min.
D16	Existing	AD3-68/141-125R	FMC Jetway Systems	141'-max. 68'-min.
E1	Future	See 2.24.1.2		
E2	Future	See 2.24.1.2		
E3	Future	See 2.24.1.2		
E4	Future	See 2.24.1.2		
E5	Future	See 2.24.1.2		
E6	Future	See 2.24.1.2		
E7	Future	See 2.24.1.2		
E8	Future	See 2.24.1.2		
E9	Future	See 2.24.1.2		
E10	Future	See 2.24.1.2		
E12	Future	See 2.26.1..2		

PASSENGER LOADING BRIDGES				
Gate Number	Existing/ Future/NA	Make/ Model	Manufacturer	Operating Limits
F1	Existing	TR-58/68-15/25	FMC Jetway Systems	68'-max. 58'-min.
F2	NA	NA	NA	NA
F3	Existing	TR-58/68-15/25	FMC Jetway Systems	68'-max. 58'-min.
F4	NA	NA	NA	NA
F5	Existing	TR-58/68-15/25	FMC Jetway Systems	68'-max. 58'-min.
F6	NA	NA	NA	NA
F7	Existing	TR-58/68-15/25	FMC Jetway Systems	68'-max. 58'-min.
F8	NA	NA	NA	NA
F9	Existing	TR-58/68-15/25	FMC Jetway Systems	68'-max. 58'-min.
F10	NA	NA	NA	NA
F11	Existing	TR-90/100-15/25R	FMC Jetway Systems	100'-max. 90'-min.
F12	NA	NA	NA	NA
F13	Existing	TR-74/84-15/25	FMC Jetway Systems	84'-max. 74'-min.
F14	NA	NA	NA	NA
F15	Existing	TR-58/68-15/25	FMC Jetway Systems	68'-max. 58'-min.
F16	NA	NA	NA	NA
F17	NA	NA	NA	NA
F18	NA	NA	NA	NA
F19	NA	NA	NA	NA
F20	NA	NA	NA	NA
F21	NA	NA	NA	NA
F22	NA	NA	NA	NA
F23	NA	NA	NA	NA
F24	Existing	TR-58/68-15/25	FMC Jetway Systems	68'-max. 58'-min.
F25	Existing	TR-58/68-15/25	FMC Jetway Systems	68'-max. 58'-min.
F26	Existing	TR-58/68-15/25	FMC Jetway Systems	68'-max. 58'-min.
F27	Existing	TR-58/68-15/25	FMC Jetway Systems	68'-max. 58'-min.
F28	Existing	TR-58/68-15/25	FMC Jetway Systems	68'-max. 58'-min.
F29	Existing	TR-58/68-15/25	FMC Jetway Systems	68'-max. 58'-min.
F30	Existing	TR-58/68-15/25	FMC Jetway Systems	68'-max. 58'-min.

PASSENGER LOADING BRIDGES				
Gate Number	Existing/ Future/NA	Make/ Model	Manufacturer	Operating Limits
F31	Existing	TR-50/60-15/25	FMC Jetway Systems	60'-max. 50'-min.
F32	Existing	TR-102/112-15/25	FMC Jetway Systems	112'-max. 102'-min.
F33	Existing	TR-66/76-15/25	FMC Jetway Systems	76'-max. 66'-min.
F34	Existing	TR-66/76-15/25	FMC Jetway Systems	76'-max. 66'-min.
F35	Existing	TR-54/64-15/25	FMC Jetway Systems	64'-max. 54'-min.
F36	Existing	TR-62/72-15/25	FMC Jetway Systems	72'-max. 62'-min.
F37	Existing	TR-62/72-15/25	FMC Jetway Systems	72'-max. 62'-min.
F38	Existing	TR-78/88-15/25	FMC Jetway Systems	88'-max. 78'-min.
F39	Existing	TR-58/68-15/25	FMC Jetway Systems	68'-max. 58'-min.

2.24.2.1.1 Equipment information will be made available to the contractor upon addition to the contract.

2.24.2.2 **SUPERVISION AND ADMINISTRATION**

2.24.2.2.1 All preventive maintenance and repairs executed by routine service and repair personnel shall be under the direct supervision of a full time service and repair supervisor employed by the successful bidder.

2.24.2.2.2 The successful bidder shall archive and maintain complete and accurate records of all preventive maintenance, repairs (including trouble calls) and parts for the term of this contract in the DOA-CMMS System. These routine records are to be made available at the completion of each job and/or on demand by the City.

2.24.2.3 **WORK HOURS**

2.24.2.3.1 All normal maintenance and repair work shall be performed on shift work as follows:

2.24.2.3.2 The successful bidder shall stand ready and be

available to perform work requested by the Owner at the time designated. All shift work not otherwise included shall be billed to the Owner as an extra charge at the successful bidder's labor rate schedule.

2.24.2.3.3 For other than emergency work, Preventive Maintenance and Repair Rehabilitation shall be performed as follows:

2.24.2.3.4 Preventive Maintenance work shall be performed during the schedule of hours approved by the OA. Repair work shall continue on a twenty four (24) hour basis until complete.

2.24.2.3.5 Preventive Maintenance work shall be performed during the schedule of hours after 4:30 P.M. at no additional charge to the City. Repair work shall continue on a twenty four (24) hour basis until complete.

2.24.2.4 **PREVENTIVE MAINTENANCE SERVICES TO BE PERFORMED ON PASSENGER LOADING BRIDGES (JETWAYS)**

2.24.2.4.1 The successful bidder shall examine the equipment at specified regular intervals. The examination shall be performed by individuals specifically trained and experienced in the maintenance of equipment similar to the type covered by this specification and shall provide all manpower and tools necessary for the examination of the subject equipment.

2.24.2.4.2 The examination shall be designed to identify equipment conditions for the purpose of corrective actions, which may be required to maintain the normal operation of the equipment.

2.24.2.4.3 When such work is determined, as necessary and caused by negligence, abuse or misuse of the equipment, or by other then ordinary wear and tear, the successful bidder shall deliver to the City a written report, along with any necessary drawings detailing the needed work and associated cost of their further action.

2.24.2.5 **PERFORMANCE OF REPAIRS, ADJUSTMENTS AND OTHER MAINTENANCE**

2.24.2.5.1 When, as a result of an operational examination, performance of preventive maintenance, performance of periodic testing, inspection or observation by the City, the successful bidder, or their representatives, corrective action is found to be necessary, the successful bidder shall proceed immediately to make (or cause to be made) replacements, repairs and corrections necessary to restore the equipment to normal operation.

2.24.2.6 **MAINTENANCE AND DOCUMENTATION**

2.24.2.6.1 A monthly report shall be submitted by the successful bidder containing an overall summary of maintenance work performed, the results of tests conducted, general status of systems and equipment, list of equipment breakdowns, repair time, and projection of major equipment shutdowns required for maintenance. In addition, a daily log of maintenance performed shall be kept by the successful bidder and this log shall be subject to periodic review by the City or its representative. The successful bidder shall also submit for review a description of the procedure recommended to schedule and report execution of periodic maintenance.

2.24.2.6.2 The successful bidder shall also provide a monthly report indicating monthly, year-to-date and cumulative cycle totals for comparison of trends with previous years, months, etc. Reports will reflect both PM and remedial repairs in terms of cycles. Most reports can either be generated by the DOA-CMMS System directly or can be derived from an existing DOA-CMMS Report or screen. In many cases, a customized report can be designed in the DOA-CMMS Report written at no charge by the Contractor's own personnel. Specialized custom reports to ease in reporting can be designed at the Contractor's expense.

2.24.2.6.3 A monthly inventory report will be submitted by the successful bidder indicating the current stock level, materials, and parts used during the preceding month and required restocking. In addition, a daily log record of parts and materials used shall be kept by the successful bidder and shall be subject to periodic review by the City.

2.24.2.6.4 The successful bidder will be responsible for providing maintenance history reports for each unit identified in these specifications. The report(s) developed will provide essentially the following information and will be submitted for approval within thirty (30) days of the Notice to Proceed date. Basic information required for each unit identified is as follows:

2.24.2.6.4.1 **Serial number**

2.24.2.6.4.2 **Loading Bridge number.**

2.24.2.6.4.3 Time technician is notified of a maintenance problem. (Not required for scheduled preventive maintenance)

2.24.2.6.4.4 Time maintenance repairs are started.

2.24.2.6.4.5 Time maintenance or repairs are completed.

2.24.2.6.4.6 Labor hours expended.

2.24.2.6.4.7 Parts replaced to be described, Tires, wiring etc.

2.24.2.6.4.8 Cause of failure (brief description).

2.24.2.6.4.9 Year-to-date unscheduled maintenance hours expended.

2.24.2.6.4.10 Description of service.

2.24.2.6.4.11 Year-to-date scheduled preventive maintenance hours expended.

2.24.2.6.4.12 Description of services.

2.24.2.6.5 All reports will be submitted to the successful bidder who will be responsible for conveying the report to the Owner.

2.24.2.7 **EMERGENCY REPAIR AND SERVICE CALLS**

2.24.2.7.1 For the purpose of this specification, a "Service Call" is a request to go to a specific passenger loading bridge to correct any reported problem and/or condition which, in the City's opinion, requires attention before the next scheduled preventive maintenance visit.

2.24.2.7.1.1 Callback Service During Scheduled Hours

The successful bidder shall without additional charge to the City, provide callback service during the scheduled hours. The successful bidder shall respond to a service call within a maximum of 15 minutes from the time the request for service is made.

2.24.2.7.2 The successful bidder shall have a work order on each service call so the prime Contractor can sign the ticket. A copy of the ticket will be left with the City representative.

2.24.2.7.3 If the number of callbacks not attributed to negligence, abuse, or misuse on the part of the user reaches more than three (3) callbacks per month on any passenger loading bridge, the successful bidder shall assign additional personnel for said duties.

2.24.2.7.4 This additional effort shall continue until callback frequency has been reduced to three (3) or less incidents per month. Consistent incidents of callbacks will be termed nonperformance on part of the successful bidder. Breakdowns and shutdowns electrical or mechanical adjustments will not keep the loading bridge out of service longer than 12 hours.

2.24.2.7.5 Under no circumstances will any shutdown or breakdown last longer than 12 hours. This includes the locating of the trouble, procurement of parts, the installation of these parts and the placing of the loading bridge back into safe operation. The reason of not being able to obtain parts, necessary technical and engineering advice, etc., will not be acceptable and the successful bidder will be considered in default, giving sufficient justification to the Owner to obtain these services from other sources who can provide the City with uninterrupted loading bridge service.

2.24.2.7.6 The City may take over the work and prosecute it to completion by contract or otherwise, and the successful bidder and his/her sureties (if any) shall be liable to the City for any additional cost occasioned by the City previous to the termination of the contract.

2.24.2.7.7 Monthly, the successful bidder shall provide and review a summary of all callbacks. The successful bidder will then convey this information to the City.

The intent of this monthly summary is to minimize callbacks by keeping the successful bidder and City aware of callback trends.

2.24.2.8 **PREVENTIVE MAINTENANCE SCHEDULE AND CALLBACK LOG**

2.24.2.8.1 All scheduled preventive maintenance performed by the successful bidder shall be scheduled unit by unit prior to commencement of the contract and subject to final approval of the City.

2.24.2.8.2 The successful bidder shall provide, use and properly maintain a maintenance examination chart for each device. Examination charts shall be posted in the passenger loading bridge of each unit. Entries for each chart shall be made by service personnel to indicate the status of all scheduled items of maintenance performed and initialed for validity. In addition, the successful bidder shall provide, use and properly maintain a "callback" log for each device. The log should indicate the reason for call, corrective measures taken and name of person making entry. The City may inspect and copy the log and maintenance at any time.

2.24.2.8.3 The successful bidder shall not remove more than one passenger loading bridge from service at a time for preventive maintenance, inspection or test during the normal operating hours noted above without prior approval of the City.

2.24.2.9 **INSPECTION AND TESTING SERVICES**

2.24.2.9.1 The successful bidder shall perform periodic tests of the loading bridge components. The periodic tests shall follow the procedures set forth in the manufacturer's service bulletin.

This shall also include the maintenance and testing. All test results shall be recorded on forms acceptable to the successful bidder. Prior notice of all tests shall be given to the successful bidder so that they may witness the testing procedures.

2.24.2.9.2 The successful bidder shall not be held responsible or liable for any damage to the building or passenger loading bridge equipment resulting from the periodic test unless due to their negligence in conducting such test.

2.24.2.9.3 Periodic Inspections as performed by City, County, State government and/or insurance agencies or their representatives are specifically not included in this specification.

2.24.2.9.4 The successful bidder's maintenance supervisor shall make himself/herself available from Monday through Friday, exclusive of holidays, within forty eight (48) hours of notification for an inspection tour. The City reserves the right to make or cause to be made, such inspection and tests as deemed advisable to ascertain that the requirements of these specifications are being fulfilled.

2.24.2.10 **OPERATIONAL EXAMINATION**

2.24.2.10.1 Testing the equipment response to the operation of all control customarily used by passengers or users of the equipment in normal operation.

2.24.2.10.2 In carrying out the above test, the examiner shall identify any improper operation in the following items:

2.24.2.10.2.1 Passenger Loading Bridge equipment involved including rotating machinery, suspension system, guides, door operating mechanisms, indicating and area lights, alarms, control systems, communication systems, and safety functions.

2.24.2.10.3 Performing a visual and audible inspection if all system machinery accessible (without disassembly) in machinery areas, operator station, etc.

2.24.2.10.4 Report completion of operation examination on each unit using an approved reporting form.

2.24.2.10.5 In accomplishing the above requirements, the successful bidder shall maintain a fully operational unit with smooth extension, retraction and a controlled stop. Passenger loading bridge operation shall be quiet and positive with smooth checking at the extremes of travel.

2.24.2.10.6 Adjustments shall be made by qualified individuals properly equipped with all tools and instruments, employed by the successful bidder. Adjustments shall be made at regular intervals frequently enough to maintain the passenger loading bridge in normal operating condition and to preserve the useful life of the part of assembly for the duration of the contract.

2.24.2.10.7 Parts or assemblies which have worn (or otherwise, deteriorated) beyond "normal" adjustment limits shall be replaced as provided for under the "replace" and/or "repair" section of the specification.

2.24.2.10.8 The successful bidder shall inspect, adjust, and replace all components whenever prescribed by the requirements of public safety, or recommended by the City or its representative

2.24.2.10.9 The successful bidder shall inspect, adjust, and replace fixed electrical wiring and traveling conductor cables.

2.24.2.10.10 Passenger loading bridges shall be capable of operating in all directions shall be periodically tested to insure adequate clearances and adjustments for both directions of travel. Stopping on all Passenger loading bridges will be tested periodically, hydraulic systems will be adjusted and recorded to insure proper performance.

2.24.2.10.11 Adjustments shall be made by qualified individuals properly equipped with tools and instruments, employees by the successful bidder. Adjustments shall be made at regular intervals frequent enough to maintain the unit in normal operating condition and preserve the useful life of the part or assembly for the duration of the contract.

2.24.2.10.12 The successful bidder shall "replace" all worn, damaged or broken items. Replacement of the items indicated shall occur during the course of the scheduled preventive maintenance, when such replacement will prevent an unscheduled passenger loading bridges shutdown and/or ensure the continued normal operation of the passenger loading bridges or which otherwise will extend the useful life of the equipment. All replacements shall be made using parts supplied by or authorized by the original equipment manufacturer.

2.24.2.10.13 The Successful bidder shall make (or cause to be made) all repairs made necessary due to normal wear and use of the passenger loading bridges system. The successful bidder shall absorb all cost for labor, materials, expenses and supplies which occur as a result of the stated repair.

2.24.2.11 **PARTS REQUIREMENTS**

2.24.2.11.1 Parts installed on the passenger loading bridges covered by this specification, either as preventive maintenance replacements and/or repairs shall be supplied by or authorized by the original equipment manufacturer.

2.24.2.11.2 The successful bidder shall prepare and submit for approval a comprehensive list of manufacturer's spare parts and lubricants for existing equipment.

This list of manufacturer's recommended

quantities of these items with adjustments made to reflect number of units utilizing the parts. It is to be understood that the successful bidder shall maintain the recommended quantities of parts throughout the term of the contract. The successful bidder shall prepare and submit for approval modification to the original approved list as units are modified, renovated, deleted or added. They shall adjust quantities and items accordingly to the changes.

2.24.2.11.3 The successful bidder shall designate on the parts and lubricant list, which parts being submitted shall be maintained at the site and which parts will be available in their warehouse. The list shall also show respective quantities associated with each location. The on site list shall reflect items most susceptible to replacement, as a result of wear and vandalism, for this facility.

On site parts and lubricants shall include, but not limited to such items as motor and generator brushes, fuses, push buttons and switches, tires, guides, miscellaneous hardware, hydraulic pumps, rollers, chains, bearings, switches, belts lights, hydraulic oil, lubricants, wiping, cloths, pc boards, timers, power supplies, etc.

2.24.2.11.4 Warehouse parts shall be defined as parts retained by the successful bidder at a facility accessible to them and their field personnel, which can assure delivery of the respective part to the job site within four (4) hours of request.

2.24.2.12 **CONDITION REPORTS**

2.24.2.12.1 The Contractor shall prepare and regularly submit written condition reports on all equipment to the City. Condition reports

shall be prepared on the successful bidder's letterhead, dated and signed by an authorized representative of the successful bidder.

2.24.2.12.2 Condition reports shall be submitted at regular intervals not to exceed, but not less than sixty (60) day intervals.

2.24.2.12.3 The condition reports shall inform the City of the current condition of the equipment and performance measurements relating to criteria specified and make recommendations regarding the need for repairs, alterations and/or modifications to the equipment.

2.24.2.12.4 All alterations requested by the successful bidder are to be by the way of written requests only. All requests are to be in triplicate and accompanied by supporting prints, sketches, and/or schematics as required to provide detailed information. Proposed cost for accomplishing to the work shall also be included.

2.24.2.13 **INSTRUCTIONS**

2.24.2.13.1 The Contractor shall be required to provide general passenger loading bridges familiarization instruction to the City's maintenance personnel such to allow them to evaluate reported failures prior to calling Contractor personnel. Instructions will be given at a time mutually agreeable to the City and the Contractor. Whenever needed, the City will furnish space for the handling of their instructions. The City reserves the right to have this procedure held every six (6) months (if deemed necessary) during the life of the contract.

2.24.2.14 **INFORMATION LIBRARY REQUIREMENTS**

2.24.2.14.1 The Contractor shall have and maintain, for the duration of the contract, a reference library of information containing (but not limited to) the applicable and current Code, current manufacturers equipment maintenance schedules, original manufacturers' lubrication specifications and schedules, equipment schematics (motion and logic), layouts, parts and assembly list and other basic information needed to properly test, adjust and maintain the equipment covered by this contract. If technical documentation unique to the City's installation is not available from the Owner the Contractor shall notify the City and advise and assist in acquiring the information.

2.24.2.14.2 If this agreement is terminated by either part, the Contractor shall provide City with a set of straight-line wiring diagrams showing as-built conditions as well as all information provided by the City. The City may reproducer these as-built drawings.

2.24.2.15 **DEFINITIONS**

2.24.2.15.1 **Apron Drive Passenger Boarding Bridge:** Complete enclosed walkway assembly from Terminal Building to Airplane, consisting of the Rotunda section, support column, telescoping Tunnels, drive assembly, drive cab, service door, stairway, console and the appurtenances necessary to support, control, maneuver and position complete bridge.

2.24.2.15.2 **Foundation** - The anchor bolts, pedestals, pile caps and piles on which the rotunda columns rest.

2.24.2.15.3 **Fixed Walkway** - The area between the Rotunda entry corridor and the Terminal Building exit, supported independently of the Terminal Building by the Rotunda column.

2.24.2.15.4 **Rotunda** - Fixed enclosed assembly located near the Terminal Building about which the Passenger Load Bridge rotates and the hinge point for vertical movement of the Passenger Loading Bridge.

2.24.2.15.5 **Rotunda Entry Corridor** - A fixed rectangular tunnel at a constant height, which connects the Terminal Building to the Rotunda, independently supported from the Rotunda column.

2.24.2.15.6 **Rotunda Column Fixed Support for the Rotunda.**

2.24.2.15.7 **Telescoping Tunnels** - Two or three Tunnel passenger walkways that connect the Rotunda to the Cab at the aircraft end and are constructed to extend and retract to mate with the aircraft.

2.24.2.15.8 **Drive Assembly** - The wheel carriage assembly, drive mechanism, drive assembly column and lift column which support the Passenger Loading Bridge at the Aircraft end of the Bridge which enables it to simultaneously extend/retract and rotate.

2.24.2.15.9 **Service Stairway** - Steel stairway with landing platform, attached to the Cab, servicing from the Cab to the Ramp.

2.24.2.15.10 **Cab -** Section at aircraft end of the Passenger Loading Bridge which is attached to the telescoping tunnels and rotates to provide proper mating with the Airplane for access from the Bridge directly to the Aircraft.

2.24.2.15.11 **Cab Closure** - That portion of the cab, which closes against the Aircraft to provide a weather-tight seal.

2.24.2.15.12 **Aircraft Output Cable** - To carry 400 Hertz auxiliary power supply to the Aircraft.

2.24.2.15.13 **Guide Rollers** - Rollers to maintain alignment between the Tunnel and rigid frame as the Bridge moves up and down.

2.24.2.15.14 **Ramps** - Inclined floor plates within the Tunnels at the juncture of Tunnel sections to eliminate steps between the Tunnel sections.

2.24.2.15.15 **Ball Screw** - Located within the drive columns has a rotating screw and traveling nut to change the rotary motion of the motor rotating screw into a linear motion for raising/lowering the cab end of the Passenger Loading Bridge.

2.24.2.15.16 **Height Indicator** - A potentiometer mounted in the hinge of the cable carrier provide an indication to the Bridge operator of the height of the car end of the Passenger Loading Bridge.

2.24.2.15.17 **Vertical Limit Switches** - Restrict the vertical travel of the Passenger Loading Bridge.

2.24.2.15.18 **Column Fault Limit Switches** - Restrict the vertical travel of the Passenger Loading Bridge to prevent the bridge from racking.

2.24.2.15.19 **Canopy** - A folding bellows, which seals between the Aircraft and cab of the Passenger Loading Bridge.

2.24.2.16 **MAINTENANCE: MINIMUM STANDARD**

Perform the following duties twice every month:

2.24.2.16.1 Rotate bridge to maximum position right/left. Examine audible/visual alarm.

2.24.2.16.2 Examine all controls, switches and indicator lights in Operator's Control Console for proper operation.

2.24.2.16.3 Examine Operator's Control Console for moisture, rust and debris.

2.24.2.16.4 Rotate aircraft sensor at maximum up and down positions. Examine limit switches.

2.24.2.16.5 Examine all electrical cables for general condition and deterioration.

2.24.2.16.6 Examine equalizer cables for proper tension and positioning of the tunnels.

2.24.2.16.7 Examine Rotunda sink ring to insure it is secured to the floor.

2.24.2.16.8 Examine Rotunda and cab curtains for proper operation.

2.24.2.16.9 Examine tires for general condition, wear, damage and air inflation and repair or replace as needed.

2.24.2.17 **DAILY PREVENTIVE MAINTENANCE**

DAILY PREVENTIVE MAINTENANCE CHECKLIST	**DATE**	**INSPECTOR'S NAME**
DESCRIPTION	*OK*	*REPAIR REQUIRED*
If appropriate, complete the Daily Winter checklist before moving the bridge.		
Check operation of terminal entrance door and associated hardware.		
Visually check ceiling tile, floor covering, and floor molding in cab, rotunda, and tunnels for cleanliness and damage.		
Verify that interior lighting in tunnels, rotunda and cab work properly.		
Visually inspect gutters and drains for obstructions or standing water.		
Visually inspect tunnel ramps. *		
Visually check windows for broken or cracked panes.		
Visually verify that cabin safety chain is properly installed.		
Check the operation of the cab weather door and hardware.		
Visually check ramp area for any obstacles that would effect bridge movement.		

Check operation of service door and service stair.		
Operate and check control console controls and indicators. Push Lamp Test button on console to verify indicator lights are illuminating. *		
Extend and retract bridge. Listen for any unusual noise that would indicate improper tunnel roller alignment. *		
Operate and check canopy curtains and drive system for proper operation. *		
Perform complete operational checkout Raise and lower bridge to limit switch settings to check operation of visual and audible alarms. Extend and retract the bridge to limit switch settings to check operation of visual and audible alarms.		
Items marked with a "*" require maintenance, then immediate attention and repair must be provided. These items must be corrected before placing the Bridge in service.		

2.24.2.18 **DAILY WINTER PREVENTIVE CHECKLIST**

DAILY WINTER PREVENTIVE MAINTENANCE CHECKLIST	**DATE**	**INSPECTOR'S NAME**
DESCRIPTION	*OK*	*REPAIR REQUIRED*
CAUTION  *THIS CHECKLIST SHOULD BE COMPLETED BEFORE ATTEMPTING TO MOVE THE BRIDGE. FAILURE TO RUN THIS CHECKLIST BEFORE ATTEMPTING TO MOVE THE BRIDGE COULD RESULT IN DAMAGE TO THE BRIDGE*		
If necessary, turn on tunnel and cab heaters.		
If necessary, remove ice and snow from rotunda curtains.		
If necessary, remove ice and snow from tunnels to allow free movement in and out, as well as up and down. *		
If necessary, remove ice and snow from limit switches. *		
If necessary, remove ice and snow from articulating floor and limit switches. *		
If necessary, remove ice and snow from autoleveler. *		
If necessary, remove ice and snow from		

all clearance detectors and sensors. *		
If necessary, remove ice and snow from canopy. *		
If necessary, remove ice and snow from cabin weather door. *		
If necessary, remove ice and snow from service stairs, platform, and stair rollers. *		
If necessary, remove ice and snow from bridge operational area of Airport apron. This area must be de-iced and kept free of ice at all times. *		
Items marked with a "*" require maintenance, then immediate attention and repair must be provided. These items must be corrected before placing the Bridge in service.		

2.24.2.19 **WEEKLY PREVENTIVE MAINTENANCE**

WEEKLY PREVENTIVE MAINTENANCE CHECKLIST	**DATE**	**INSPECTOR'S NAME**
DESCRIPTION	*OK*	*REPAIR REQUIRED*
Perform daily preventive maintenance checklist and if appropriate the Winter daily checklist.		
Check flashing and seals where rotunda joins terminal building or walkway.		
Inspect auto level wheel switch. *		
Check tension of rotunda curtains.		
Check tension of cab curtains.		
Check electrical cables and equipment. *		
Inspect hydraulic reservoir for oil level or leaks. *		
Check fluid level of hydraulic reservoir. *		
Check operation of emergency lighting system.		
Check all lights – replace bulbs as necessary.		
Check torque of wheel bolts using torque wrench. Bolts must be torqued to: Plated bolts =213 foot pounds (29.45 kilogram-meters)		
Check tire pressure: 24-ply tires = 200-PSI ± 5-PSI 28-ply tires = 220-PSI ± 5-PSI Inspect tires for snags or cuts – Any damage to the tires that results in the exposure of plies or tread carcass mean the tire should be replaced.		
Items marked with a "*" require maintenance, then immediate attention and repair must be provided. These items must be corrected before placing the Bridge in service.		

2.24.2.20 **MONTHLY PREVENTIVE MAINTENANCE**

MONTHLY PREVENTIVE MAINTENANCE CHECKLIST	**DATE**	**INSPECTOR'S NAME**
DESCRIPTION	*OK*	*REPAIR REQUIRED*
Perform daily and weekly checklists and where appropriate the Winter daily checklist.		
Inspect both equalizer cables for cracks and excessive wear. Adjust cable tension as required. This does not apply to two tunnel bridges.		
Check lubrication of all gearboxes and add proper seasonal lubricant as required.		
Check carpets and rubber mats for damage or wear and tear.		
Inspect the condition of interior and exterior paint. Clean off loose scale, rust, etc. and repair as necessary.		
Inspect cab rotation drive motor sprocket and chain. *		
Inspect wheel drive sprocket and chain.		
Inspect control console and panels for loose connections and operation of switches.		
Items marked with a "*" require maintenance, then immediate attention and repair must be provided. These items must be corrected before placing the Bridge in service.		

2.24.2.21 **QUARTERLY PREVENTIVE MAINTENANCE**

QUARTERLY PREVENTIVE MAINTENANCE CHECKLIST	**DATE**	**INSPECTOR'S NAME**
DESCRIPTION	*OK*	*REPAIR REQUIRED*
Perform daily, weekly, and monthly checklists and where appropriate the Winter daily checklist.		
Inspect auto level assembly components for signs of wear, missing parts, and security of mounting.		
Inspect rotunda to tunnel seals, hinge pins, and floor alignment. *		
Inspect exterior safety handrails.		
Inspect the height indicator encoder for security of mounting, cleanliness, or damage.		
Check connections to hydraulic tank for leaks.		
Observe and check mechanical connections. Tighten loose bolts as necessary.		
Check rotunda and rotating cab curtain tension. (Apply force from inside about 36 inches [1 meter) from the base of the curtain. Curtain should not displace out of guide rail.		
Lubricate wheel bogie bearing. Refer to special instructions for Rotek bearings.		
Items marked with a "*" require maintenance, then immediate attention and repair must be provided. These items must be corrected before placing the Bridge in service.		

2.24.2.22 **QUARTERLY MAINTENANCE LUBRICATION**

2.24.2.22.1 Lubricate lift column ball screw assembly.

2.24.2.22.2 Lubricate sheave mounts on two tunnel cable tension device.

2.24.2.22.3 Lubricate cable take-up and equalizing system on three Telescoping Tunnels.

2.24.2.22.4 Lubricate chains on wheel carriage of drive assembly.

2.24.2.22.5 Lubricate shafts for cab rotation.

2.24.2.22.6 Lubricate shafts for Rotunda rotation.

2.24.2.22.7 Lubricate drive chains for cab rotation.

2.24.2.23 **QUARTERLY MAINTENANCE AND HOUSEKEEPING**

2.24.2.23.1 Examine lighting fixtures for inoperative lamps and repair or replace as needed.

2.24.2.23.2 Examine drive assembly headlights for inoperative lamps and repair or replace as needed.

2.24.2.23.3 Lubricate canopy closure lower activator arm assembly.

2.24.2.23.4 Lubricate canopy closure support hinges.

2.24.2.23.5 Lubricate cable lifting device hinges.

2.24.2.23.6 Lubricate cab rotation sprocket shafts.

2.24.2.24 **SEMI-ANNUAL PREVENTIVE MAINTENANCE**

SEMI-ANNUAL PREVENTIVE MAINTENANCE CHECKLIST	**DATE**	**INSPECTOR'S NAME**
DESCRIPTION	*OK*	*REPAIR REQUIRED*
Perform daily, weekly, monthly, and quarterly checklists. If appropriate complete daily Winter checklist		
Lubricate the drive chain on the cab rotation drive.		
Lubricate canopy frame pivot points.		
Check operating current on hydraulic pump drive motor and wheel drive motors. Record reading and compare with motor nameplate specifications.		
Check brake release lever on wheel drive for proper operation		
Check inner lift column tube for presence of lubricating grease. Lubricate if necessary.		
Check wheel drive gearboxes and cab rotating motor gearbox. Flush and replace lubricant as needed.		
Lubricate rotunda bearing.		
Clean all lighting fixtures. Replace lamps as necessary.		
Inspect tunnel and cab rollers, tracks, and stops.		
Inspect condition of interior and exterior paint. Repair damaged areas and repaint as needed.		
Lubricate sheave pins on the cable equalizing system. This does not apply to two tunnel bridges.		
Inspect exterior stairs for ease of operation and safety.		
Replace return line hydraulic filter. Initial replacement after 50 hours of operation, then every six months.		
Inspect all hydraulic hoses and fittings for leaks or damage.		
Check hydraulic pump for leaks and correct operations.		
Check all hydraulic cylinders for leaks, damage, and proper operation.		
Check all electrical control and power cables for clearance from		

obstruction, freedom of movement, and secure mating of connector plugs.		
Check electrical motor for hydraulic pump for unusual noise, plugged drain holes, loose electrical connection, or damage.		
All items on this checklist must be completed before bridge is returned to service.		

2.24.2.25 **ANNUAL PREVENTIVE MAINTENANCE**

ANNUAL PREVENTIVE MAINTENANCE CHECKLIST	**DATE**	**INSPECTOR'S NAME**
DESCRIPTION	*OK*	*REPAIR REQUIRED*
Perform daily, weekly, monthly, quarterly, and semiannual checklists.		
Clean all drive chains thoroughly, lubricate, and adjust.		
Lubricate the cab rotation motor bearings. Follow Manufacturer's recommendations in Chapter 5.		
Clean exterior of bridge using high pressure/superheated steam. Note: Canopy is to be hand leaned. Do not use steam. Thyssen-Stearns recommends that a car wash cleaner be used as a cleaning agent. These cleaners are readily available and do not damage any painted surfaces.		
Clean interior carpet using professional carpet cleaner (Shampooing/spray extractor).		
Repair any damaged paint areas.		
Inspect upper and lower lift column pads for wear.		
Test hydraulic fluid for presence of contaminants. Drain hydraulic fluid if test indicates new fluid is needed. Fill with recommended hydraulic fluid. Refer to Appendix G for the type of fluid to use. Be sure to use a 10-micron filter.		

Perform this checklist, preferably in the month of October. All items

on this checklist must be completed before returning the bridge to service.

2.24.2.26 **MAINTENANCE TOOLS**

2.24.2.26.1 The Contractor shall furnish all tools required to maintain and repair the passenger loading bridges.

2.24.2.27 **SPARE PARTS REQUIREMENTS**

2.24.2.27.1 The Contractor shall be responsible for accepting and inspecting all Spare Parts prior to storage. Defective parts shall be rejected or returned to supplier for replacement.

2.24.2.27.2 The Contractor shall be responsible for ordering additional Spare Parts or replacement parts in a timely manner so as not to jeopardize the operation of the equipment.

2.24.2.27.3 The Contractor shall be responsible for good housekeeping of the assigned area.

2.24.2.28 **RECORDS**

2.24.2.28.1 All work shall be coordinated with the Airport work control center. Requests for repairs and emergency services will be issued by written work orders. Emergency service requests with a Priority 1 will be communicated by phone to the Contractor.

2.24.2.28.2 All labor hours and parts used will be recorded on the work orders keyed in by the Contractor. Work orders not completed at the end of the shift will reflect the labor hours and parts used for each shift, and continue daily until complete.

2.24.2.28.3 The Contractor shall submit all proposed Preventive Maintenance procedures, technical information and recommended frequencies on work sheets and approved by the Manager of Maintenance after submittal.

2.24.2.28.4 The Preventive Maintenance information will be entered into the computerized maintenance management system by the Contractor and generated at predetermined intervals for review.

2.24.2.28.5 The Contractor shall be fully responsible for all record keeping associated with the maintenance of the Passenger Loading Bridges.

2.24.2.28.6 The Contractor shall maintain a current inventory of all Spare Parts and their condition.

2.24.3 400 Hz GROUND POWER SYSTEM

2.24.3.1 GENERAL DESCRIPTION

2.24.3.1.1 Each bridge is provided with an "over-the-bridge" or "within-the-bridge" device, such as a pantograph, that will allow power cables including the power cables for the 400 Hz converter system to be retracted or extended with the passenger boarding bridge.

2.24.3.1.2 Each Ground Support Electrical Power System to be maintained is characterized by location in the following tables.

2.24.3.2 Ground Power Unit Schedule

400HZ - GROUND POWER					
Gate Number	Existing/ Future/NA	Manufacturer	Make/ Model	Cable Hoist	# of Output Cables
A1	NA	NA	NA	NA	NA
A2	Existing	FMC Jetway Systems	90 KVA / Jetpower 2-90	single	1
A3	Future	FMC Jetway Systems	90 KVA / PWM2-90	single	1
A4	Existing	FMC Jetway Systems	90 KVA / Jetpower 2-90	single	1
A5	NA	NA	NA	NA	NA
A6	Existing	FMC Jetway Systems	90 KVA / Jetpower 2-90	single	1
A7	Future	FMC Jetway Systems	90 KVA / Jetpower 2-90	single	1
A8	Existing	FMC Jetway Systems	90 KVA / Jetpower 2-90	single	1

400HZ - GROUND POWER					
Gate Number	Existing/ Future/NA	Manufacturer	Make/ Model	Cable Hoist	# of Output Cables
A9	Future	FMC Jetway Systems	90 KVA / Jetpower 2-90	single	1
A10	Existing	FMC Jetway Systems	90 KVA / Jetpower 2-90	single	1
A11	Future	FMC Jetway Systems	90 KVA / Jetpower 2-90	single	1
A12	Existing	FMC Jetway Systems	90 KVA / Jetpower 2-90	single	1
A13	Existing	FMC Jetway Systems	90 KVA / Jetpower 2-90	single	1
A14	Existing	FMC Jetway Systems	90 KVA / PWM2-90	single	1
A15	Existing	FMC Jetway Systems	120 KVA / PWM2-120	dual	2
A16	Existing	FMC Jetway Systems	120 KVA / PWM2-120	dual	2
A17	Existing	FMC Jetway Systems	120 KVA / PWM2-120	dual	2
A18	Existing	FMC Jetway Systems	120 KVA / PWM2-120	dual	2
A19	Existing	FMC Jetway Systems	120 KVA / PWM2-120	dual	2
A20	Existing	FMC Jetway Systems	120 KVA / PWM2-120	dual	2
A21	Existing	FMC Jetway Systems	120 KVA / PWM2-120	dual	2
A22	Existing	FMC Jetway Systems	120 KVA / PWM2-120	dual	2
A23	Existing	FMC Jetway Systems	120 KVA / PWM2-120	dual	2
A24	Existing	FMC Jetway Systems	120 KVA / PWM2-120	dual	2
A25	Existing	FMC Jetway Systems	120 KVA / PWM2-120	dual	2
A26	Existing	FMC Jetway Systems	120 KVA / PWM2-120	dual	2
B1	Future	FMC Jetway Systems	90 KVA / PWM-90	single	1
B2	Future	Jet Power	90 KVA / J-090-115-A1-008	single	1
B3	Future	FMC Jetway Systems	90 KVA / PWM-90	single	1
B4	Future	FMC Jetway Systems	90 KVA / PWM-90	single	1
B5	Future	FMC Jetway	90 KVA / PWM-90	single	1

400HZ - GROUND POWER					
Gate Number	Existing/ Future/NA	Manufacturer	Make/ Model	Cable Hoist	# of Output Cables
		Systems			
B6	Future	Jet Power	90 KVA / J-090-115-A1-008	single	1
B7	Future	Jet Power	90 KVA / J-090-115-A1-008	single	1
B8	Future	FMC Jetway Systems	90 KVA / PWM-90	single	1
B9	Future	Jet Power	90 KVA / J-090-115-A1-008	single	1
B10	Future	FMC Jetway Systems	90 KVA / PWM-90	single	1
B11	Future	Jet Power	90 KVA / J-090-115-A1-008	single	1
B12	NA	NA	NA	NA	NA
B13	Future	FMC Jetway Systems	90 KVA / PWM-90	single	1
B14	Future	FMC Jetway Systems	90KVA/J-090-115	single	1
B15	Future	FMC Jetway Systems	90 KVA / PWM-90	single	1
B16	Future	FMC Jetway Systems	90 KVA / PWM-90	single	1
C16	NA	NA	NA	NA	NA
C17	Future	FMC Jetway Systems	90 KVA / PWM-90	single	1
C18	Future	FMC Jetway Systems	90 KVA / J-090-115-A1-008	single	1
C19	Future	Jet Power	90 KVA / J-090-115-A2-001	single	1
C20	Future	Jet Power	90KVA/J-090-115	single	1
C21	Future	Jet Power	90 KVA / J-090-115-A1-008	single	1
C22	Future	FMC Jetway Systems	90KVA/J-090-115	single	1
C23	Future	FMC Jetway Systems	90KVA/J-090-115	single	1
C24	Future	FMC Jetway Systems	90 KVA / PWM-90	single	1
C25	Future	Jet Power	90 KVA / J-090-115	single	1
C26	Future	FMC Jetway Systems	90 KVA / PWM-90	single	1
C27	Future	Jet Power	90KVA/J-090-115	single	1
C28	Future	FMC Jetway Systems	90 KVA / PWM-90	single	1

400HZ - GROUND POWER					
Gate Number	Existing/ Future/NA	Manufacturer	Make/ Model	Cable Hoist	# of Output Cables
C29	Future	Jet Power	90 KVA / J-090-115	single	1
C30	Future	FMC Jetway Systems	90 KVA / PWM-90	single	1
C31	Future	Jet Power	90KVA/J-090-115	single	1
D1	Future	FMC Jetway Systems	90 KVA / PWM-90	single	1
D2	Future	Jet Power	90 KVA / J-090-115-A0-001	single	1
D3	Future	FMC Jetway Systems	90 KVA / PWM-90	single	1
D4	Future	Jet Power	90 KVA / J-090-115-A0-001	single	1
D5	Future	FMC Jetway Systems	90 KVA / PWM-90	single	1
D6	Future	Jet Power	90 KVA / J-090-115-A1-008	single	1
D7	Future	FMC Jetway Systems	90 KVA / PWM-90	single	1
D8	Future	Jet Power	90 KVA / J-090-115-A1-008	single	1
D9	Future	Jet Power	90 KVA / J-090-115-A1-008	single	1
D10	Future	Jet Power	90 KVA / J-090-115-A0-001	single	1
D11	Future	FMC Jetway Systems	90 KVA / PWM2-90		1
D12	Existing	FMC Jetway Systems	90 KVA / PWM2-90	single	1
D13	Future	FMC Jetway Systems	90 KVA / PWM2-90		
D14	Existing	FMC Jetway Systems	90 KVA / PWM2-90	single	1
D15	Existing	FMC Jetway Systems	90 KVA / PWM2-90	single	1
D16	Existing	FMC Jetway Systems	90 KVA / PWM2-90	single	1
E1	NA	NA	NA	NA	NA
E2	Future	Hobart	90 KVA	single	1
E3	NA	NA	NA	NA	NA
E4	Future	Hobart	90 KVA	single	1
E5	NA	NA	NA	NA	NA
E6	Future	Hobart	90 KVA	single	1
E7	NA	NA	NA	NA	NA

400HZ - GROUND POWER					
Gate Number	Existing/ Future/NA	Manufacturer	Make/ Model	Cable Hoist	# of Output Cables
E8	Future	FMC Jetway Systems	75 KVA / PMU2-75	single	1
E9	Future	FMC Jetway Systems	75 KVA / PMU2-75	single	1
E10	Future	FMC Jetway Systems	75 KVA / PMU2-75	single	1
E12	Future	FMC Jetway Systems	75 KVA / PMU2-75	single	1
F1	Existing	Hobart GPU-600	28 Volt / 6T28-600CL	NA	NA
F2	NA	NA	NA	NA	NA
F3	Existing	Hobart GPU-600	28 Volt / 6T28-600CL	NA	NA
F4	NA	NA	NA	NA	NA
F5	Existing	Hobart GPU-600	28 Volt / 6T28-600CL	NA	NA
F6	NA	NA	NA	NA	NA
F7	Existing	Hobart GPU-600	28 Volt / 6T28-600CL	NA	NA
F8	NA	NA	NA	NA	NA
F9	Existing	Hobart GPU-600	28 Volt / 6T28-600CL	NA	NA
F10	NA	NA	NA	NA	NA
F11	Existing	Hobart GPU-600	28 Volt / 6T28-600CL	NA	NA
F12	NA	NA	NA	NA	NA
F13	Existing	Hobart GPU-600	28 Volt / 6T28-600CL	NA	NA
F14	NA	NA	NA	NA	NA
F15	Existing	Hobart GPU-600	28 Volt / 6T28-600CL	NA	NA
F16	NA	NA	NA	NA	NA
F17	NA	NA	NA	NA	NA
F18	NA	NA	NA	NA	NA
F19	NA	NA	NA	NA	NA
F20	NA	NA	NA	NA	NA
F21	NA	NA	NA	NA	NA
F22	NA	NA	NA	NA	NA
F23	NA	NA	NA	NA	NA
F24	Existing	Hobart GPU-600	28 Volt / 6T28-600CL	NA	NA
F25	Existing	Hobart GPU-600	28 Volt / 6T28-600CL	NA	NA
F26	Existing	Hobart GPU-	28 Volt / 6T28-	NA	NA

400HZ - GROUND POWER					
Gate Number	Existing/ Future/NA	Manufacturer	Make/ Model	Cable Hoist	# of Output Cables
		600	600CL		
F27	Existing	Hobart GPU-600	28 Volt / 6T28-600CL	NA	NA
F28	Existing	Hobart GPU-600	28 Volt / 6T28-600CL	NA	NA
F29	Existing	Hobart GPU-600	28 Volt / 6T28-600CL	NA	NA
F30	Existing	Hobart GPU-600	28 Volt / 6T28-600CL	NA	NA
F31	Existing	Hobart GPU-601	29 Volt / 6T28-600CL	NA	NA
F32	Existing	Hobart GPU-602	30 Volt / 6T28-600CL	NA	NA
F33	Existing	Hobart GPU-603	31 Volt / 6T28-600CL	NA	NA
F34	Existing	Hobart GPU-604	32 Volt / 6T28-600CL	NA	NA
F35	Existing	Hobart GPU-605	33 Volt / 6T28-600CL	NA	NA
F36	Existing	Hobart GPU-606	34 Volt / 6T28-600CL	NA	NA
F37	Existing	Hobart GPU-607	35 Volt / 6T28-600CL	NA	NA
F38	Existing	Hobart GPU-608	36 Volt / 6T28-600CL	NA	NA
F39	Existing	Hobart GPU-609	37 Volt / 6T28-600CL	NA	NA

2.24.3.3 **TECHNICAL DESCRIPTION**

2.24.3.3.1 The Ground Support Electrical Power System's 400 Hz inverter incorporates pulse-width-modulation, solid state-transistorized circuitry complete with aircraft plug. The system maximizes the use of integrated circuits and modular assemblies. Remote controls are provided for Power on, Power off, Aircraft interlock, Loading bridge interlock, Automatic reset and Restart functions.

2.24.3.3.1.1 **INPUT CHARACTERISTICS**

The input starting in rush does not exceed 100% of the input current required when the unit is operating at rated load output. The

input line current will be balanced to supply any load from 10% to rated load.

2.24.3.3.2 **OUTPUT CHARACTERISTICS**

2.24.3.3.2.1 The frequency inverter's output is 400 Hz + or - 0.04 Hz at any load condition. The system operates at a constant load to accommodate varying temperatures from -40 degrees Fahrenheit to 130 degrees Fahrenheit with voltage changes not more than 1% of its rated value and frequency changes not more than 0.05% of the rated frequency. The overall efficiency is not less than 95% at any load and power factor above 50% of rated. The acoustical noise is not greater than 50dba at 1.5 meter height and 1.0 meter in distance.

2.24.3.3.1.3 **INDICATING LIGHTS AND METER**

2.24.3.3.1.3.1 There are three (3) indicating lights visible to the console operator. The red indicating light indicates an internal fault, a flashing light indicates a phase loss. The yellow indicating light indicates ready utility power. The green indicating light indicates 400 Hz power to the external power connection. An hour meter registers total hours the equipment is providing 400 Hz output.

2.24.3.3.1.4 **OPERATING MONITORS**

2.24.3.3.1.4.1 LEDs provide indication that all primary circuits and components are operating correctly. The system incorporates built-in test equipment to indicate operating characteristics. The system detects 100% of all faults by use of the Built-In Testing Monitors.

2.24.3.3.1.5 **RELIABILITY**

2.24.3.3.1.5.1 The system is capable of operating within the specifications at any load up to and including rated loads with a Mean-Time-Between-Failure of 24,000 hours.

2.24.3.3.1.6 **TESTING**

2.24.3.3.1.6.1 The tests to be run will include total harmonic distortion, voltage balance (input), voltage balance (output), transient voltage dip and response, frequency regulation, overload, safety operating device and line drop compensation.

2.24.3.4 **SERVICE CALL AND RESPONSE TIME**

2.24.3.4.1 Major maintenance for failures will be on a demand basis 24 hours per day, 7 days a week with a response time of fifteen (15) minutes.

2.24.3.4.2 Any component found defective or not operational will be repaired immediately. If a technician is not on site, a service call will be made to the Contractor who will provide a technician to repair the system within six (6) hours. The program will include a check list form to be filled out during testing.

2.24.3.5 **SPARE PARTS**

2.24.3.5.1 The Contractor will maintain spare parts in accordance with the manufacturer's recommendations. As a minimum, there will be one complete set of circuit boards on site.

2.24.3.6 **RECORDS/DOCUMENTATION**

2.24.3.6.1 The Contractor will forward to the City copies of all preventive maintenance services performed and any trouble call reports.

2.24.3.6.2 All work will be initiated from the Airport's work control center through the issuance of a work order. The work control center will only phone in Priority 1, emergency requests.

2.24.3.6.3 All hours and parts used will be logged onto the work orders. Work that is not completed at the end of the day will have all of the hours and parts logged to it daily until completed.

2.24.3.6.4 Submit all proposed PM procedures and support information on approved work sheets, along with recommended frequencies for approval by the manager of maintenance. The PM information will be entered into the computerized maintenance management system to be generated at the set frequencies.

2.24.4 PRE-CONDITIONED AIR UNITS

2.24.4.1 GENERAL DECRIPTION

2.24.4.1.1 The Pre-Conditioned Air (PCA) Unit is an all electric, self-contained, automatically controlled air conditioning unit that provides ventilation, cooling, dehumidifying, heating and filtering of aircraft supply air. The PCA unit therefore is designed to provide comfort to the passengers and crew of a parked aircraft during pre-flight servicing and loading. It is also utilized for ground maintenance.

2.24.4.1.2 The PCA Unit is mounted under a passenger boarding bridge directly behind the vertical lift column. Four mounting hangers attached the unit to the horizontal lower corner flange of the bridge. The flexible air duct is attached to the outlet of the unit and drops into a duct storage basket positioned beneath. The controls consist of a push-button station attached to the lift column cross beam accessible to the operator near the basket.

2.24.4.2 **TECHNICAL DESCRIPTION**

2.24.4.2.1 **Owner's Responsibility**

The objective of periodic maintenance is to maintain units in the same condition and configuration as originally supplied and to incorporate any changes directed by the manufacturer to assure the continued service life and safety of the product.

Maintenance must be performed on a routine basis in accordance with manufacturer's recommended preventive maintenance checklists. Replacement parts must conform to original equipment specifications.

Modification of the structural, electrical, mechanical, or safety components of Pre-Conditioned Air Units must be accomplished in strict accordance with manufacturer specifications if performed by any party other than the manufacturer. Likewise, relocation to another passenger boarding bridge offers the potential for damage to the bridge and the PCA Unit itself. Any relocation must be approved in advance and installation must be performed in strict accordance with the manufacturer's current field directive and specifications.

2.24.4.2.2 **Preventive Maintenance**

A good program of preventive maintenance rigidly adhered to, will prevent or reduce failure or the need for corrective maintenance. Preventive maintenance includes recommended inspection, cleaning and painting.

2.24.4.2.3 **Pre-Conditioned Air Unit Schedule**

PRE-CONDITIONED AIR			
Gate Number	Existing/ Future/NA	Manufacturer	Make/ Model
A1	NA	NA	NA
A2	NA	NA	NA
A3	NA	NA	NA
A4	NA	NA	NA
A5	NA	NA	NA
A6	NA	NA	NA
A7	NA	NA	NA
A8	NA	NA	NA
A9	NA	NA	NA
A10	NA	NA	NA
A11	NA	NA	NA
A12	NA	NA	NA
A13	NA	NA	NA
A14	Existing	FMC Technologies, Inc.	60 Ton / XPC6000
A15	Existing	FMC Technologies, Inc.	90 Ton / XPC9000
A16	Existing	FMC Technologies, Inc.	90 Ton / XPC9000
A17	Existing	FMC Technologies, Inc.	60 Ton / XPC6000
A18	Existing	FMC Technologies, Inc.	60 Ton / XPC6000
A19	Existing	FMC Technologies, Inc.	60 Ton / XPC6000
A20	Existing	FMC Technologies, Inc.	60 Ton / XPC6000
A21	Existing	FMC Technologies, Inc.	60 Ton / XPC6000
A22	Existing	FMC Technologies, Inc.	60 Ton / XPC6000
A23	Existing	FMC Technologies, Inc.	90 Ton / XPC9000

PRE-CONDITIONED AIR			
Gate Number	Existing/ Future/NA	Manufacturer	Make/ Model
A24	Existing	FMC Technologies, Inc.	60 Ton / XPC6000
A25	Existing	FMC Technologies, Inc.	60 Ton / XPC6000
A26	Existing	FMC Technologies, Inc.	90 Ton / XPC9000
B1	Future	Trilectron	30 Ton / POU300
B2	Future	Trilectron	30 Ton / POU300
B3	Future	Trilectron	30 Ton / POU300
B4	Future	Trilectron	30 Ton / POU300
B5	Future	Trilectron	30 Ton / POU300
B6	Future	Trilectron	30 Ton / POU300
B7	Future	Trilectron	30 Ton / POU300
B8	Future	Trilectron	30 Ton / POU300
B9	Future	Trilectron	30 Ton / POU300
B10	Future	Trilectron	30 Ton / POU300
B11	Future	Trilectron	45 Ton / POU450PE
B12	NA	NA	NA
B13	Future	Trilectron	45 Ton / POU450PE
B14	Future	Trilectron	30 Ton / POU300
B15	Future	Trilectron	30 Ton / POU300
B16	Future	Trilectron	30 Ton / POU300
C16	NA	NA	NA
C17	Future	Trilectron	30 Ton / POU300
C18	Future	Trilectron	30 Ton / POU300
C19	Future	Trilectron	30 Ton /

PRE-CONDITIONED AIR			
Gate Number	Existing/ Future/NA	Manufacturer	Make/ Model
			POU300
C20	Future	Trilectron	30 Ton / POU300
C21	Future	Trilectron	30 Ton / POU300
C22	Future	Trilectron	30 Ton / POU300
C23	Future	Trilectron	30 Ton / POU300
C24	Future	Trilectron	30 Ton / POU300
C25	Future	Trilectron	30 Ton / POU300
C26	Future	Trilectron	30 Ton / POU300
C27	Future	Trilectron	30 Ton / POU300
C28	Future	Trilectron	45 Ton / POU450PE
C29	Future	Trilectron	45 Ton / POU450PE
C30	Future	Trilectron	45 Ton / POU450PE
C31	Future	Trilectron	30 Ton / POU300
D1	Future	FMC Technologies, Inc.	30 Ton / POU300
D2	Future	Trilectron	30 Ton / POU300
D3	Future	FMC Technologies, Inc.	30 Ton / POU300
D4	Future	Trilectron	30 Ton / POU300
D5	Future	FMC Technologies, Inc.	30 Ton / POU300
D6	Future	Trilectron	30 Ton / POU300
D7	Future	FMC Technologies, Inc.	30 Ton / POU300
D8	Future	Trilectron	30 Ton / POU300
D9	NA	NA	NA

PRE-CONDITIONED AIR			
Gate Number	Existing/ Future/NA	Manufacturer	Make/ Model
D10	Future	Trilectron	30 Ton / POU300
D11	Future	FMC Technologies, Inc.	45 Ton / XPC4500
D12	Existing	FMC Technologies, Inc.	45 Ton / XPC4500
D13	Future	FMC Technologies, Inc.	45 Ton / XPC4500
D14	Existing	FMC Technologies, Inc.	45 Ton / XPC4500
D15	Existing	FMC Technologies, Inc.	45 Ton / XPC4500
D16	Existing	FMC Technologies, Inc.	45 Ton / XPC4500
E1	NA	NA	NA
E2	NA	NA	NA
E3	NA	NA	NA
E4	NA	NA	NA
E5	NA	NA	NA
E6	NA	NA	NA
E7	NA	NA	NA
E8	Future	FMC Technologies, Inc.	30 Ton / XPC3000
E9	Future	FMC Technologies, Inc.	30 Ton / XPC3000
E10	Future	FMC Technologies, Inc.	45 Ton / XPC4500
E12	Future	FMC Technologies, Inc.	30 Ton / XPC3000
F1	NA	NA	NA
F2	NA	NA	NA
F3	NA	NA	NA
F4	NA	NA	NA
F5	NA	NA	NA
F6	NA	NA	NA
F7	NA	NA	NA

PRE-CONDITIONED AIR			
Gate Number	Existing/ Future/NA	Manufacturer	Make/ Model
F8	NA	NA	NA
F9	NA	NA	NA
F10	NA	NA	NA
F11	NA	NA	NA
F12	NA	NA	NA
F13	NA	NA	NA
F14	NA	NA	NA
F15	NA	NA	NA
F16	NA	NA	NA
F17	NA	NA	NA
F18	NA	NA	NA
F19	NA	NA	NA
F20	NA	NA	NA
F21	NA	NA	NA
F22	NA	NA	NA
F23	NA	NA	NA
F24	NA	NA	NA
F25	NA	NA	NA
F26	NA	NA	NA
F27	NA	NA	NA
F28	NA	NA	NA
F29	NA	NA	NA
F30	NA	NA	NA
F31	NA	NA	NA
F32	NA	NA	NA
F33	NA	NA	NA
F34	NA	NA	NA
F35	NA	NA	NA
F36	NA	NA	NA
F37	NA	NA	NA
F38	NA	NA	NA
F39	NA	NA	NA

2.24.4.3 **PREVENTIVE MAINTENANCE**

2.24.4.3.1 **Precautionary Measures**

2.24.4.3.1.1 Extreme care must be exercised to insure that all repairs, installations, and service are of the highest possible quality. Use the proper tools at all times when making repairs, adjustments and services to prevent damage, scars and burrs to fittings, bolts, etc. Wipe clean all spills, smudges, smears or dirt accumulation resulting from preventive maintenance.

2.24.4.3.1.2 **General Considerations**

1) Only trained personnel should work on the Pre-Conditioned Air Unit.

2) Avoid hurried or careless workmanship.

3) Work should be scheduled from start to finish without interruption to insure no steps are overlooked.

4) EPA certified personnel must perform any maintenance or work done on the refrigeration system.

2.24.4.3.2 **Weekly Inspection**

2.24.4.3.2.1 The PCA Unit should be visually checked for the following items: missing, loose or worn hardware, weathered paint, rust and corrosion, filter cleanliness, refrigerant oil leaks, and audible abnormal noises from the rotating equipment. Problem areas must be reported to maintenance for repair.

2.24.4.3.2.2 Check the operation of the unit and report any malfunction to the maintenance department for repair.

2.24.4.3.3 **Quarterly Maintenance**

2.24.4.3.3.1 Check air filters for cleanliness by visually observing the surface on both sides. Clean filters.

2.24.4.3.3.2 Check condenser coils for cleanliness by visually observing the finned surface. If dust and dirt have accumulated between the fins, blow out with compressed air or hose down with water.

2.24.4.3.3.3 Visually check the refrigerant sight glass. The refrigerant systems must have a full head of liquid refrigerant at the expansion valve to insure proper operation. Adjust quantity of refrigerant as required.

2.24.4.3.3.4 Visually check the oil level in the compressor or sight glass.

2.24.4.3.3.5 Check the color of the indictor element in the center of the refrigerant sight glass.

2.24.4.3.3.6 Visually check each refrigeration drier for appearance and temperature. If the drier is frosted or if there is a perceptible temperature change between the liquid line entering and leaving the drier, an excessive pressure drop in the drier is indicated, and the drier should be replaced.

2.24.4.3.3.7 Visually check refrigerant lines. Check the lines for wear and vibration. Tape or support as necessary. Check refrigerant line supports and braces to make certain they are not wearing or cutting the refrigerant line. Oil traces at flare nuts or valve connections indicate the possibility of a refrigerant leak. Wipe clean and tighten the flare nut.

2.24.4.3.3.8 Visually check air passageways inside unit for obstruction from leaves, papers and debris that may block the internal airflow and increase the condenser head pressure.

2.24.4.3.3.9 Listen for any abnormal noise or vibration. Find causes and repair the malfunction.

2.24.4.3.3.10 Check for erratic operation such as the following:

2.24.4.3.3.10.1 Fan cycling – operating on and off quickly.

2.24.4.3.3.10.2 Compressor cycling – operating on and off more than every 2 minutes. If abnormal operation is found, repair the malfunction.

2.24.4.3.3.11 **Test Smoke Detector.**

2.24.4.3.3.12 Check all mounting bolts to the passenger boarding bridge for looseness.

2.24.4.3.3.13 Check mounting bolts to the duct basket and hose brackets.

2.24.4.3.3.14 Check casters on the duct basket and repair or replace if needed.

2.24.4.3.3.15 Check air ducts for holes, tears, abrasion wear or leaks. Replace or repair as needed.

2.24.4.3.3.16 Check condensate float to see if it is operating without sticking.

2.24.4.3.3.17 Check all wiring for tightness. Re-tighten all high voltage terminals. Check contactors for abnormal wear. Replace if needed.

2.24.4.3.4 **Annual Maintenance**

2.24.4.3.4.1 Check the electrical control panel to see that the overloads and circuit breakers are functioning properly. Look for burn marks on the cabinet and components that might indicate possible shorts, and check the contacts on any contactor on which there are any questions.

2.24.4.3.4.2 Check all high voltage wiring connections for loose or corroded connections. Re-torque all high voltage connections.

2.24.4.3.4.3 Check motors for free rotation. Grease motor bearings with one squirt of grease. (About one inch from a grease gun)

2.24.4.3.4.4 Check fan hub to motor shaft for tightness. Re-torque hub set screws to motor shaft.

2.24.4.3.4.5 Re-torque all mounting bolts to the bridge including the duct basket mounting brackets.

2.24.4.3.4.6 Clean Condenser Coils.

2.24.4.3.4.7 Clean Evaporator and duct.

2.24.4.4 **SERVICE CALL AND RESPONSE TIME**

2.24.4.4.1 Major maintenance for failures will be on a demand basis 24 hours per day, 7 days a week with a response time of fifteen (15) minutes.

2.24.4.4.2 Any component found defective or not operational will be repaired immediately. If a technician is not on site, a service call will be made to the Contractor who will provide a technician to repair the system within six (6)hours. The program will include a check list form to be filled out during testing.

2.24.4.5 **SPARE PARTS**

2.24.4.5.1 The Contractor will maintain spare parts in accordance with the manufacturer's recommendations.

2.24.4.6 **RECORDS/DOCUMENTATION**

2.24.4.6.1 The Contractor will forward to the City copies of all preventive maintenance services performed and any trouble call reports.

2.24.4.6.2 All work will be initiated from the Airport's work control center through the issuance of a

work order. The work control center will only phone in Priority 1, emergency requests.

2.24.4.6.3 All hours and parts used will be logged onto the work orders. Work that is not completed at the end of the day will have all of the hours and parts logged to it daily until completed.

2.24.4.6.4 Submit all proposed PM procedures and support information on approved work sheets, along with recommended frequencies for approval by the manager of maintenance. The PM information will be entered into the computerized maintenance management system to be generated at the set frequencies.

2.24.5 POTABLE WATER CABINET

2.24.5.1 GENERAL DESCRIPTION

The purpose of the Semler Potable Water Cabinet (PWC) is to enable ground support personnel to safely and efficiently transfer potable water from the airport terminal potable water supply line into the aircraft potable water storage tank. When in operation the PWC regulates the water pressure during filling. When the filling operation is finished the operation can easily rewind the hose onto the motorized reel. When not in operation the heated PWC prevents water line "freeze up" in the hose and the interior cabinet piping. When the PWC key lock is used it can help prevent tempering of the potable water line.

2.24.5.2 TECHNICAL DESCRIPTION

2.24.5.2.1 **Hose Reel** – The hose reel stores the hose (up to ¾" ID x 200' long) when not in use. The motorized drive enables a powered retrieval of the hose after the filling operation has been completed.

2.24.5.2.2 **Guidemaster/Level Rewind** – Helps the operator guide the hose onto the reel in a uniform pattern.

2.24.5.2.3 **Ball Valve** – The "T" handle ball valve on the hose assembly allows the operator to control the flow of water at the aircraft during the filling operation.

2.24.5.2.4 **Water Pressure Regulator** – Regulates water pressure to maintain 30 psi in the system. (30 psi set at factory.)

2.24.5.2.5 **Heating -** Cabinet interior is heated by (4) 600 watt electric heat pads located in the side wall cavities.

2.24.5.2.6 **Thermostat** – The adjustable thermostat controls the interior temperature and is factory set at 50°F. Do **NOT** adjust thermostat beyond set point of 50°F.

2.24.5.2.7 **Reel Motor Run Switch** – When depressed, the switch activates the rewind drive on the reel. This is a deadman type switch which must be held in to operate the drive.

2.24.5.2.8 **Light Switch** – When light switch, located at P.B. Station, is turned on it energizes a 100 watt service light.

2.24.5.3 **POTABLE WATER CABINET SCHEDULE**

POTABLE WATER				
Gate Number	Existing/ Future/NA	Manufacturer	Make/Model	Hose Length
A1	NA	NA	NA	NA
A2	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
A3	NA	NA	NA	NA
A4	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
A5	NA	NA	NA	NA
A6	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
A7	Future	Semler Industries	SS Rack Mounted/SI-	200' - 3/4"

POTABLE WATER				
Gate Number	Existing/ Future/NA	Manufacturer	Make/Model	Hose Length
			2400-P	
A8	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
A9	Future	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
A10	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
A11	Future	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
A12	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
A13	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
A14	Existing	Phoenix	PNX-WC98	300' - 3/4"
A15	Existing	Phoenix	PNX-WC98	300' - 3/4"
A16	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	300' - 3/4"
A17	Existing	Phoenix	PNX-WC98	300' - 3/4"
A18	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	300' - 3/4"
A19	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	300' - 3/4"
A20	Existing	Phoenix	PNX-WC98	300' - 3/4"
A21	Existing	Phoenix	PNX-WC98	300' - 3/4"
A22	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	300' - 3/4"
A23	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	300' - 3/4"
A24	Existing	Phoenix	PNX-WC98	300' - 3/4"
A25	Existing	Phoenix	PNX-WC98	300' -

POTABLE WATER				
Gate Number	Existing/ Future/NA	Manufacturer	Make/Model	Hose Length
				3/4"
A26	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	300' - 3/4"
B1	Future	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
B2	NA	NA	NA	NA
B3	Future	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
B4	NA	NA	NA	NA
B5	NA	NA	NA	NA
B6	Future	Semler Industries	SS Rack Mounted/SI-2400-P	
B7	Future	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
B8	NA	NA	NA	NA
B9	Future	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
B10	Future	Semler Industries	SS Rack Mounted/SI-2400-P	NA
B11	NA	NA	NA	NA
B12	NA	NA	NA	NA
B13	NA	NA	NA	NA
B14	Future	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
B15	Future	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
B16	NA	NA	NA	NA
C16	NA	NA	NA	NA
C17	Future	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
C18	NA	NA	NA	NA
C19	Future	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
C20	Future	Semler Industries	SS Rack Mounted/SI-	200' - 3/4"

POTABLE WATER				
Gate Number	Existing/ Future/NA	Manufacturer	Make/Model	Hose Length
			2400-P	
C21	NA	NA	NA	NA
C22	Future	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
C23	NA	NA	NA	NA
C24	NA	NA	NA	NA
C25	NA	NA	NA	NA
C26	NA	NA	NA	NA
C27	Future	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
C28	Future	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
C29	NA	NA	NA	NA
C30	Future	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
C31	Future	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
D1	Future	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
D2	Future	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
D3	NA	NA	NA	NA
D4	NA	NA	NA	NA
D5	Future	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
D6	Future	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
D7	NA	NA	NA	NA
D8	Future	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
D9	NA	NA	NA	NA
D10	Future	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
D11	NA	NA	NA	NA
D12	Existing	Semler	SS Rack	200' -

POTABLE WATER				
Gate Number	Existing/ Future/NA	Manufacturer	Make/Model	Hose Length
		Industries	Mounted/SI-2400-P	3/4"
D13	NA	NA	NA	NA
D14	NA	NA	NA	NA
D15	NA	NA	NA	NA
D16	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
E1	Future	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
E2	NA	NA	NA	NA
E3	NA	NA	NA	NA
E4	Future	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
E5	Future	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
E6	NA	NA	NA	NA
E7	Future	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
E8	Future	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
E9	NA	NA	NA	NA
E10	NA	NA	NA	NA
E12	NA	NA	NA	NA
F1	NA	NA	NA	NA
F2	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
F3	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
F4	NA	NA	NA	NA
F5	NA	NA	NA	NA
F6	NA	NA	NA	NA
F7	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
F8	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
F9	Existing	Semler	SS Rack	200' -

POTABLE WATER				
Gate Number	Existing/ Future/NA	Manufacturer	Make/Model	Hose Length
		Industries	Mounted/SI-2400-P	3/4"
F10	NA	NA	NA	NA
F11	NA	NA	NA	NA
F12	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
F13	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
F14	NA	NA	NA	NA
F15	NA	NA	NA	NA
F16	NA	NA	NA	NA
F17	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
F18	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
F19	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
F20	NA	NA	NA	NA
F21	NA	NA	NA	NA
F22	NA	NA	NA	NA
F23	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
F24	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
F25	NA	NA	NA	NA
F26	NA	NA	NA	NA
F27	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
F28	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
F29	NA	NA	NA	NA
F30	NA	NA	NA	NA
F31	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
F32	Existing	Semler Industries	SS Rack Mounted/SI-	200' - 3/4"

POTABLE WATER				
Gate Number	Existing/ Future/NA	Manufacturer	Make/Model	Hose Length
			2400-P	
F33	NA	NA	NA	NA
F34	NA	NA	NA	NA
F35	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
F36	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"
F37	NA	NA	NA	NA
F38	NA	NA	NA	NA
F39	Existing	Semler Industries	SS Rack Mounted/SI-2400-P	200' - 3/4"

2.24.5.4 **PREVENTIVE MAINTENANCE**

2.24.5.4.1 **Week**

1) Cabinet Interior – flush with water once a day to remove any dust or dirt in the cabinet.
2) Light – check and replace as necessary (100 watt max.)
3) Motor – unreel approximately 15’ (5 m) of hose and activate motor to check operation.
4) Nozzle – check for damage.
5) Lines and Fittings – check for leaks.
6) Heater – check operation.
7) Cabinet – check for damage and defective or missing hardware.

2.24.5.4.2 **Monthly**

1) Swivel Joint – lubricate with Chem-a-Lube F-880 or equal approved for food service use.
Do not pack joint with high pressure grease gun. Doing so can result in damage to the seals and contamination of the potable water.
2) Alternate Rewind Mechanism – lubricate using standard chassis grease.
3) Chain – lubricate with SAE 30 oil.
4) Plumbing – visually inspect to check for various leaks around fittings and joints. Tighten plumbing as required to correct such leaks.
5) Cabinet Hardware – periodically check to see that all fasteners (nuts and bolts) are tightened securely.

2.24.5.4.3 **Quarterly**

1) Hose – pull out full length and examine for cuts, deterioration and leaks.
2) Door Hinges, Locking Devices and Door Holders – oil lightly.
3) Front Reel Swivel Bearing – lubricate with Dow FDA-approved lubricant or equal.

2.24.5.4.4 **Semi-Annual**

1) Hose – remove nozzle and remove hose from reel. Reverse ends and reconnect.
2) Cabinet – wash interior and exterior with detergent.

2.24.5.4.5 **Annual**

1) Hose – remove nozzle and remove hose from reel. Install new hose on reel and attach nozzle to hose. Discard old hose.

2.24.5.5 **SERVICE CALL AND RESPONSE TIME**

2.24.5.5.1 Major maintenance for failures will be on a demand basis 24 hours per day, 7 days a week with a response time of fifteen (15) minutes.

2.24.5.5.2 Any component found defective or not operational will be repaired immediately. If a technician is not on site, a service call will be made to the Contractor who will provide a technician to repair the system within six (6) hours. The program will include a check list form to be filled out during testing.

2.24.5.6 **SPARE PARTS**

2.24.5.6.1 The Contractor will maintain spare parts in accordance with the manufacturer's recommendations.

2.24.5.7 **RECORDS/DOCUMENTATION**

2.24.5.7.1 The Contractor will forward to the City copies of all preventive maintenance services performed and any trouble call reports.

2.24.5.7.2 All work will be initiated from the Airport's work control center through the issuance of a work order. The work control center will only phone in Priority 1, emergency requests.

2.24.5.7.3 All hours and parts used will be logged onto the work orders. Work that is not completed at the end of the day will have all of the hours and parts logged to it daily until completed.

2.24.5.7.4 Submit all proposed PM procedures and support information on approved work sheets, along with recommended frequencies for approval by the manager of maintenance. The PM information will be entered into the computerized maintenance management system to be generated at the set frequencies.

2.25.6 **AIRCRAFT PARKING OPTICAL GUIDANCE SYSTEMS**

2.25.6.1 **GENERAL DESCRIPTION**

The system is an Optical Nose-in Guidance System at twenty Terminal A East & West gates to enable the pilot of an aircraft at any of the equipped gate positions to stop accurately on the center line of an aircraft gate with assistance from ground staff. An Optical guidance selector switch is located at the lift column/drive assembly to the Optical Guidance System junction box on the Concourse Building.

2.25.6.2 **TECHNICAL DESCRIPTION**

2.25.6.2.1 The principal components consist of center line azimuth lights, signal lights, mounting brackets and controllers. The system provides, in the control system, a hand held controller that when released the system automatically returns to the red indication. It provides fail-safe fixtures such that when one neon lamp fails, the other lamp also extinguishes and it also provides that when the red lamp fails, the yellow and green lamps will not illuminate.

2.25.6.2.2 The system has, at each gate, a control box, a 2 button controller, aircraft indicators and light housing units. The system operates on 120 VAC at less than 10 amps per location. The Clear-Caution-Stop traffic signal contains (6) 100W incandescent lamps with 2 red lamps at the bottom, 2 amber lamps at the center and 2 green lamps at the top. The system is turned on with the switch at the control box.

The system will energize and turn on the red lamps and the azimuth lights. The operator then takes the hand held controller, extends the controller cable, then depresses and holds the green button. The red lamps go off and the green lamps turn on.

The green lamps indicate to proceed with the approach to the parking position. When the air craft is within 15 feet of the stop position the operator releases the green button and depresses the yellow button. The green lamps go off and the yellow lamps will turn on.
The amber light indicates 15 feet to the stop

position. When the aircraft is in the stop position the operator releases the yellow button. The yellow lamps go off and the red lamps will come on. The red light indicates stop.

2.25.6.2.3 The major components of the system are manufactured by R.L.G. & Co. in Studio City, California.

2.25.6.3 **AIRCRAFT PARKING OPTICAL GUIDANCE SYSTEM SCHEDULE**

AIRCRAFT PARKING OPTICAL GUIDANCE SYSTEM			
Gate Number	Existing/ Future/NA	Manufacturer	Make/Model
A1	NA	NA	NA
A2	Existing	RLG & Company	
A3	NA	NA	NA
A4	Existing	RLG & Company	
A5	NA	NA	NA
A6	Existing	RLG & Company	
A7	NA	NA	NA
A8	Existing	RLG & Company	
A9	NA	NA	NA
A10	Existing	RLG & Company	
A11	NA	NA	NA
A12	Existing	RLG & Company	
A13	NA	NA	NA
A14	Existing	SafeGate Group	Safedock Type 3
A15	Existing	SafeGate Group	Safedock Type 3
A16	Existing	SafeGate Group	Safedock Type 3
A17	Existing	SafeGate Group	Safedock Type 3
A18	Existing	SafeGate Group	Safedock Type 3
A19	Existing	SafeGate Group	Safedock Type 3
A20	Existing	SafeGate Group	Safedock Type 3
A21	Existing	SafeGate Group	Safedock Type 3
A22	Existing	SafeGate Group	Safedock Type 3
A23	Existing	SafeGate	Safedock

		Group	Type 3
A24	Existing	SafeGate Group	Safedock Type 3
A25	Existing	SafeGate Group	Safedock Type 3
A26	Existing	SafeGate Group	Safedock Type 3

2.25.6.4 **SERVICE CALLS AND RESPONSE TIME**

Any component found defective or not operational will be repaired immediately. If a technician is not on site, a service call will be made to the Contractor who will provide a technician to repair the system within fifteen (15) minutes. The program will include a check list form to be filled out during testing.

2.25.6.5 **SPARE PARTS**

The Contractor will maintain spare lamps and a hand held push button controller with retractable cable assembly on site.

2.25.6.6 **RECORDS AND DOCUMENTATION**

The Contractor will forward to the City the copies of all preventive maintenance services performed and any trouble call reports.

2.25.6.6.1 All work will be initiated from the Airport's work control center through the issuance of a work order. The work control center will only phone in Priority 1, emergency requests.

2.25.6.6.2 All hours and parts used will be logged onto the work orders. Work that is not completed at the end of the day will have all of the hours and parts logged to it daily until completed.

2.25.6.6.3 Submit all proposed PM procedures and support information on approved work sheets, along with recommended frequencies for approval by the manager of maintenance.

The PM information will be entered into the computerized maintenance management system to be generated at the set frequencies.

2.26 **SCHEDULE D - PASSENGER TRANSFER VEHICLES (PTV's)**

2.26.1 **SCOPE OF SERVICES TO BE PROVIDED**

2.26.1.1 The Contractor will be required to furnish all necessary labor, tools, materials, fuel, equipment, insurance, operators and supervision required to perform regular inspections, comprehensive preventive maintenance, testing, repairs and transportation operations for the mobile PTV Fleet at Philadelphia International Airport.

2.26.1.2 Six PTV units are on site at the Philadelphia International Airport. Currently, two PTV units, which are owned by the Airport, provide transportation for airline passengers to and from Airport Terminals to aircraft parked remotely or on ramp areas. This service allows Airport Operations the flexibility to transfer passengers to different locations at the Airport or from one aircraft to another. The Contractor will operate PTV's in lieu of Airport "Jetways" while major construction is being performed at the Airport and as directed by the Airport's Maintenance Manager or his designee. The remaining four PTV units are to be maintained on a limited time and material maintenance cost.

2.26.1.3 Six vehicles are on site at the Philadelphia International Airport. The current schedule requires one vehicle to be available during the same hours and in service eight hours a day, seven days a week on an as available for operation basis. One other vehicle is to be available during the same hours as a standby vehicle. Full comprehensive preventive maintenance is required for these two vehicles. The four remaining vehicles are to be maintained on a limited time and material maintenance cost. Current plans are to continue this schedule and provide both a fixed and variable bid component for this service. Upon notice they will have to have the fleet fully active within 30 days.

2.26.1.4 The fixed monthly cost would be for the maintenance of the above referenced schedule. The variable monthly cost would be for time and materials with quantities estimated for a mechanic, driver, guidemen, and/or other personnel or service requirements.

2.26.2 **TECHNICAL DESCRIPTION**

2.26.2.1 **Cab and Body Equipment**

The dashboard equipped with vehicle, engine, and APU operational instruments and warning lights giving the operator required information on the engines and operating systems. The dashboard is shock proof, vibration proof and water-resistant.

All exterior lighting in compliance with FAA, PADOT and PHL safety and driving requirements for day and nighttime use vehicles on Airport roads, ramps, and taxiways, etc.

Each unit is equipped with two (2) 4 ton air conditioning units; a 30 kw heating unit; a cab dome light, two (2) electrically lowered and raised stairways with manual backup; 4 fire extinguishers: 2 cab mounted, and 2 mounted externally near engines; an engine fire detection and alarm system for both engines; passenger public address system; wheel chair ramps to permit unassisted access to passenger area; heavy duty turn signal indicator with flasher; two (2) heated glass rear view mirrors, externally mounted; tinted safety glass throughout; heated windshield; and heavy duty floor covering throughout.

- Vehicle Passenger Capacity

Total	122
Seated	70
Wheel Chair	2
Standing	50

2.26.2.2 **Frame**

A tubular steel chassis rated to the maximum anticipated GVW of the vehicle.

- Lift System

Two vertical ball screw units, one suspended from each mast, are driven through a mechanical arrangement. A 20 HP electric motor drives the screws. The non-rotating ball nut seated against the lifting body raises and lowers depending on screw rotation. The lifting body position and rate of ascent and descent are controlled by the operator and monitored by an electronic controller device.

Dimensions

Wheelbase	21′ - 8″	
	Width (incl. mirrors)	16′ - 5″
	Overall Height (lowered)	25′ - 0″
	Overall Height (raised)	43′ - 0″
	Length (gangway extended)	59′ - 4″
	Length (gangway retracted)	49′ - 0″
	Gangway maximum extension	8′ - 6″
	Gangway floor height (lowered)	6′ - 7″

Weights

Normal Maximum Gross Vehicle Weight (83 seated passengers)	92,580 lbs
Crush Load Gross Vehicle Weight (150 Passengers)	103,300 lbs
Elevating Body	36,500 lbs
Chassis	42,000 lbs
Driver & Fuel	800 lbs
Operating Weight	79,300 lbs

2.26.2.3 **Axles & Suspension System**

Welded front steering/stabilizing axle and welded rear drive axle. The lifting body when in the traveling position rides on four coil springs, one installed in pockets at each end of the chassis. Shock absorbers shall be located in the springs for dampening.

The rear drive axle is geared to provide a 30 MPH top travel speed.

2.26.2.4 **Brakes**

- Hydraulic brakes.
- The parking brake set by spring pressure and released hydraulically.
- Non-asbestos brake linings.

2.26.2.5 **Engine**

Diesel powered chassis engine, Detroit Diesel Series 53. Diesel powered auxiliary power unit (APU) engine, Detroit Diesel Series 71.

- Vehicle Performance

Design Speed	30 mph
Operating Speed	25 mph
Turning Radius	55 feet
Fuel Consumption	6 gph
Lift/Lower Time	60 seconds

2.26.2.6 **Engine Equipment**

- Low oil pressure automatic shut down system with dashboard mounted indicator light.
- A 200 degree, water jacket pre-heater.
- A quiet exhaust system approved by the engine manufacturer and mounted to carry the exhaust away from the passenger compartment.
- Fire detection system/alarm in both engine enclosures.

2.26.2.7 **Transmission**

- Allison MT 41 Transmission.

2.26.2.8 **Steering**

- Power steering.

2.26.2.9 **Engine Cooling System**

- Heavy duty cooling system.
- Permanent type anti-freeze protection to 34 degrees that meets OEM engine requirements.

2.26.2.10 **Electrical Equipment**

- Heavy duty batteries
- Nominal System Voltage: 12 volt, negative ground.
- All circuits protected by manual reset circuit breakers or fuses.
- All wiring protected by plastic loom and rubber grommets, where needed.
- AC Delco, Externally Regulated, 120/208 VAC-3P-40W-60Hz, three phase, 60Hz 50k W for auxiliary power 12 volt alternator.

2.26.2.11 **Tires**

- All tires are of ALL SEASON tread design.
- One spare, same type and manufacturer as the tires on the vehicle.

2.26.2.12 **Fuel System**

- 50 gallon Diesel fuel tank (for chassis engine), complete with chained tank cap (paint green and label).
- 40 gallon Diesel fuel tank (for APU engine), complete with chained tank cap (paint green and label).

2.26.2.13 **Safety Equipment**

- 4 fire extinguishers: 2 cab mounted
- 2 mounted externally near engines
- Engine fire detection system and alarm in both engine enclosures.
- A closed circuit television system (CCTV) provides unobstructed rearward vision to operator. Back up alarm.

2.26.2.14 **Radio/Communications Equipment**

- Provide Tecno-sonic Mobile Transceiver System Model Number TMF 150.

2.26.3 **PERSONNEL AND ADMINISTRATION**

2.26.3.1 The Contractor shall be experienced in PTV navigation, service, maintenance and repair in conformity with the Federal Aviation Administration (FAA), National Transportation Safety Board (NTSB), Pennsylvania Department of Transportation and all other Federal, State and Local regulations. The Contractor shall engage trained and qualified persons as drivers, technicians and guidemen.

2.26.3.2 Drivers specifically trained and/or experienced in the operation of PTV's or similar equipment must successfully complete the Airport Airfield Driver's Training Program and obtain a permit. FAA Regulation, Section 504 of the Rehabilitation Act and Air Carrier Access Act of 1986 concerning equipment to facilitate access and egress by individuals shall apply.

2.26.3.3 Service Technicians specifically trained and experienced in the care and maintenance of equipment similar to the type covered in the Technical Description above shall perform maintenance. Maintenance will be performed in the space designated for this purpose and not on the areas reserved for landing, take-off, taxiing. Service locations are to be neat, clean, safe and orderly, including removal of all spilled fuels, lubricants, and solvents. No fluids are permitted to enter any storm-sewer drain, ponding ditch or sanitary disposal system.

In addition, personnel who are assigned to perform preventive maintenance and repairs must be equipped with the necessary tools and equipment for the performance of all services.

2.26.3.4 Guidemen will assume full and complete responsibility for directing equipment on the non-movement area of the Air Operations Area. Vehicle must strictly adhere to all right-of-way rules. Units being escorted on the movement area must follow the instructions of the FAA Air Traffic Control Tower and Ramp Control.

The Contractor shall obtain sufficient staff to operate, 2 PTV units, 2 shifts daily. All persons performing under this requirement are subject to the security program pursuant to Part 107 of the Federal Aviation Regulations.

2.26.4 **OPERATIONAL SERVICES**

2.26.4.1 The successful bidder shall stand ready and be available to perform passenger transport services in accordance with Airport's approved standard operational procedures from 10 am to 2 am and at times outside of the designated shifts upon ample notice 7 days a week. All shift work not otherwise included shall be billed to the Airport as an extra charge at the successful bidder's labor rate schedule.

2.26.4.2 In addition to PTV trained drivers and guidemen the Contractor must provide adequate escort vehicles and radios for communication with Airport officials.

2.26.4.3 The Contractor is responsible for daily fueling of the PTV Fleet and must have resources available to meet this obligation.

2.26.4.4 In the event of mechanical breakdowns and out of service shutdowns the standard operational procedure must be followed immediately to insure that all appropriate parties are notified. The Contractor must have the means to tow in operational equipment if necessary.

2.26.5 **PREVENTIVE MAINTENANCE/INSPECTIONS**

2.26.5.1 **GENERAL DESCRIPTION**

The Contractor will implement maintenance requirements specified herein as minimum requirements for maintenance/inspection program designed for the diesel-powered Passenger Transfer Vehicle. There are two PTV units, which are active daily under the current schedule. Maintenance personnel specifically trained in the maintenance and inspection of this vehicle shall perform on a routine basis as per the maintenance schedule.
The remaining four units are to undergo maintenance on a quarterly basis. Item numbers one through

seventy-nine must be performed for these vehicles at the time of inspection. The annual maintenance performance schedule must also be performed on these vehicles as per the maintenance schedule.

2.26.5.2 **DAILY MAINTENANCE/INSPECTION**

The Daily Inspection is designed to be a cursory inspection of the condition of the vehicle, along with a normal operations verification. The maintenance personnel perform a visual check of the liquid levels of the vehicle and verify the proper operation of the lift, gangway, and operators cab systems. This inspection is always completed prior to the first use of the vehicle for the day and at the conclusion of all other maintenance inspections.

2.26.5.3 **WEEKLY MAINTENANCE/INSPECTION**

The Weekly Service is designed to visually inspect all systems and to detect wear and tear on basic components of the vehicle. Engine additives are installed during this inspection. A complete cleaning of the interior is done at this time or as often as needed.

2.26.5.4 **200 HOUR MAINTENANCE/INSPECTION**

The 200 Hour Service is an oil and filter change of both engines. In addition, a visual inspection is also made of all systems with adjustments or lubrication done as needed.

2.26.5.5 **500 HOUR MAINTENANCE/INSPECTION**

The 500 Hour Service is designed to be a detailed inspection of the entire vehicle with the intent of verifying the overall integrity of the unit while lubricating all moveable working components of the PTV.

2.26.5.6 **1500 HOUR MAINTENANCE/INSPECTION**

The 1500 Hour Service is a slightly more in depth inspection, which includes a complete servicing and lubrication of a major systems of the vehicle. This inspection also verifies the summer/winter operational readiness of the HVAC system and complete cleaning of the exterior of the vehicle.

2.26.5.7 **4500 HOUR MAINTENANCE/INSPECTION**

The 4500 Hour Service is designed to be the annual overall in depth inspection. All systems are to be checked and verified and serviced as needed at this time.

2.26.5.8 **PREVENTIVE MAINTENANCE SCHEDULE FOR PTV's**

Item No.	Requirements	Daily	Wkly	200 Hrs.	500 Hrs.	1500 Heas.	Annually
1	Record Generator Engine Hours	X					
2	Record Propulsion Engine Hours	X					
3	Record Hubodometer Reading	X					
4	Check Propulsion Sys., Gen. Oil & Battery Levels	X					
5	Check Electrical Sys., Gen. Oil Battery Levels	X					
6	Check Radiator Hoses & Coolant Level	X					
7	Inspect Air Conditioner Filter	X					
8	Inspect Wheels/Tires	X					
9	Check Transmission Lubricant	X					
10	Check Exterior and Interior View	X					
11	Check Short Stairs	X					
12	Check Steering and Throttle	X					
13	Check Hydraulic System and Filter	X					
14	Inspect Gangway, Chain, & Lift Operation	X					
15	Check Brake System	X					
16	Service General/Prop Engine Doors	X					
17	Check Condition Of Enclosures & Doors		X				
18	Check Tire Pressure & Tire Wear		X				
19	Inspect and Drain Long Stairs		X				
20	Check Interior & Exterior Lights		X				
21	Visual Inspection Of All Hoses & Lines		X				
22	Check Operation Of Emergency Lighting		X				

23	Inspect Condition Of Passenger Seating		X				
24	Install Injector Cleaner Additive		X				
25	Install Diesel Engine Additive		X				
26	Perform Vehicle Run-Up and Check For Abnormalities		X				
27	Clean Entire Interior and Windows		X				
	ENGINE SERVICE FOR BOTH GENERAL & PROPULSION						
28	Steam Clean Engine Packages and Undercarriage: (Protect Electrical Components From Moisture)			X			
29	Verify Operation Of Hourmeters:			X			
30	Change 15W40 Motor Oil:			X			
31	Change Oil Filters:			X			
32	Change Fuel Filters:			X			
33	Change Air Filters:			X			
34	Top Off Radiators:			X			
35	Inspect Belts, Tensioners, and Water Pump: (Replace if Necessary)			X			
36	Inspect Exhaust Systems For Leaks and Condition			X			
37	Lube Linkage On Throttle and Shutdown and Shutdown On Propulsion Engine With Penetrating Oil			X			
38	Check Operation and Condition of Shutters			X			
39	Check Condition of Enclosures and Doors			X			
40	Check Emergency Shutdown Systems			X			
41	Check Transmission Fluid Level (Dexron 3/Mercon)			X			
42	Clean and Service Batteries			X			
43	Clean Battery Terminal Connections			X			
44	Check and Record Charging Voltage			X			
	WHEELS AND TIRES SERVICE						
45	Check Front and Rear Hubs For Leaking Seals			X			
46	Inspect Wheels For Cracks			X			
47	Torque Front Lugs To 600 Ft. Lbs.			X			
48	Torque Rear Lugs To 350 Ft. Lbs.			X			
49	Inspect Tires For Abnormal Wear Or Condition			X			
50	Inflate Tires To 100PSI			X			
51	Inspect Flexible Brake Hoses			X			
52	Adjust Service Brakes			X			
53	Adjust Park Brake			X			
54	Lube Rear Pod Doors				X		

55	Lube Front Pod Doors				X		
56	Lube Gangway Extension				X		
57	Lube Gangway Rotation				X		
58	Lube Walkway Drive				X		
59	Lube Canopy Drive				X		
60	Lube Throttle				X		
61	Lube Drive Train				X		
62	Lube Master Brake System				X		
63	Service Cab				X		
64	Drain Oil Drip Pans				X		
65	Lube Ball Screw **(QUARTERLY)**				X		
66	Lube Kingpins **(QUARTERLY)**				X		
67	Service Gangway Extension					X	
68	Service Stairs Hydraulic System					X	
69	Service Walkway Drive					X	
70	Service Canopy Drive					X	
71	Lube Rear Pod Stairs					X	
72	Lube Service Stairs Hyd. Sys.					X	
73	Lube Steering					X	
74	Lube Ball Screw					X	
75	Lube Ball Nut					X	
76	Clean Propulsion Engine					X	
77	Clean Generator Engine					X	
78	Summer/Winter HVAC Service					X	
79	Brush, Powerwash and Wax Exterior					X	
	GEAR DRIVE SERVICE CHANGE OIL IN THE FOLLOWING WITH 80W90 GEAR OIL						
80	Right Angle Drives						X
81	Dorris Speed Reducer						X
82	Planetary Hubs						X
83	Differential						X
84	Walkway Gear Drive						X
85	Canopy Gear Drive						X
86	Gangway Gear Drive						X
87	Rotation Gear Drive						X
88	Stair Gear Drive						X
89	Stair Limit Drives						X
90	Check Ball Nut Backlash. If Backlash Exceeds .050”, Service Ballnuts Assembly As Per Service Manual						X
	HYDRAULICS SERVICE						
91	Verify System Pressure (600-200PSI)						X
92	Verify Brake Pressure (300-600PSI)						X
93	Verify Steering Pressure (1500PSI Maximum)						X

94	Verify Emergency Brake Application Pressure (600PSI)						X

2.26.5.8.1 All scheduled preventive maintenance performed by the successful bidder shall be scheduled unit by unit and subject to final approval of the City.

2.26.5.8.2 The successful bidder shall provide, use and properly maintain a maintenance examination chart for each device. Examination charts shall be posted in the PTV. Entries for each chart shall be made by service personnel to indicate the status of all scheduled items of maintenance performed and initialed for validity. The City may inspect and copy the chart and maintenance at any time.

2.26.5.8.3 The successful bidder shall not remove more than one PTV from service at a time for preventive maintenance, inspection or test during the normal operating hours without prior approval of the City.

2.26.6 **PERFORMANCE OF REPAIRS, ADJUSTMENTS AND OTHER MAINTENANCE**

2.26.6.1 When, as a result of an operational examination, performance of preventive maintenance, performance of periodic testing, inspection or observation by the City, the successful bidder, or their representatives, corrective action is found to be necessary, the successful bidder shall proceed immediately to make (or cause to be made) replacements, repairs and corrections necessary to restore the equipment to normal operation.

2.26.7 **MAINTENANCE AND DOCUMENTATION**

2.26.7.1 A monthly report shall be submitted by the successful bidder containing an overall summary of maintenance work performed, the results of tests conducted, general status of systems and equipment, list of equipment breakdowns, repair time, and projection of major equipment shutdowns required for maintenance.

In addition, a daily log of maintenance performed shall be kept by the successful bidder and this log shall be subject to periodic review by the City or its representative.

The successful bidder shall also submit for review a description of the procedure recommended to schedule and report execution of periodic maintenance (i.e., sample maintenance shift report, equipment daily log, etc.).

2.26.7.2 The successful bidder shall also provide a monthly report indicating monthly, year-to-date and cumulative cycle totals for comparison of trends with previous years, months, etc. Reports will reflect both PM and remedial repairs in terms of cycles. Most reports can either be generated by the DOA-CMMS System directly or can be derived from an existing DOA-CMMS Report or screen.

2.26.7.3 A monthly inventory report will be submitted by the successful bidder indicating the current stock level materials, and parts used during the preceding month and required restocking. In addition, a daily log record of parts and materials used shall be kept by the successful bidder and shall be subject to periodic review by the City.

2.26.7.4 The successful bidder will be responsible for providing maintenance history reports for each PTV unit. The report(s) developed will provide essentially the following information and will be submitted for approval within thirty (30) days of the Notice to Proceed date. Basic information required for each unit identified is as follows:

- Serial Number
- PTV Number
- Time maintenance repairs are started
- Time maintenance or repairs are completed
- Labor hours expended
- Parts replaced to be described, tires, wiring, etc.
- Cause of failure (brief description)
- Year-to-date unscheduled maintenance hours expended
- Description of service
- Year-to-date scheduled preventive maintenance hours expended
- Description of service

2.26.8 **EMERGENCY REPAIR**

2.26.8.1 Under no circumstances will any shutdown or breakdown last longer than 72 hours. This includes the locating of the trouble, procurement of parts, the installation of these parts and the placing of the loading bridge back into safe operation. The reason of not being able to obtain parts, necessary technical and engineering advice, etc., will not be acceptable and the successful bidder will be considered in default, giving sufficient justification to the Owner to obtain these services from other sources who can provide the City with uninterrupted PTV service.

2.26.9 **INSPECTION AND TESTING SERVICES**

2.26.9.1 The successful bidder's maintenance supervisor shall make himself/herself available from Monday through Friday, exclusive of holidays, within forth eight (48) hours of notification for an inspection tour. The City reserves the right to make or cause to be made, such inspection and tests as deemed advisable to ascertain that the requirements of these specifications are being fulfilled.

2.26.10 **PARTS REQUIREMENT**

2.26.10.1 Parts installed on the PTV's covered by this specification, either as preventive maintenance replacements and/or repairs shall be supplied by or authorized by the original equipment manufacturer. If the manufacturer is no longer in business or no longer carries the part, an acceptable alternative supplier must be submitted for approval and approved by the Director of Aviation or Designee.

2.26.10.2 The successful bidder shall prepare and submit for approval a comprehensive list of manufacturer's spare parts and lubricants for existing equipment. This list of manufacturer's recommended quantities of these items with adjustments made to reflect number of units utilizing the parts. It is to be understood that the successful bidder shall maintain the recommended quantities of parts throughout the term of the contract.
The successful bidder shall prepare and submit for approval modification to the original approved list as units are modified, renovated, deleted or added. They shall adjust quantities and items accordingly to the changes.

2.26.10.3 The successful bidder shall designate on the parts and lubricant list, which parts being submitted shall be maintained at the site and which parts will be available in their warehouse. The list shall also show respective

quantities associated with each location. The on-site list shall reflect items most susceptible to replacement, as a result of wear and vandalism, for this facility.

On-site parts and lubricants shall include, but not be limited to such items as hoses, belts filters, fuses, circuit breakers, lamps, electrical wire and cable, fittings, tires, tubing, valves, miscellaneous hardware, engine oils, transmission fluid, hydraulic oil, grease, additives, etc.

2.26.10.4 Warehouse parts be defined as parts retained by a successful bidder at a facility accessible to them and their field personnel which can assure delivery of the respective part to the job site within four (4) hours of request.

2.26.11 **CONDITION REPORTS**

2.26.11.1 The Contractor shall prepare and regularly submit written condition reports on all equipment to the City. Condition reports shall be prepared on the successful bidder's letterhead, dated and signed by an authorized representative of the successful bidder.

2.26.11.1.1 Condition reports shall be submitted at regular intervals not to exceed, but not less than sixty (60) day intervals.

2.26.11.1.2 The condition reports shall inform the City of the current condition of the equipment and performance measurements relating to criteria specified and make recommendations regarding the need for repairs, alterations and/or modifications to the equipment.

2.26.11.1.3 All alterations requested by the successful bidder are to be by the way of written requests only. All requests are to be in triplicate and accompanied by supporting prints, sketches, and/or schematics as required to provide detailed information. Proposed cost for accomplishing the work shall be included.

2.26.12 **RECORDS/DOCUMENTATION**

2.26.12.1 The Contractor will be provided operation, maintenance and repair data for each unit to be serviced. In accordance with the maintenance manuals provided the Contractor shall perform date of PM service, length of time of

service/repair, nature of service/repair, materials used, probable cause in case of failure, type of corrective action and/or lubrication performed.

2.26.12.2 The Contractor shall submit all proposed Preventive Maintenance procedures, technical information and recommended frequencies on work sheets and approved by the Airport's Maintenance Manager or his designee after submittal.

2.26.12.3 The Preventive Maintenance information will be entered into the computerized maintenance management system by the Contractor and generated at predetermined intervals for review.

2.26.12.4 All labor hours and parts used will be recorded on the work orders keyed in by the Contractor. Work orders not completed at the end of the shift will reflect the labor hours and parts used for each shift, and continue daily until complete.

2.26.12.5 The Contractor shall be responsible for all records associated with the PTV's. Reports outlined elsewhere in this specification shall be produced in a timely manner and delivered to the Airport's Maintenance Manager or his designee.

2.27 **SCHEDULE E - STORM WATER AND SANITARY DRAINAGE**

2.27.1 **GENERAL DESCRIPTION**

2.27.1.1 **GENERAL**

The storm water and sanitary maintenance includes the following items:

2.27.1.1.1 Removal and disposal of debris and sediment from storm water systems;

2.27.1.1.2 Removal of debris, sediment, sludge grease, detergent build-up, and other debris from sanitary systems;

2.27.1.1.3 Bi-annual closed circuit television inspection of storm water and sanitary sewers (12 inches and above). Perform inspection first year of contract, then once every other year thereafter.

2.27.1.1.4 Pressure grouting, internal sewer line repair;

2.27.1.1.5 Air testing and mandrelling of sanitary sewers for line acceptance;

2.27.1.1.6 Hydrostatic testing of water lines and sewer force mains;

2.27.1.1.7 By-pass pumping of sanitary systems;

2.27.1.1.8 Sanitary sewer pump station maintenance;

2.27.1.1.9 Excavation for storm water and sanitary sewer operations;

2.27.1.1.10 Street repairs;

2.27.1.1.11 Monthly preventive maintenance (inspection and cleaning) of sewage and sump pits;

2.27.1.1.12 Monthly cleaning and inspection of floor and roof drains and gutters;

2.27.1.1.13 Cargo City oil/water separator on-call maintenance;

2.27.1.1.14 Aircraft sewage dump stations on-call maintenance;

2.27.1.1.15 Sanitization of surrounding area after a spill of sewage including use of cleaning, disinfectants and chemical methods;

2.27.1.1.16 Aircraft Rescue and Fire Fighting Training (ARFFT) Septic System;

2.27.1.1.17 Roll-off container rental for sludge/sewage waste disposal;

The work covered by this section shall include costs for insurance, bonds, permits, guards and Airport security requirements. The work shall also include costs for flagmen, barricades, flashing lights, restoration, clean up, etc., as required.

Under this section the Contractor shall include all labor, material and equipment necessary to maintain both vehicular and pedestrian traffic and protect the public from all damage to person and property, within the limits of work, and adjacent areas affected by the work, for the duration of the work, to the approval of the Engineer.

Maintenance of the systems described within this section shall be performed on an as needed basis, as requested by the Airports Maintenance Manager or designee.

2.27.1.2 **Storm Water:**

This section specifies requirements for the removal and disposal of debris and sediment from storm water structures such as catch basins, manholes, sumps and scuppers, and from connecting pipes of such. This section also specifies requirements for the repair and reattachment of manhole frames invert structures, replacement of manhole covers, and the resetting of brick.

2.27.1.3 **Sanitary:**

Debris, sediment, sludge grease, detergent build-up and other debris shall be removed and disposed from sanitary structures such as sanitary sewers, culverts, drain tile, sewage treatment plants and pump stations, and all interconnecting piping, as well as building plumbing.

2.27.1.4 **References**

The following is a listing of the publications referenced in this Section:

- National Fire Protection Association (NFPA)

  NFPA 820 "Recommended Practice for the Control of Flammable and Combustible Liquids and Gases in Manholes, Sewers and Similar Underground Structures."

- City of Philadelphia, Department of Commerce, Division of Aviation:

  PHL-1127: Landside Stormwater Drainage Rehabilitation

2.27.1.5 **R/W 8-26 Ground Water Mitigation System**

Mitigation System:

Mitigation System maintenance is required to address groundwater contamination found in the QP Aquifer. This system consisting of four groundwater extraction wells will require periodic well rehabilitation due to the build-up of iron scale within the system. Periodic rehabilitation of ground water extraction wells is described in Attachment E.

2.27.2 **TECHNICAL DESCRIPTION**

2.27.2.1 **Maintenance and Protection of Traffic:**

2.27.2.1.1 Quality Assurance: The Contractor shall prepare and submit to the Airports Maintenance Manager for his approval a plan and schedule of operation for the maintenance, protection and detouring of traffic, showing in complete detail the method, sequences, procedures and facilities he proposes to install. Before the Contractor shall in any way or manner restrict or interfere with the normal flow of traffic, he must first secure written approval of his proposed plan from the Airport's Maintenance Manager or his designee or the proper road authority.

The Contractor is placed on notice that maintenance and protection of traffic during operations is considered as important and necessary an item of work as in the actual work, and failure by the Contractor to fully comply in every respect with the requirements of this item will result in payment deductions as provided herein.

2.27.2.1.2 Execution: The work area shall be so marked by signs, traffic cones, barricades, flashing lights, flags and/or flagman, that a person who has no knowledge of conditions can safely pass through the area with minimum discomfort and inconvenience. Access to all streets shall be maintained at all times so that fire protection and emergency equipment may have access to all locations.
The Contractor shall also furnish, erect and maintain completely around all open drainage structures, in addition to the required warning

lights and /or barricades, a suitable metal and/or wood fence barrier, at least four (4') feet high, and adequately supported.

2.27.2.1.3 Details: All temporary signs, delineators, barricades, and guiding devices shall conform in all respects to the provisions of the U.S. Department of Transportation Federal Highway Administration Manual of Uniform Traffic Control Devices. All signs are to be reflectorized.

The Contractor shall conduct his operations to insure a minimum delay of traffic. If the road is to be closed to traffic, a proper, fully signed detour shall be established and maintained as directed by the Airport's Maintenance Manager or his designee and the police shall be notified in advance of all such closings.

The Contractor shall provide a sufficient number of flagmen in areas where traffic is congested, particularly where construction equipment is operating.

2.27.2.2 **Cleaning of Stormwater and Sanitary Drainage Systems:**

2.27.2.2.1 The Contractor shall clean sediment in catch basins, manholes, gutter drains, and from the connecting pipes of such catch basins, manholes, and gutter drains, as directed by the Airport's Maintenance Manager or his designee.

2.27.2.2.2 The Contractor shall remove debris from the work sites and off of the Division of Aviation property as it accumulates. Debris shall not be stored, burned or otherwise disposed of on Division of Aviation property.

2.27.2.2.3 The Contractor shall obtain prior approval from the Airport’s Maintenance Manager or his designee for all equipment and procedures to be employed in the performance of this section.

2.27.2.2.4 Water required for the performance of the Work shall be provided for by the Contractor, at the Contractor's cost. The Contractor shall supply a water source at all locations, unless public water is available at the site. The Contractor is responsible to notify the City of

Philadelphia Fire Department prior to using public water.

2.27.2.2.5 When work in any area is completed, the Contractor shall clean and sanitize the area, replace all covers and leave the area in a condition satisfactory to the Airports Maintenance Manager, or designee.

2.27.2.2.6 **Execution:**

2.27.2.2.6.1 **Preparation:**

Equipment shall include, but not be limited to, a vacuum truck of 13 cubic yards minimum capacity with a 25 foot minimum length vacuum hose.

The vacuum truck shall be VAC-ALL Model 16 as manufactured by Central Company of Milwaukee, Wisconsin, or approved equal, and a self-contained truck unit developing approximately 1000 psi of water pressure through an appropriate nozzle attached to hose at least 200 feet long. The truck shall be Aquateck Model C2000" or an approved equal.

Equipment shall also include devices to "scoop" or auger lines clean, by pass pumping system to pump sewage from manhole before blockage or work area to a manhole downstream of the work area, and fresh air vans.

Test each subsurface structure for combustible, toxic or otherwise harmful gases, vapors or airborne particulates prior to entry of personnel. Conform to requirements of NFPA 820. If such gases, vapors or particulates are detected, ventilate and retest prior to entry.

The Contractor shall perform closed circuit television inspection of storm water and sanitary drainage systems as requested by the Airports Maintenance Manager. The equipment shall be able to monitor pipes as small as 2 inches in diameter. Video display shall be available in color or black and white.

2.27.2.2.6.2 **Application**

Remove debris and sediment from catch basins, manholes, pipes, tunnel sumps and scuppers to clear drainage paths and provide unobstructed water flow. Dispose of removed materials away from Division of Aviation property.

Pipe cleaning may be performed by using a high pressure water system designed for cleaning storm drainage and sanitary system piping.

Catch basins, manholes, sumps and scuppers shall be cleaned by use of a vacuum system or procedure approved by the Airports Maintenance Manager, or designee.

At no time will chemical solvents be used for the Work of this Section.

2.27.2.2.6.3 **Casting Cover Removal and Replacement:**

At the time of removal of casting covers or grates, mark the edge of such cover or grate and edge of frame in such a way so that the cover or grate can be replaced in the same position relative to the frame. The lip of the frame shall be cleaned of debris so that the cover or grate fits securely in the frame.

2.27.2.3 **Repair of Manholes:**

2.27.2.3.1 Mortar: Unless otherwise permitted, mix mortar in an acceptable type of mixer. Do not use re-tempered mortar mixed for more than 45 minutes, unless otherwise specified. When specified, submit dated certification, Form CS-4171 supplied by the PADOT, from the manufacturer, fabricator, or producer that items furnished meet specifications.

Unless otherwise directed, retain the original, signed certification at the manufacturer's, fabricator's, or producer's location. Send a copy of the original certification to the project with each shipment. Do not incorporate any material in the work, unless approved by the Airports Maintenance Manager, or designee or until a properly completed certification arrives on the project.

The Contractor shall accept responsibility for all certifications for all materials arriving at the project site.

2.27.2.3.2 Precast Iron Manhole Cover: The Contractor shall reuse existing manhole covers, unless determined unacceptable by the Airports Maintenance Manager, or designee. The Contractor shall submit manufacturer's specification on size and type of new materials.

2.27.2.3.3 Brick Masonry: Lay brick with exposed surfaces true to line, in courses, in a full bed and head of mortar, and with joints not exceeding 3/8 inch in width. Do not furrow beds. Stagger head joint on adjoining courses one-half brick, as nearly as practicable. Make courses level, except as otherwise required. Construct at least one course in every six entirely of headers, (common bond), unless otherwise directed. Before laying brick, thoroughly saturate them with water. Broken or chipped brick will not be allowed in exposed faces. In making closures, do not use less than the width of a brick and lay whole brick, with the long side at right angle to the face.

2.27.2.3.4 Pointing: Finish mortar joints with a concave pointing tool to a depth not exceeding 1/8 inch, to the approval of the Airports Maintenance Manager, or designee.

2.27.2.3.5 Manhole Frames in 1" Mortar Bed: Curing and Protection - Do not place mortar and bricks, nor point, in freezing weather, unless otherwise permitted in writing. Provide adequate protection; remove and replace work damaged by frost. Protect completed brickwork from the elements. Cure brickwork with water moisture for a period of at least 3 days. Satisfactorily wet and clean the exposed brick faces with a 10% (by column) solution of muriatic acid, applied with stiff fiber brushes.

2.27.2.4 **R/W 8-26 Groundwater Mitigation System Maintenance.**

The following tasks are to be completed on a daily basis to ensure compliance with Permit Discharge requirementsand that the Mitigation System is operating properly. Accurate data is necessary for subsequent reporting purposes.

2.27.2.4.1 Physically go to each of the four extraction wells (EW-A, EW-1, EW-2 & EW-3, refer to Attachment E for locations). Look at housing, piping, etc. to make certain there are no leaks, visible damage or other abnormalities.

Listen to pump operation sounds to confirm that the pump is operating and determine any sound changes that could be indicating a problem (refer to example details in item 2 below). Attached is a two-day recording sheet to be used for collecting field data. Any problems should be recorded in the comments section and appropriate action(s) should be immediately implemented. For any leaks, the field person who first observes the leak should immediately turn off pump(s) and/or close valves as necessary to stop the leak. The Airport's Maintenance Manager or his designee should be immediately notified if any of the operating pumps are down or there is leakage observed.

2.27.2.4.2 Record the time, accumulated meter total gallons, Ametek reading, pressure and flow rate at each extraction well location on the recording sheet. Typically two wells are in operation at all times (EW-1 and EW-3).
The other two wells are utilized if problems develop maintaining groundwater capture in the Western Boundary Area. Under the heading of Flow Rate (gpm), write "OFF" for the wells not being utilized. If a flow rate cannot be determined from a timed meter reading at an online well, then listen to determine if the pump has actually shut down or if instead the

meter has stopped turning. The latter is a more common problem. This is usually caused by the precipitation of iron in the meter housing. If this has occurred and the pump sounds as though it is still functioning, then write "METER STUCK" under the Flow Rate heading. If the pump does not seem to be operational, then write "DOWN" instead. Immediately take appropriate actions to rectify any "DOWN" or "METER STUCK" determinations. A non-operating pump can adversely impact the groundwater capture zone area. A non-functioning meter results in missed data that is required for permit reporting. As indicated above, if a pump is down, Airport's Maintenance Manager or his designee should be immediately notified.

2.27.2.4.3 Collect a water sample for the purposes of measuring temperature and pH. The sample is to be collected through a bailer attached to a sampling port located in the Mitigation System Tie-in Building (near EW-3). A plastic bottle dedicated to this daily sampling is best for collecting the purge water. Keep a bucket under the bailer so that water does not discharge to the floor of the building. As necessary, this bucket can be emptied directly into the top of well casing at EW-3 for discharge into the force main line. The water is not to be discharged to the ground. Use a properly calibrated pH meter to measure the temperature and pH. This data is to be included, along with sample collection time, on the same daily recording sheet. Please note that the recording sheet also includes an area for documenting daily pH meter calibration.

2.27.2.4.4 Fax the Monday through Sunday (inclusive) daily recording sheets each Monday morning to the Airport's Maintenance Manager or his designee and to a specified WESTON person.

2.27.2.5 Cargo City Aircraft Deicing Facility Stormwater Collection and Discharge System Inspection: The following tasks are to be completed on a (daily) basis to ensure compliance with NPDES permit requirements established by PADEP and to keep in good and proper working order the storm water system associated with the collection and discharge of product generated at the aircraft deicing facility in Cargo City.

2.27.2.5.1 Physically go to the Cargo City Aircraft Deicing Facility. Visually inspect the stormwater discharge system's components to make sure that there are no leaks, visible damage or other visible abnormalities. Inspect diversion valves, vale actuators, pumps, pump controllers, tanks, associated visible piping, and motors to confirm proper operation. Inspect the TOC (Total Organic Carbon) Analyzer and its associated equipment for proper operation and calibration.

2.27.2.5.2 Contractor shall develop a plan for a program of preventive maintenance for equipment associated with deicing stormwater discharge. This program shall include regular maintenance for motors, bearings, valve actuators, and pumps with scheduled/recommended program of lubrications and replacement as necessary. The preventive maintenance program will not be implemented unless approved by the Airport Maintenance Manger.

2.27.2.5.3 Contractor shall immediately notify the Airport Maintenance Manger or his/her designee if any of the pumps are inoperable, pipe leakage or other damage is observed, TOC Analyzer fails to operate properly, or any other inspected equipment is found to malfunction.

2.27.3 **SERVICE CALL AND RESPONSE TIME**

Cleanout and repair requirements for the removal and disposal of debris, sediment, sludge grease, and detergent build-up from storm water and sanitary systems including, but not limited to catch basins, manholes, sumps and scuppers, and from connecting pipes of such, will be on a demand basis 24 hours a day, 7 days a week, with a response time of 1 hour. Response time for closed circuit television inspection, pressure grouting, internal sewer line repairs, air testing and mandrelling of sanitary sewers for line acceptance, hydrostatic testing of water lines and sewer force mains, by-pass pumping of sanitary systems, and sanitary sewer pump maintenance, shall be performed at a negotiated schedule between the Contractor and the Airport's Maintenance Manager or his designee. Backfilling and street repairs shall be performed in accordance with PADOT

specifications (Pub. 408) immediately upon acceptable storm water and sanitary sewer operations. Sanitary and storm water operations shall be performed to the satisfaction of the Airport's Maintenance Manager or his designee.

2.27.4 **SPARE PARTS**

The Contractor will maintain an adequate supply of materials, such as mortar, brick, and covers, etc. in quantities to achieve the requirements of this contract.

2.27.5 **RECORDS/DOCUMENTATION**

The Contractor shall conduct monthly inspections of roof drains and bi-annual inspections of underground piping. Written reports shall be submitted to the Division of Aviation following each inspection. These reports shall note all damages and quantities of sediment observed in piping. A videotape library shall be maintained chronicling incremental line conditions. Mitigation system recording, documentation and reports shall be submitted weekly. Contractor shall conduct an annual inspection of the sewage holding tank at the Aircraft Rescue and Fire Training Facility. A written tank inspection report, along with photos and videotape of the inspection, shall be submitted to the Division of Aviation following each inspection.

2.27.5.1 All work will be initiated from the airport's work control center through the issuance of a work order. The work control center will only phone in Priority 1, emergency requests.

2.27.5.2 All hours and parts used will be logged onto the work orders. Work that is not completed at the end of the day will have all of the hours and parts logged to it daily until completed.

2.27.5.3 Submit all proposed PM procedures and support information on approved worksheets along with recommended frequencies for approval by the manager of maintenance. The PM information will be entered into the computerized maintenance management system to be generated at the set frequencies.

2.28 SCHEDULE F - FIRE PROTECTION SYSTEMS

2.28.1 GENERAL DESCRIPTION

2.28.1.1 The work includes but is not limited to furnishing labor, transportation, equipment, materials, supplies and supervision necessary to provide maintenance and inspection and repair service for the water-based and chemical agent (FM-200) fire protection and domestic/fire water service backflow prevention systems throughout the Philadelphia International Airport and Philadelphia Northeast Airport. All work shall be in accordance with NFPA 25, Standard for Inspection, Testing and Maintenance of Water-Based Fire Protection Systems. Annual certification shall be performed in accordance with the Philadelphia Fire Prevention Code paragraph F-501-4(R) periodic test requirements.

2.28.2 TECHNICAL DESCRIPTION

2.28.2.1 SPRINKLERS

2.28.2.1.1 Sprinklers shall be visually inspected from floor level annually. If any sprinkler heads need to be replaced, the replacement sprinklers shall have the proper characteristics for the application. This includes: style, orifice size and K factor, temperature rating, coating, deflector type and design requirements.

2.28.2.1.1.1 A minimum of 50 spare sprinklers shall be maintained on site. A minimum of two sprinklers and one sprinkler wrench for each type of sprinkler.

2.28.2.2 DRY PIPE SYSTEM

2.28.2.2.1 Dry pipe systems shall be inspected monthly. Gauges and valves shall be inspected for proper operation. Gauges not accurate to within three percent of the full scale shall be recalibrated or replaced.

2.28.2.3 **WET PIPE SYSTEM**

2.28.2.3.1 Wet pipe systems shall be inspected monthly. Gauges and valves shall be inspected for proper operation. Gauges not accurate to within three percent of the full scale shall be recalibrated or replaced.

2.28.2.4 **PREACTION SYSTEM**

2.28.2.4.1 Preaction systems shall be inspected monthly. Gauges and valves shall be inspected for proper operation. Gauges not accurate to within three percent of the full scale shall be recalibrated or replaced.

2.28.2.5 **OBSTRUCTION INVESTIGATION AND PREVENTION**

2.28.2.5.1 Obstruction Investigation.

To ensure that piping remains clear of all obstructive foreign matter, conduct an obstruction investigation for sprinkler system main piping wherever any of the following conditions exist:

2.28.2.5.1.1 Discharge of obstructive material during routine water tests.

2.28.2.5.1.2 Foreign materials in fire pumps, in dry pipe valves, or in check valves.

2.28.2.5.1.3 Heavy discoloration of water during drain tests or plugging of inspector's test connections.

2.28.2.5.1.4 Plugging of sprinklers.

2.28.2.5.1.5 Plugged piping in sprinkler systems dismantled during building alternations.

2.28.2.5.1.6 A record of broken public mains in the area.

2.28.2.5.1.7 Abnormally frequent false-tripping of dry-pipe valves.

2.28.2.5.2 **Flushing Procedure**

If an obstruction is found sufficient to obstruct sprinklers, conduct a complete flushing program (as outlined in NFPA 25, Appendix A) utilizing certified personnel.

2.28.2.5.3 Obstruction Prevention

Perform quarterly water flow alarm and main drain tests. These tests should reveal any obstructions. If obstructions are found, conduct a complete flushing program utilizing qualified personnel.

2.28.2.6 **CONTROL VALVES**

2.28.2.6.1 Quarterly, each control valve shall be opened until spring or torsion is felt in the rod, indicating that the rod has not become detached from the valve. Valves shall be backed one-quarter turn from the wide open position to prevent jamming. Outside screw and yoke valves or gear-operated indicating butterfly valves do not require this test.

2.28.2.6.2 Annually, each control valve shall be operated through its full range and returned to its normal position.

2.28.2.6.3 The operating stems of outside screw and yoke valves shall be lubricated annually. The valves shall then be completely closed and re-opened to test its operation and distribute the lubricant.

2.28.2.7 **ALARM VALVES**

2.28.2.7.1 Alarm valves shall be inspected monthly to verify that gauges indicate normal supply water pressure being maintained, valves are in their appropriate open or closed position, and there is no leakage from the retarding chamber or alarm drains.

2.28.2.7.2 Alarm valves and their associated strainers, filters, and restriction orifices shall be inspected internally at least once during this contract.

2.28.2.7.3 Internal components shall be cleaned/repaired as necessary in accordance with the manufacturer's instructions.

2.28.2.8 **PREACTION VALVES**

2.28.2.8.1 Gauges shall be inspected weekly. The gauge on the supply side of the preaction valves shall indicate that the normal supply water pressure is being maintained.

2.28.2.8.2 The preaction valves shall be inspected weekly to ascertain that they are free from physical damage, they are in their appropriate open or closed position, there is no leakage from their valve seats, and electrical components are in service.

2.28.2.8.3 The interior of the preaction valves and condition of detection devices shall be inspected annually when the trip test is conducted.

2.28.2.8.4 Strainers, filters, restricted orifices, and diaphragm chambers shall be inspected internally once during this contract.

2.28.2.8.5 Priming water level in supervised preaction systems shall be tested quarterly for compliance with the manufacturer's instructions.

2.28.2.8.6 Each preaction valve shall be full flow trip tested annually in warm weather in accordance with manufacturer's instructions.

2.28.2.8.7 Records indicating the date the preaction valves were last tripped, the tripping time, as well as the individual conducting the test shall be maintained at a location or in a manner readily available for review by the authority having jurisdiction.

2.28.2.8.8 Low air pressure alarms shall be tested quarterly.

2.28.2.8.9 Leaks causing drops in supervisory pressure sufficient to sound warning alarms and

electrical malfunctions causing alarms to sound shall be located and repaired.

2.28.2.8.10 During the annual trip test the interior of the preaction valves shall be thoroughly cleaned and parts replaced or repaired as necessary.

2.28.2.8.11 Low points in preaction systems shall be drained after each operation and before the onset of freezing weather conditions.

2.28.2.9 **DRY PIPE VALVES**

2.28.2.9.1 Gauges shall be inspected weekly. The gauge on the supply side of the dry pipe valve shall indicate that the normal supply water pressure is being maintained. The gauge on the system side of the dry pipe valve shall indicate that the proper ratio of air pressure to water supply pressure is being maintained in accordance with the manufacturer's instructions.

2.28.2.9.2 The dry pipe valve shall be inspected weekly to ascertain that the valve is free of physical damage, trim valves are in their appropriate open or closed position and there is no leakage from the intermediate chamber.

2.28.2.9.3 The interior of the dry pipe valve shall be inspected annually when the trip test is conducted.

2.28.2.9.4 Strainers, filters, and restricted orifices shall be inspected internally once during this contract.

2.28.2.9.5 Priming water level shall be tested quarterly.

2.28.2.9.6 Each dry pipe valve shall be tested annually during warm weather.

2.28.2.9.7 Dry pipe valves shall be trip tested once every three years with the control valve wide open. A tag showing the date on which the dry pipe valve was last tripped and showing the name of the person conducting the test shall be attached to the valve.

2.28.2.9.8 Low air pressure alarms shall be tested quarterly in accordance with manufacturer's instructions.

2.28.2.9.9 Leaks resulting in pressure losses greater than 10 psi per week shall be located and repaired.

2.28.2.9.10 During the trip test, the interior of the dry pipe valves shall be thoroughly cleaned and parts replaced or repaired as necessary.

2.28.2.9.11 Low points in dry pipe sprinkler system shall be drained after each operation and before the onset of freezing weather conditions.

2.28.2.10 **PRESSURE REGULATING AND RELIEF VALVES**

2.28.2.10.1 All valves shall be inspected monthly to verify that valves are in the open position, not leaking, maintaining downstream pressure and in good condition.

2.28.2.10.2 A flow test shall be conducted on each valve annually.

2.28.2.11 **FIRE PUMP PRESSURE RELIEF VALVES**

2.28.2.11.1 All circulation relief valves shall be inspected weekly.

2.28.2.11.2 The inspection shall verify that sufficient water flows through the valve when the fire pump is operating at shutoff pressure to prevent pump overheating.

2.28.2.11.3 All pressure relief valves shall be inspected weekly.

2.28.2.11.4 The inspection shall verify that the pressure down stream of the relief valve fittings in the

fire pump discharge piping does not exceed the pressure rating of the system components.

2.28.2.11.5 During the annual fire pump flow test, it shall be verified that this valve is correctly adjusted and set to relieve at the appropriate pressure and closes below that pressure setting.

2.28.2.12 **BACKFLOW PREVENTION ASSEMBLIES**

2.28.2.12.1 Double check assembly and double check detector assembly valve shall be inspected weekly to ensure that the OS&Y isolation valves are in the normal open position.

2.28.2.12.2 All backflow prevention assemblies shall be tested annually in accordance with the Philadelphia Water Company.

2.28.2.12.3 All backflow devices installed in fire protection water supply shall be tested annually at the designed flow rate of the sprinkler system, and the friction loss across the device measured and compared to the device manufacturer's specifications.

2.28.2.12.4 Maintenance of all backflow prevention assemblies shall be conducted by a certified individual following the manufacturer's instructions in accordance with the procedures and policies of the Philadelphia Water Company and the Philadelphia Fire Code.

2.28.2.13 **FIRE DEPARTMENT CONNECTIONS**

2.28.2.13.1 Fire department connections shall be inspected monthly to verify that the fire department connections are visible and accessible, couplings or swivels are not damaged and rotate smoothly, plugs or caps are in place and not damaged, gaskets are in place and in good condition, identification signs are in place, the check valve is not leaking, and the automatic drain valve is in place and operating properly.

2.28.2.13.2 If fire department connection plugs or caps are not in place, the interior of the connection shall be inspected for obstructions and it shall be verified

that the valve clapper is operational over is full range.

2.28.2.13.3 Components shall be repaired or replaced as necessary, in accordance with the manufacturer's instructions. Any obstructions that are present shall be removed.

2.28.2.14 **FIRE PUMP SYSTEM**

2.28.2.14.1 **Tests**

2.28.2.14.1.1 The fire pump assembly shall be inspected weekly in accordance with Table 5-2.2 of NFPA-25. (Includes: Aurora split case vertical drive 500GPM, Aurora single stage horizontal drive 500GPM, CFP Aurora 1250GPM, and ITT 3000GPM).

2.28.2.14.1.2 A weekly test of the electric motor-driven fire pump assemblies shall be conducted without flowing water. This test shall be conducted by allowing automatic starting of the pump to occur. Pump shall run a minimum of 10 minutes.

2.28.2.14.1.3 The visual observations or adjustments listed in Table 5-3.2.4 of NFPA 25 shall be conducted while the pump is running during the weekly test.

2.28.2.14.1.4 An annual test of the fire pump assembly shall be conducted with power output adjusted to "no load", "rated load", and "peak" load. This test shall be conducted using pump discharge via hose streams, pump suction, and discharge pressures, and flow measurements of each hose stream shall determine the total pump output.

2.28.2.14.1.5 The visual observations, measurements, and adjustments listed in Table 5-3.3.2 of NFPA 25 shall be conducted while the pump is running and flowing water under the specified output condition during the annual test.

2.28.2.14.1.6 Alarm conditions shall be simulated during annual fire pump test by activating alarm circuits at alarm sensor locations, and all such local or remote alarm indicating devices shall be observed for operation.

2.28.2.14.2 **Maintenance**

2.28.2.14.2.1 A preventive maintenance program shall be performed on all components of the pump assembly in accordance with the manufacturer's recommendations and Table 5-5.1 of NFPA 25.

2.28.2.15 **FM-200 SYSTEM**

2.28.2.15.1 FM-200 System shall be inspected monthly. Gauges and valves shall be inspected for proper operation. Gauges reading for cylinders shall be recorded and compared to previous month reading to determine if leakage has occurred.

2.28.2.15.2 Every six months check system discharge piping for corrosion and damage. Check piping supports. Check to see that discharge nozzle orifices are clear and unobstructed and that no signs of corrosion exist. Check pressure gauge of each container. If the pressure is less than 360 psig at 70°F, remove, weight and recharge container as necessary.

2.28.2.15.3 Bi-annual visual cylinder inspection in accordance with the regulations of C.F.R. Title 49 and C.G.A. Pamphlet C-6, Section 3. All inspections are to be done by C.G.A./D.O.T. approved inspectors only.

2.28.2.16 **CONTRACT ELEMENTS**

The Contractor will perform maintenance on various fire suppression systems within the Terminal Complex (approximately 2.0 million sq. ft.), Vehicle Storage Facility, Maintenance Support Building, Warehouse, Hog Island Road Tunnel and Airfield Lighting Vaults.

Location		Systems
a.	Terminal Complex	Dry Pipe System Wet Pipe System Pre-action System Fire Cycle System Fire Pump System FM-200 System
b.	Vehicle Storage Facility	Wet Pipe System
c.	Maintenance Support Building	Wet Pipe System
d.	Hog Island Road Tunnel	Dry Pipe System
e.	Airfield Lighting Vaults	FM-200 System

2.28.2.16.1 **Sprinkler Systems**

2.28.2.16.1.1 Wet Pipe

2.28.2.16.1.2 Dry Pipe

2.28.2.16.1.3 Preaction

2.28.2.16.1.4 Deluge

2.28.2.16.2 **Fire Department Connections**

2.28.2.16.3 Water Supplies

2.28.2.16.4 Fire Pump:

- Central Utilities Building
- Terminal F
- Terminal A West
- Ramp Control Tower

2.28.2.16.5 Fire Hydrants

2.28.2.16.6 Backflow Preventers

2.28.2.16.7 Fire Mains

2.28.2.16.8 Valves (Not associated with a specific sprinkler system)

2.28.2.17 Equipment Schedules

2.28.2.17.1 Backflow Preventer Schedule

BACKFLOW PREVENTER SCHEDULE						
	DEVICE	**SERVICE TYPE**		**TYPE OF DEVICE**		**SIZE**
BUILDING SERVED	**NO. (BFP)**	**FIRE**	**DOMESTIC**	**REDUCED PRESSURE**	**DOUBLE CHECK**	
BAGGAGE CLAIM A EAST	BFP 1F	•			•	6″
	BFP#2F	•			•	6″
	BFP#1D		•	•		4″
TICKETING A EAST	BFP#3F	•			•	6″
	BFP#2D		•	•		4″
CONCOURSE A EAST	BFP#4F	•			•	6″
	BFP#5F		•	•		6″
	BFP#3D	•			•	4″
BAGGAGE CLAIM B/C	BFP#6F	•				6″
	BFP#4D		•	•		3″
	BFP#7F	•			•	8″

BACKFLOW PREVENTER SCHEDULE						
	DEVICE	**SERVICE TYPE**		**TYPE OF DEVICE**		**SIZE**
BUILDING SERVED	**NO. (BFP)**	**FIRE**	**DOMESTIC**	**REDUCED PRESSURE**	**DOUBLE CHECK**	
	BFP#8F	•			•	6″
	BFP#5D		•	•		3″
TICKETING B/C	BFP#6D	•			•	6″
	BFP#7D		•	•		6″
	BFP#9F	•			•	12″
	BFP#10F	•			•	12″
BAGGAGE CLAIM D	BFP#11F	•			•	6″
	BFP#8D		•	•		3″
TICKETING D	BFP#12F	•			•	6″
	BFP#9D		•	•		4″
CONCOURSE "D" HAMMERHEAD	BFP #16F	•		•		8″
	BFP #27D		•		•	4"
BAGGAGE CLAIM E	BFP#13F	•			•	6″
	BFP#10D		•	•		3″
SATELLITE THERMAL PLANT	BFP#14F	•			•	4″
	BFP#11D		•	•		4″
TICKETING E	BFP#15F	•			•	6″
	BFP#12D		•	•		4″
CONCOURSE E	BFP#13D		•	•		4″
TERMINAL F	BFP #17F			•		
	BFP #15D		•		•	4"
	BFP #16D		•		•	4"
	BFP #18F	•		•		
	BFP #19F	•		•		
METER PIT NO. 5 (LOCATED IN THE VICINITY OF BAGGAGE CLAIM E)	BFP#14D		•	•		16″
METER PIT NO. 9 (LOCATED WEST OF BAGGAGE CLAIM A)	BFP#19D	•			•	20″

BACKFLOW PREVENTER SCHEDULE						
	DEVICE NO. (BFP)	**SERVICE TYPE**		**TYPE OF DEVICE**		**SIZE**
BUILDING SERVED		**FIRE**	**DOMESTIC**	**REDUCED PRESSURE**	**DOUBLE CHECK**	
METER PIT NO. 8 (LOCATED IN PARKING GARAGE A-B WEST OF MARRIOTT HOTEL)	BFP#20D		•	•		6″
CENTRAL UTILITIES BUILDING (RAC)	BFP#25D	•			•	2 1/2″
	BFP#26D		•	•		4″
TERMINAL A WEST	BFP #20F	•			•	8"
	BFP#21D		•	•		
	BFP#22D		•	•		4"

2.28.2.17.2 **Fire Protection Zone Schedule**

FIRE PROTECTION SYSTEM ZONE SCHEDULE						
			SQ. FT.		**SERVICE SIZE**	
LOCATION	**ZONE**	**AREA**	**ZONE**	**AREA**	**ZONE**	**AREA**
TERMINAL A WEST GROUND LEVEL SECT 1	ZONE 100	N/A	10,210		3"	
	ZONE 101	N/A	20,300		3"	
TERMINAL A WEST GROUND LEVEL SECT 2	ZONE 102	N/A	18,780		3"	
	ZONE 103	N/A	18,950		3"	
TERMINAL A WEST GROUND LEVEL SECT 3	ZONE 104	N/A	6,740		3"	
	ZONE 105	N/A	2,270		3"	
TERMINAL A WEST GROUND LEVEL SECT 4	ZONE 106	N/A	8,200		3"	
	ZONE 107	N/A	15,500		3"	
TERMINAL A WEST GROUND LEVEL SECT 5, 6, 9 & 10	ZONE 108	N/A	39,210		6"	
TERMINAL A WEST GROUND LEVEL SECT 5	ZONE 109	N/A	34,930		3"	
	ZONE 110	N/A	1,490		2"	
	ZONE 111	N/A	995		1 1/2"	
TERMINAL A WEST GROUND LEVEL SECT 6	ZONE 112	N/A	3,720		6"	
TERMINAL A WEST GROUND LEVEL SECT 7	ZONE 113	N/A	960		1 1/2"	
	ZONE 114	N/A	1,600		3"	
	ZONE 115	N/A	32,060		3"	

FIRE PROTECTION SYSTEM ZONE SCHEDULE

LOCATION	ZONE	AREA	SQ. FT. ZONE	SQ. FT. AREA	SERVICE SIZE ZONE	SERVICE SIZE AREA
TERMINAL A WEST GROUND LEVEL SECT 8	ZONE 116	N/A	15,510		3"	
TERMINAL A WEST GROUND LEVEL SECT 6, 7, 10 & 11	ZONE 117	N/A	39,210		6"	
TERMINAL A WEST GROUND LEVEL SECT 8	ZONE 118	N/A	1,040/1,730		3"	
	ZONE 119	N/A	9,350		3"	
TERMINAL A WEST GROUND LEVEL SECT 13	ZONE 120	N/A	10,050		3"	
TERMINAL A WEST GROUND LEVEL SECT 11, 12 & 13	ZONE 121	N/A	49,010		4"	
TERMINAL A WEST GROUND LEVEL SECT 9, 10, 11 & 12	ZONE 122	N/A	50,760		4"	
TERMINAL A WEST, GARAGE CORE LEVEL "A"	ZONE 123	N/A	3,700		2 1/2"	
TERMINAL A WEST SECOND AND THIRD LEVEL LEVEL SECT 1	ZONE 200	N/A	3,860/27,215		3"	
TERMINAL A WEST SECOND LEVEL SECT 1 & 2	ZONE 201	N/A	7,115		3"	
	ZONE 202	N/A	3,930		4"	
TERMINAL A WEST SECOND LEVEL SECT 2	ZONE 203	N/A	5,360		3"	
	ZONE 204	N/A	3,890		3"	
	ZONE 205	N/A	5,860		3"	
TERMINAL A WEST SECOND LEVEL SECT 3	ZONE 206	8520	206A	N/A		
			206B	N/A		
	ZONE 207	6605	207A	N/A	3"	
			207B	N/A	3"	
			207C	N/A	3"	
TERMINAL A WEST SECOND LEVEL SECT 3, 4 & 5	ZONE 208	16950	208A	6,905	2 1/2"	
			208B	10,045	3"	
TERMINAL A WEST SECOND LEVEL SECT 4 & 5	ZONE 209	N/A	11,510		4"	
TERMINAL A WEST SECOND LEVEL SECT 4 & 5	ZONE 210	N/A	210A	N/A	3"	
			210B	N/A	3"	
TERMINAL A WEST SECOND LEVEL SECT 4, 5, 6, 9 & 10	ZONE 211	N/A	12,065/12,890		6"	

FIRE PROTECTION SYSTEM ZONE SCHEDULE

LOCATION	ZONE	AREA	SQ. FT.		SERVICE SIZE	
			ZONE	AREA	ZONE	AREA
TERMINAL A WEST SECOND LEVEL SECT 5 & 6	ZONE 212	N/A	20,725		4"	
TERMINAL A WEST SECOND LEVEL SECT 4 & 5	ZONE 213	N/A	25,675		4"	
TERMINAL A WEST SECOND LEVELSECT 5 & 6	ZONE 214	N/A	11,580		3"	
TERMINAL A WEST SECOND LEVEL SECT 6 & 7	ZONE 215	N/A	11,580		3"	
TERMINAL A WEST SECOND LEVEL SECT 6 & 7	ZONE 216	N/A	29,745		4"	
TERMINAL A WEST SECOND LEVEL SECT 7 & 8	ZONE 217	N/A	8,105		4"	
TERMINAL A WEST SECOND LEVEL SECT 7 & 8	ZONE 218	N/A	17,488/3,385		3"	
TERMINAL A WEST SECOND LEVEL SECT 6, 7, 10 & 11	ZONE 219	N/A	12,890		6"	
TERMINAL A WEST SECOND AND THIRD LEVEL SECT 8 & 14	ZONE 220	N/A	3,415/4,820		3"	
TERMINAL A WEST SECOND LEVEL SECT 8	ZONE 221	N/A	6,555		3"	
TERMINAL A WEST SECOND LEVEL SECT 8	ZONE 222	N/A	7,250		3"	
TERMINAL A WEST SECOND LEVEL SECT 11, 13 & 14	ZONE 223	N/A	12,890		4"	
TERMINAL A WEST SECOND LEVEL SECT 13	ZONE 224	N/A	12,455		4"	
TERMINAL A WEST GARAGE CORE LEVEL "B"	ZONE 225	N/A	7,000		3"	
TERMINAL A WEST THIRD LEVEL SECT 5, 6, 9 & 10	ZONE 300	N/A	49,785		4"	
TERMINAL A WEST THIRD LEVEL SECT 5 & 6	ZONE 301	N/A	32,445		4"	

FIRE PROTECTION SYSTEM ZONE SCHEDULE

LOCATION	ZONE	AREA	SQ. FT.		SERVICE SIZE	
			ZONE	AREA	ZONE	AREA
TERMINAL A WEST THIRD LEVEL SECT 6, 7, 10 & 11	ZONE 302	N/A	45,055		4"	
TERMINAL A WEST THIRD LEVEL SECT 6 & 7	ZONE 303	N/A	34,895		4"	
TERMINAL A WEST THIRD LEVEL SECT 12 & 13	ZONE 304	N/A	33,270		4"	
TERMINAL A WEST THIRD LEVEL SECT 7, 11 & 14	ZONE 305	N/A	15,554		4"	
TERMINAL A WEST THIRD LEVEL SECT 13	ZONE 306	N/A	12,065		4"	
TERMINAL A WEST GARAGE CORE LEVEL "C"	ZONE 307	N/A	9,280		3"	
TERMINAL A WEST MEZZANINE LEVEL SECTOR 5	ZONE 400	N/A	10,185		3"	
TERMINAL A WEST MEZZANINE LEVEL SECTOR 5 & 6	ZONE 401	N/A	13,550		4"	
TERMINAL A WEST MEZZANINE LEVEL SECTOR 5 & 6	ZONE 402	N/A	10,520		4"	
TERMINAL A WEST MEZZANINE LEVEL SECTOR 6 & 7	ZONE 403	N/A	10,660		4"	
TERMINAL A WEST MEZZANINE LEVEL SECTOR 6 & 7	ZONE 404	N/A	10,120		4"	
TERMINAL A WEST MEZZANINE LEVEL SECTOR 7	ZONE 405	N/A	9,505		1 1/4"	
TERMINAL A WEST GARAGE CORE LEVEL "D"	ZONE 406	N/A	6,286		4"	
TERMINAL A WEST GARAGE CORE LEVEL "E"	ZONE 500	N/A	3,730		2 1/2"	
TERMINAL A WEST GARAGE CORE LEVEL "F"	ZONE 600	N/A	3,730		2 1/2"	

FIRE PROTECTION SYSTEM ZONE SCHEDULE

LOCATION	ZONE	AREA	SQ. FT.		SERVICE SIZE	
			ZONE	AREA	ZONE	AREA
TERMINAL A WEST GARAGE CORE LEVEL "G"	ZONE 700	N/A	3,730		2 1/2"	
TERMINAL A WEST GARAGE CORE LEVEL "H"	ZONE 800	N/A	3,730		2 1/2"	
TERMINAL A WEST GARAGE CORE MACHINE ROOM	ZONE 900	N/A	1,860		2"	
BAGGAGE CLAIM A EAST	ZONE 1-1	N/A	3,000		3"	
	ZONE 1-2	N/A	7,000		4"	
	ZONE 1-3	N/A	46,440		4"	
	ZONE 2-1	N/A	8,000		3"	
	ZONE 2-2	N/A	27,000		4"	
TERMINAL A EAST	ZONE 3-1	N/A	74,300		6"	
	ZONE-3-2	N/A	3,600		4"	
CONCOURSE A EAST	ZONE 4-1	N/A	65,000		4"	
	ZONE 4-2	N/A	5,200		4"	
	ZONE 5-1	N/A	70,000		4"	
BAGGAGE CLAIM B/C	ZONE 7-1	AREA 7-1-1	65,000		6"	
	ZONE 7-2	AREA 7-2-1	65,000		6"	
TICKETING BUILDING B/C	ZONE 9/10-1	N/A	9,840		N/A	
	ZONE 9/10-2	N/A	13,600		N/A	
	ZONE 9/10-3	N/A	9,600		N/A	
	ZONE 9/10-4	N/A	11,700		N/A	
	ZONE 9/10-5	N/A	400		3"	
	ZONE 9/10-6	N/A	550		2"	
	ZONE 9/10-7	N/A	23,000		N/A	
	ZONE 9/10-8	N/A	26,700		4"	
TICKETING BUILDING B/C	ZONE 9/10-9	N/A	25,800		2"	
	ZONE 9/10-10	N/A	26,500		N/A	
	ZONE 9/10-11	N/A	32,000		N/A	

FIRE PROTECTION SYSTEM ZONE SCHEDULE

LOCATION	ZONE	AREA	SQ. FT. ZONE	SQ. FT. AREA	SERVICE SIZE ZONE	SERVICE SIZE AREA
	ZONE 9/10-12	N/A	240		N/A	
	ZONE 9/10-13	N/A	510		N/A	
	ZONE 9/10-14	N/A	320		N/A	
	ZONE 9/10-15	N/A	640		N/A	
	ZONE 9/10-34	N/A	80		N/A	
	ZONE 9/10-35	N/A	112		N/A	
	ZONE 9/10-38	N/A	1,400		N/A	
TICKETING BUILDING B/C	ZONE 9/10-20	N/A	26,500		8"	
	ZONE 9/10-21	N/A	28,100		12"	
	ZONE 9/10-22	N/A	34,300		3"	
	ZONE 9/10-23	N/A	32,300		3"	
.TICKETING BUILDING B/C	ZONE 9/10-16	N/A	2,300		4"	
	ZONE 9/10-17	N/A	3,460		4"	
	ZONE 9/10-18	N/A	2,050		4"	
	ZONE 9/10-19	N/A	7,900		4"	
	ZONE 9/10-36	N/A	660		N/A	
	ZONE 9/10-37	N/A	480		N/A	
TICKETING BUILDING B/C 3RD FLOOR	ZONE 9/10-24	N/A	2,700		8"	
	ZONE 9/10-25	N/A	10,400		12"	
	ZONE 9/10-28	N/A	13,400		3"	
	ZONE 9/10-29	N/A	5,900		3"	
TICKETING BUILDING B/C 3RD FLOOR	ZONE 9/10-26	N/A	15,400		8"	

FIRE PROTECTION SYSTEM ZONE SCHEDULE

LOCATION	ZONE	AREA	SQ. FT. ZONE	SQ. FT. AREA	SERVICE SIZE ZONE	SERVICE SIZE AREA
	ZONE 9/10-27	N/A	1,920		12"	
	ZONE 9/10-31	N/A	2,120		2"	
	ZONE 9/10-32	N/A	3,100		2"	
	ZONE 9/10-30	N/A	5,000		3"	
TICKETING BUILDING B/C 4TH FLOOR	ZONE 9/10-33	N/A	4,600		8"	
CONCOURSE "C" HAMMERHEAD	ZONE 9/10-1	N/A	9,300		4"	
	ZONE 9/10-2	N/A	512		2"	
	ZONE 9/10-3	N/A	60,240		4"	
	ZONE 9/10-4	N/A	33,728		4"	
BAGGAGE CLAIM "D"	ZONE 11-1	N/A	8,560		5"	
CONCOURSE "D" HAMMERHEAD	ZONE 1-A	N/A	18,440		4"	
	ZONE 1-B	N/A	1,570		4"	
	ZONE 1-C	N/A	11,225		6"	
	ZONE 2-A	N/A	26,000		4"	
TERMINAL E	ZONE 12-1	N/A	14,000		4"	
	ZONE 12-2	AREA 12-2-1	4,096	2,160	6"	4"
		AREA 12-2-2		1,936		3"
	ZONE 12-3	AREA 12-3-1	2,700			3"
BAGGAGE CLAIM "E"	ZONE 13-1	N/A	8,300		4"	
SATELLITE THERMAL PLANT	ZONE 14-1	N/A	6,400		4"	
TERMINAL "E" TICKETING BUILDING	ZONE 15-1	N/A	14,000		4"	
	ZONE 15-2	AREA 15-2-1	4,118	2,180	8"	4"
		AREA 15-2-2		1,938		3"
	ZONE 15-3	AREA 15-3-1	2,700			3"

FIRE PROTECTION SYSTEM ZONE SCHEDULE

LOCATION	ZONE	AREA	SQ. FT. ZONE	SQ. FT. AREA	SERVICE SIZE ZONE	SERVICE SIZE AREA
CONCOURSE "B" UTILITY TUNNEL	UTB-1	N/A	8,901		N/A	
	UTB-2	N/A	6,884		N/A	
CONCOURSE "B" FIRST FLOOR	B-1	N/A	8,006		N/A	
	B-2	N/A	669		N/A	
	B-3	N/A	21,778		N/A	
	B-4	N/A	4,511		N/A	
	B-5	N/A	13,607		N/A	
	B-6	N/A	381		N/A	
	B-7	N/A	18,165		N/A	
	B-8	N/A	12,310		N/A	
	B-9	N/A	392		N/A	
PEDESTRIAN BRIDGE "B" SECOND FLOOR	B-10	N/A	15,260		N/A	
CONCOURSE "B" SECOND FLOOR	B-11	N/A	16,647		N/A	
	B-12	N/A	26,558		N/A	
	B-13	N/A	22,577		N/A	
	B-14	N/A	9,249		N/A	
TERMINAL "B" 4TH, 5TH, 6TH &7TH FLOORS	B-15	N/A	8,135		N/A	
CONCOURSE "C" UTILITY TUNNEL	UTC-1	N/A	7,669		N/A	
	UTC-2	N/A	5,783		N/A	
CONCOURSE "C" FIRST FLOOR	C-1	N/A	8,422		N/A	
	C-2	N/A	12,343		N/A	
	C-3	N/A	3,808		N/A	
	C-4	N/A	1,003		N/A	
	C-5	N/A	4,208		N/A	
	C-6	N/A	10,124		N/A	
	C-7	N/A	697		N/A	
	C-8	N/A	4,108		N/A	
	C-9	N/A	6,729		N/A	
	C-13	N/A	352		N/A	
PEDESTRIAN BRIDGE "C" SECOND FLOOR	C-10	N/A	13,754		N/A	
CONCOURSE "C" SECOND FLOOR	C-11	N/A	17,308		N/A	
	C-12	N/A	26,076		N/A	
TERMINAL C/D FIRST FLOOR	C/D-1	N/A	7,562		N/A	
	C/D-2	N/A	8,833		N/A	
	C/D-3	N/A	2,818		N/A	
	C/D-4	N/A	1,390		N/A	
TERMINAL C/D SECOND FLOOR	C/D-5	N/A	22,445		N/A	

FIRE PROTECTION SYSTEM ZONE SCHEDULE

LOCATION	ZONE	AREA	SQ. FT. ZONE	SQ. FT. AREA	SERVICE SIZE ZONE	SERVICE SIZE AREA
TICKETING "D" FIRST FLOOR	D-1	N/A	16,350		N/A	
	D-2	N/A	1,026		N/A	
CONCOURSE "D" APRON LEVEL - AREA BENEATH PEDESTRIAN BRIDGE	D-3	N/A	8,759		N/A	
CONCOURSE "D" FIRST FLOOR	D-4	N/A	903		N/A	
	D-7	N/A	10,251		N/A	
	D-8	N/A	8,643		N/A	
	D-9	N/A	2,219		N/A	
	D-10	N/A	6,367		N/A	
	D-11	N/A	1,950		N/A	
CONCOURSE "D" FIRST FLOOR AND BASEMENT	D-5	N/A	2,750		N/A	
PEDESTRIAN BRIDGE "D" SECOND FLOOR	D-12	N/A	18,788		N/A	
CONCOURSE "D" SECOND FLOOR	D-13	N/A	22,241		N/A	
	D-14	N/A	18,737		N/A	
	D-15	N/A	21,015		N/A	
BAGGAGE CLAIM "E" BASEMENT	E-1	N/A	13,717		N/A	
BAGGAGE CLAIM "E" BASEMENT, UTILITY ROOM, AND 1ST FLOOR	E-2	N/A	17,942		N/A	
TICKETING "E" FIRST FLOOR	E-3	N/A	12,300		N/A	
TICKETING "E" BASEMENT	E-4	N/A	1,200		N/A	
CONCOURSE "E" OUTBOUND BAGGAGE FIRST FLOOR	E-5	N/A	9,780		N/A	
CONCOURSE "E" BASEMENT	E-6	N/A	1,580		N/A	
CONCOURSE "E" FIRST FLOOR	E-7	N/A	24,647		N/A	
	E-8	N/A	28,403		N/A	
PEDESTRIAN BRIDGE "E" SECOND FLOOR	E-9	N/A	21,255		N/A	
TERMINAL D/E CONNECTOR BRIDGE SECOND FLOOR	E-10	N/A	6,433		N/A	
CONCOURSE "E" SECOND FLOOR	E-11	N/A	26,179		N/A	
	E-12	N/A	30,169		N/A	
TERMINAL F SECTOR 1 - TERMINAL BLDG	ZONE 16-1	N/A	N/A		4"	

FIRE PROTECTION SYSTEM ZONE SCHEDULE

LOCATION	ZONE	AREA	SQ. FT.		SERVICE SIZE	
			ZONE	AREA	ZONE	AREA
TERMINAL F SECTOR 1 - CONCOURSE 1	ZONE 16-2	N/A	N/A		4"	
TERMINAL F SECTOR 1 - MEZZANINE	ZONE 16-3	N/A	N/A		4"	
TERMINAL F SECTOR 2 HUB BLDG	ZONE 16-4	N/A	N/A		4"	
TERMINAL F SECTOR 2 CONCOURSE 2	ZONE 16-5	N/A	N/A		4"	
TERMINAL F SECTOR 3 CONCOURSE 3	ZONE 16-6	N/A	N/A		4"	
TERMINAL F SECTOR 4 BAGGAGE	ZONE 16-7	N/A	N/A		4"	
TERMINAL F TOWER	ZONE 16-8	N/A	N/A		1 1/2"	
MAINTENANCE SUPPORT BUILDING (ISLAND AVE)	N/A	25,000	N/A		N/A	
WAREHOUSE (ISLAND AVE)	N/A	80,000	N/A		N/A	
HOG ISLAND ROAD TUNNEL DRY SYSTEM	N/A	50,000	N/A		N/A	
MAINT. VEHICLE STORAGE FACILITY (CARGO CITY)	N/A	25,000	N/A		N/A	
NORTHWEST AIR, TERMINAL	N/A	N/A	N/A		N/A	
USAIR, TERMINAL F HUB	N/A	N/A	N/A		N/A	
PRESTIGE PENS, TERMINAL F HUB	N/A	455	N/A		N/A	
SUNGLASS HUT, TERMINAL F HUB	N/A	300	N/A		N/A	
SBARRO, TERMINAL F HUB	N/A	N/A	N/A		N/A	
ASIAN CHAO, TERMINAL F HUB	N/A	773	N/A		N/A	
JET ROCK, TERMINAL F HUB	N/A	1850	N/A		N/A	
HUDSON NEWS, TERMINAL F HUB	N/A	896	N/A		N/A	
HUDSON NEWS, GATE F32	N/A	N/A	N/A		N/A	
HUDSON NEWS, TERMINAL F, GATE F18	N/A	N/A	N/A		N/A	
F-TOWER STAIRS,	N/A	N/A	N/A		N/A	

FIRE PROTECTION SYSTEM ZONE SCHEDULE						
			SQ. FT.		**SERVICE SIZE**	
LOCATION	**ZONE**	**AREA**	**ZONE**	**AREA**	**ZONE**	**AREA**
TERMINAL						
ELEC. EQUIP RM, TERMINAL F	N/A	N/A	N/A		N/A	
TOWER4TH FLOOR, TERMINAL F	N/A	N/A	N/A		N/A	
TOWER 3RD FLOOR, TERMINAL F	N/A	N/A	N/A		N/A	
TERMINAL B FIELD SIDE STAIR, B-BAG MAKE-UP	N/A	N/A	N/A		N/A	
TERMINAL B 2ND FLOOR, B-BAG MAKE-UP	N/A	N/A	N/A		N/A	

2.28.2.17.3 **FM 200 System Schedule**

FM 200 System	Location	Area (SF)
FM1 – FLER	Field Lighting Equipment Room	1,000
FM2 – FLV2	Field Lighting Vault 2	1,000
FM3 – FLV3	Field Lighting Vault 3	1,500
FM4 – FLV4	Field Lighting Vault 4	2,500
FM5 - B/C1	USAirways Communication Room, Main Terminal Complex 1st Floor Terminal B	80
FM6 - B/C2	USAirways Communication Room, Main Terminal Complex 1st Floor Midway Between Terminals B and C	144
FM7 - B/C3	USAirways Communication Room, Main Terminal Complex 1st Floor Midway Between Terminals B and C	80
FM8 - B/C4	DOA Main Communication Room, Main Terminal Complex 1st Floor Midway Between Terminals B and C	220
FM9 - B/C5	Telephone Equipment Room, Main Terminal Complex 1st Floor Terminal B	594
FM10-AW1	Tele/Com Room, Terminal A West, Ground Floor Sector 2	208
FM11-AW2	Baggage System Rooms, Terminal A West, Ground Floor Sector 2	525
FM12-AW3	Audio Paging Equipment Room, Terminal A West, Ground Floor Sector 4	420
FM13-AW4	Main Tele/Com Room, Terminal A West, Ground Floor Sector 5	520
FM14-AW5	Tele/Com Room, Terminal A West, Ground Floor Sector 7	482
FM15-AW6	Cute Lan Room, Terminal A West, Ground Floor Sector 7	635
FM16-AW7	Computer Room, Terminal A West, Third Level Sector 7	243
FM17-AW8	TECS Room, Terminal A West, Third Level Sector 11	384
FM18-F1	DOA MDF and US Airways MDF, Terminal F First Floor Sector 1	208
FM19-F2	US Airways Closet "A" and DOA Closet "A", Terminal F, First Floor Sector 1	100
FM20-F3	US Airways Closet "B", Terminal F, First Floor Sector 1	64
FM21-F4	US Airways Closet "C" and DOA Closet "C", Terminal F, First Floor Sector 2	106
FM22-F5	US Airways Closet "D" and DOA Closet "D", Terminal F, First Floor Sector 2	128
FM23-F6	US Airways Closet "E" and DOA Closet "E",	94

	Terminal F, First Floor Sector 3	
FM24-F7	US Airways Closet "F" and DOA Closet "F", Terminal F, First Floor Sector 3	98
FM25-F8	Comm Room, Terminal F, Mezz. Lower Level, Sector 1	182
FM26-AE1	Baggage Control Room E, Terminal A East Lower Level, Sector 23	245

2.28.3 **SPECIAL REQUIREMENTS**

2.28.3.1 A tag shall be used to indicate that any system, or part thereof, has been removed from service.

2.28.3.1.1 The tag shall be posted at each fire department connection and system control valve indicating which system, or part thereof, has been removed from service.

2.28.3.1.2 Provide the services of a qualified fire alarm technician to monitor the fire alarm system during all fire protection system testing. Technician shall monitor system for proper function during testing. Any deficiencies or failings with devices, electrical componenets, or switches shall immediately be reported to Division of Aviation Maintenance. Personnel qualifications for fire alarm techinicians shall be as indicated in Section 2.34.4.1.1.

2.28.3.1.3 Provide support to facilitate the emergency generating system testing process. Test will occur semi-annually, generally between 0000-0300 hours on a Sunday morning. Also provide support services during scheduled power outages or testing sequences that affect contract covered equipment.

2.28.4 **SERVICE CALL AND RESPONSE TIME**

2.28.4.1 Major maintenance for failures will be on a demand basis 24 hours per day, 7 days a week with a response time of fifteen (15) minutes.

2.28.4.2 Any component found defective or not operational will be repaired immediately. If a technician is not on site, a service call will be made to the Contractor who will provide a technician to repair the system with a response time of (15) minutes to be on site to repair the system. The program will include a check list form to be filled out during testing.

2.28.4.3 Service or repair which is necessary but unscheduled due to Acts of God, malicious acts of others, misuse or abuse of equipment, or the result of water damage, etc. may be subject to conditions described in Section 2.17".

2.28.5 **RECORDS/DOCUMENTATION**

2.28.5.1 All work will be initiated from the airport's work control center through the issuance of a work order. The work control center will only phone in priority 1, emergency requests.

2.28.5.2 All hours and parts used will be logged onto the work orders. Work that is not completed at the end of the day will have all of the hours and parts logged to it daily until completed.

2.28.5.3 Submit all proposed PM procedures and support information on approved worksheets along with recommended frequencies for approval by the Airport's Maintenance Manager or his designee. The PM information will be entered into the computerized maintenance management system to be generated at the set frequencies.

2.28.5.4 All results of specified inspections, tests and repairs shall be entered into the computerized maintenance management system.

2.28.5.5 Prepare, provide and file all documentation and certifications required by the City of Philadelphia and Tinicum Township.

2.29 **SCHEDULE G – HVAC MAINTENANCE**

2.29.1 **General Description:**

The Contractor will be required to furnish all necessary labor, tools, transportation, services, permits, supervision, materials and equipment, as necessary to conduct a comprehensive preventing maintenance program of specified cooling equipment and appurtenances.

The Terminal complex HVAC units and other machinery in the mechanical rooms are controlled from Central Utility Building, (CUB) and the Satellite Thermal Pant, (STP) where main equipment is housed.

Central Utility Building	4 Centrifugal Chillers	5100 Tons
Satellite Thermal Plant	3 Centrifugal Chillers	3600 Tons
Former Overseas Terminal	2 Centrifugal Chillers	400 Tons
Terminal A West Plant	3 Centrifugal Chillers	3600 Tons

2.29.2 **Technical Description**

Service and Repair Specifications for the Following:
Former overseas terminal building on Island Avenue.

A. Two (2) Trane Cen-Tra-Vac Chillers, model #PVC1J, S/NL2J15633 and L2J15634.
B. Two (2) Taco Chilled water circulation pumps.
C. Two (2) Taco Condenser water pumps.
D. One (1) Tower Tech Cooling Tower, model
E. Two (2) Quincy air compressors, model #216, S/N 3000424 and 3000433.

Equipment List-Central Utility Bldg. - CUB

A. Trane 1200 ton centrifugal liquid chiller model (CVHB-155N-AT) #4
B. Trane 1200 ton centrifugal liquid chiller model (CVHE-125N-AV) #2
C. Trane 1500 centrifugal liquid chiller model (HT-K1-E3-EC-A) #3
D. Trane 1200 ton centrifugal liquid chiller model (CVHF-128N) #1
E. Baltimore Air Coil Cooling Tower 2400 ton model 3000
F. Marley Cooling Towers 1-1200 ton and 1-1500 ton

Equipment List-Satellite Thermal Plant - STP

A. Three (3) Trane centrifugal chillers 1200 ton, 123 refrigerant
B. Two (2) boilers, 500 horse power, Kewance
C. Marley Towers, 2400 tons
D. One (1) boiler, 500 horsepower, Clever Brooks

E. Marley Towers, 1200 tons
Equipment List – Terminal A West
A. Three (3) Trane 1500 ton centrifugal chillers, 123 refrigerant
B. Two (2) Clever Brooks boilers, 750 horsepower
C. Five (5) Marley Cooling Towers, 1800 tons

PUMP SCHEDULES

Pump #	GPM	Duty	Type	HP	Location
01	2580	CHW	Double Suction	30	STP
02	2580	**CHW**	Double Suction	30	STP
03	2580	CHW	Double Suction	30	STP
04	4300	CHW	Double Suction	200	STP
05	4300	CHW	Double Suction	200	STP
06	3600	CW	Double Suction	75	STP
07	3600	CW	Double Suction	75	STP
08	3600	CW	Double Suction	200	STP
09	1800	Hot Water	Double Suction	200	STP
10	1800	Hot Water	Double Suction	200	STP
13	3150	CHW	Double Suction	55	STP
14	1750	CHW	Double Suction	150	STP
15	3600	CW	Double Suction	100	STP
16	1650	Hot Water	Double Suction	150	STP
17	1650	Hot Water	Double Suction	150	STP
01	3600	Condenser	Vertical	100	CUB
02	1750	Condenser	Horizontal	100	CUB
03	3600	Condenser	Vertical	100	CUB
04	4500	Condenser	Vertical	100	CUB
05	3600	Chill Return	Horizontal	100	CUB
06	3600	CHWR	Vertical	100	CUB
07	3600	CHWR	Vertical	100	CUB
08	1550	CHWR	Vertical	100	CUB
09	2040	Chilled Water	Horizontal	125	CUB
10	2040	Chilled Water	Horizontal	125	CUB
11	2040	Chilled Water	Horizontal	125	CUB
12	2040	Chilled Water	Vertical	125	CUB
13	2040	Chilled Water	Vertical	125	CUB
14	2400	Sec. Chilled	Vertical	100	A-Mech
15	2400	Sec. CHW	Vertical	100	A-Mech
16	470	Hot Water	End Suction	40	A-Mech
17	470	Hot Water	End Suction	40	A-Mech
P-1	465	CW30% A/F	End Suction	20	MR-14
P-2	465	HW Heat 30% A/F	End Suction	20	MR-14
P-3	275	HW Heat 30% A/F	End Suction	20	MR-14
P-4	275	HW Heat 30% A/F	End Suction	20	MR-14
P-5	400	Ch. H 30% A/F	Hor/split case	15	MR-13
P-6	400	Ch. H 30% A/F	Hor/split case	15	MR-13

Pump #	GPM	Duty	Type	HP	Location
P-7	150	HW Heat 30% A/F	In-Line	5	MR-13
P-8	150	HW Heat 30% A/F	In-Line	5	MR-13
P-1	900	Ch.W 30% A/F	Hor/split	40	Tunnel B
P-2	900	Ch. W 30% A/F	Hor/split	40	Tunnel B
P-3	575	H.W. 30% A/F	End Suction	25	Tunnel B
P-4	575	H.W. 30% A/F	End Suction	25	Tunnel B
P-1	900	Ch. W. 30% A/F	Hor/split case	40	Tunnel C
P-2	900	Ch. W. 30% A/F	Hor/split case	40	Tunnel C
P-3	575	H.W. 30% A/F	End Suction	30	Tunnel C
P-4	575	H.W. 30% A/F	End Suction	30	Tunnel C
HP-5-1	925	H.W.	End Suction	50	MR-5
HP-5-2	925	H.W.	End Suction	50	MR-5
P-1	3600	CHW	Hor/split case	75	Terminal A West
P-2	3600	CHW	Hor/split case	75	Terminal A West
P-3	3600	CHW	Hor/split case	75	Terminal A West
P-4	3600	CHW	Hor/split case	250	Terminal A West
P-5	3600	CHW	Hor/split case	250	Terminal A West
P-6	3600	CHW	Hor/split case	250	Terminal A West
P-7	4500	CW	Hor/split case	125	Terminal A West
P-8	4500	CW	Hor/split case	125	Terminal A West
P-9	4500	CW	Hor/split case	125	Terminal A West
P-10	1675	H.W.	Hor/split case	40	Terminal A West
P-11	1675	H.W.	Hor/split case	40	Terminal A West
P-12	1675	H.W.	Hor/split case	40	Terminal A West
P-13	1675	H.W.	Hor/split case	125	Terminal A West
P-14	1675	H.W.	Hor/split case	125	Terminal A West
P-15	18	Fuel Oil	Rotary	2	Terminal A West
P-16	18	Fuel Oil	Rotary	2	Terminal A West
P-17	18	Fuel Oil	Submersible	1/3	Terminal A West
P-18	18	Fuel Oil	Submersible	1/3	Terminal A

Pump #	GPM	Duty	Type	HP	Location
					West

Variable Frequency Drives

Central Utility Building	5-Drives
Satellite Thermal Plant #1	7-Drives
Terminal A West Thermal Plant	5-Drives
A-Mechanical Room	4-Drives
B-Mechanical Room	2-Drives
C-Mechanical Room	2-Drives
Mechanical Room #13	2-Drives

2.29.3 **Method and Schedule of Work**

Work will be scheduled during regular working hours 7:30a.m.-4:00 p.m., Monday-Friday, City holidays excluded. The work shall be executed in a manner and at such time will cause the least practical disturbance to station utilities. If the contractor desires to carry on work outside regular hours or on Saturdays, Sundays or holidays, with no extra compensation, he shall submit an application to the D.O.A. and shall allow ample time to enable satisfactory arrangements to be made for inspection.

Where emergency or off-hour work is directed by Maintenance Department, Contractor shall perform work after receiving work request authorization.

The contractor shall respond to work order only after written notification and issuance of a work authorization. The contractor shall complete any work authorization with a value less than $250.00 within 1 day of the response date. The contractor shall complete any work authorization with a value greater than or equal to $250.00 within 15 days of the response date.

All repairs, adjustments and alterations to the systems covered by this contract made by others are subject to the City's approval.

Inspections and major repairs are to be made during normal working hours. The City reserves the right to direct that his work be done on an overtime basis and the City will be responsible for only the premium portion of the contractors standard service billing rate for the actual overtime hours worked.

Contractor shall be free to start and stop the various pieces of equipment covered by this contract when this is essential to the proper performance of this contract.

Availability of Utilities

The Division of Aviation (DOA) may furnish reasonable amounts of the following utilities for the work to be performed under this contract at no cost. The contractor shall provide and maintain, at his expense, the necessary service lines from existing DOA outlets to the site of work.

- Electric
- Water
- Compressed Air (where available)

Contractor Furnished Utilities

In the event that the DOA is unable to provide the required types of utilities the contractor shall, at his expense, arrange for the required Utilities.

2.29.4 **Supervision and Administration**

2.29.4.1 **Workmanship**

2.29.4.1.1 All workmanship shall be in accordance with the best commercial practices when the maintenance task is completed, all stains, fingerprints, debris and other unsightly marks shall be removed. During the progress or work, unaffected areas are expected to be free of debris. The job will not be considered complete until the site is completely cleaned

2.29.4.2 **Permits and Responsibilities of Work**

2.29.4.2.1 The contractor shall, without additional expense to the DOA, obtain all licenses and permits required for the execution of the work. He shall be responsible for all damages to persons and/or property that occur as a result of his fault or negligence in connection with the execution of the work. He shall also be responsible for all materials delivered and work performed until completion and final acceptance.

2.29.4.3 **Subcontractors and Personnel**

2.29.4.3.1 Promptly after award of the contract, the contractor shall submit to the DOA a list of his subcontractors and the work each is to perform. The list shall include the name of key personnel of the contractor and subcontractors, together with their home addresses, cell phone and office telephone numbers, for use in event of emergency. From time to time as changes occur and additional information becomes available, the contractor shall update, correct, and change the information contained in previous lists.

2.29.4.4 **Storm Protection**

2.29.4.4.1 Should warnings of winds of gale force or stronger be issued, the contractor shall take every precaution to minimize danger to persons, to the work, and to adjacent property. The precautions shall include, but not be limited to, closing all openings, removing or securing scaffolding and other temporary work.

2.29.4.5 **Debris**

2.29.4.5.1 Debris and useless materials shall be moved from the activity at directed times and the area of work shall be kept reasonably clean and free of useless materials at all times. At completion of the contract, the area of work and the activity shall be left without containers equipment, and other undesirable materials, and in an acceptable clean condition.

2.29.4.6 **Contractor Availability**

2.29.4.6.1 The contractor shall maintain a telephone at which he or his representative may be reached 24 hours daily. The telephone shall be listed in the contractor's name. If the contractor does not have a local telephone, he shall maintain a toll free emergency telephone number accept collect calls from authorized personnel, at which he or his representative may be reached at night, weekends and holidays.
It is mandatory that the contractor or his representative be available at the toll free telephone number 24 hours daily, 7 days a week, including holidays. The Contractor shall provide

immediate emergency response within four (4) hours of notification.

2.29.4.7 **Guarantee**

2.294.7.1 All services and material under this contract shall be free, of defect in workmanship and or function for a period of one (1) year from final acceptance of the work by the Facility Services Department.

2.29.4.8 **Hazmat Disposal/Removal**

2.29.4.8.1 It shall be the vendor’s responsibility to remove and dispose of all oils, greases, and otherwise hazardous materials in accordance with all EPA and OSHA regulations generated as the result of their performance at no additional cost to the City.

2.29.4.9 **Contractor Management**

2.29.4.9.1 Contractor shall conduct quarterly progress review meeting for DOA summarizing work completed during previous quarter and planned work for next quarter. Minutes of the meeting shall be prepared and delivered to Airport's Maintenance Manager or his designee within five (5) days after meeting.

2.29.5 **Preventive Maintenance Service**

2.29.5.1 Furnish regular and systematic preventive maintenance with monthly inspections on equipment listed in section: 2.29.2. At the time of inspection, contractor shall do the following to keep the City’s system operating properly and with maximum energy efficiency.

2.29.5.1.1 Check for proper refrigerant charge, check for refrigerant leaks, repair leaks and replace any refrigerant loss. Adjust refrigerant charge to insure optimum performance.

2.29.5.1.2 Check operation of purge unit and purge noncondensibles to insure optimum performance.

2.29.5.1.3 Check and adjust all capacity, temperature and safety controls including thermometers and gauges which are a part of the equipment (chillers, pumps, etc.).

2.29.5.1.4 Analyze each machine for proper and efficient operation and performance. Verify proper equipment operation with a full set of log readings taken during inspections.

2.29.5.1.5 Check condition and operation of Safety and limit controls. Verify for proper operation and calibrate as required.

2.29.5.1.6 Determine excessive condenser tube fouling and perform corrective measures if required.

2.29.5.1.7 Check compressors oil level, check oil acidity and/or replace oil as needed.

2.29.5.1.8 Maintain pumps, pumps motors, pump motor starters, seals and packing glands and pump bearing in accordance with respective manufacturer's published maintenance requirements and industry standards.

2.29.5.1.9 Inspect cooling tower fans, their motors, vibration controls, drives and starters. Performs all adjustments, alignments, and lubrication necessary to maintain optimum reliable performance.

2.29.5.1.10 Inspect for proper operation in automatic mode all Systemcon/Robicon drive systems.

2.29.5.1.11 Automatic Temperature Control (ATC) subcontractor shall be required to make Technician available one (1) day per month to perform system checks and calibrations.

2.29.5.2 Contractor's responsibility to include but not be limited to providing the following services at least once a year, or as so directed by the designated authority of the Division of Aviation. There shall be no billing for these items. Perform Eddy current test on all list chillers chilled water and condensers. Test to be perform first year of contract with subsequent bi-annual test.

2.29.5.2.1 Furnish every (6) months written inspection report to the Division of Aviation. These reports shall be detailed analysis summarizing the mechanical condition of all moving and working parts and equipment and shall contain a summary of all major repairs and work to the equipment during the contract. Final payment will not be issued until report is submitted by contractor.

2.29.5.2.2 Annually supply new compressor oil, oil filters, refrigerant filters and filter driers, perform chemical analysis service one per year on all compressor oils. Provide a written report and take corrective steps to insure optimum equipment performance and reliability.

2.29.5.2.3 Remove end bells on chillers both sides of evaporator and condenser and epoxy to insure extended life of tube sheets. At this time contractor will mechanically brush clean condenser and evaporator tubes.

2.29.5.2.4 Pressurize leak check and add or replace refrigerants as needed.

2.29.5.2.5 Notify DOA representative of any manufacturer modifications as they become available for purchase to update or protect the listed equipment.

2.29.5.2.6 Conduct yearly varied tests of motor bar.

2.29.5.2.7 Conduct yearly meg-ohm winding test of the compressor motors.

2.29.5.2.8 Annually check motor and starter lugs and tighten as required.

2.29.5.2.9 Annually conduct start-up inspection including complete log readings. These readings are to be used as a basis for analysis of the readings taken throughout the operating season.

2.29.5.2.10 Semi-annual inspection and conduct performance test of all systemcon/robicon systems. At this time make necessary adjustment to transmitters receivers, and variable speed drives so equipment meets operations design specifications. Also clean all fans, cabinets, and electronic circuitry of dust and dirt.

2.29.5.2.11 Check and adjust all capacity, Temperature and Safety controls including thermometers and gauges which are a part of the equipment listed in Section (2.29.2). Replace gauges and thermometer as needed.

2.29.5.2.12 Annually completely drain and pump out and clean cooling towers basins . Disassemble, clean and replace nozzles as required. Balance tower water as required. Tighten and adjust gearboxes. Replace oil with new, in accordance with original manufacturer’s published specifications.

2.29.5.2.13 Inspect all pumps for leaks. Replace gauges and thermometers as required.

2.29.5.2.14 Perform each manufactures recommended annual preventive maintenance procedures for all chillers motor starters (include procedures in annual report).

2.29.5.3 Provide proper instruction on upgrades and/or new parts and technical advisory service for approximately twelve, (12) designated City operating personnel in the proper and efficient operation of centrifugal liquid chilling systems.

2.29.5.4 Furnish a detailed report within ten days after each inspection to the Airport's Maintenance Manager or his designee. This report will include but not be limited to the following: Lot Readings, Reports on the condition of those items inspected, a scheduling of when needed repairs will be performed by the contractor and recommendations for reducing energy consumption

2.29.6 **DOWN TIME AND SPARE PARTS**

For the purpose of minimizing downtime during emergency service repair and to avoid extended downtime due to the possible unavailability of parts, the contractor shall have stocked in a locked metal cabinet, provided by the contractor at the job site, the following original manufacturer's new parts.

2.29.6.1 One (1) current temperature module each type.

2.29.6.2 Two (2) of each type relay in the control panels.

2.29.6.3 One (1) of each type filter and filter drier required for normal periodic replacement for each chiller.

2.29.6.4 One (1) volume of oil equal to one (1) complete oil change.

2.29.6.5 One (1) quantity of replacement refrigerant equal to 10% of full operating charge.

2.29.6.6 Contractor is responsible for any loss of glycol during scheduled maintenance or damage caused by contractor. Product is Ethylene glycol is downtherm SR-1 heat transfer fluid. hw & chw systems are 30% solutions by volume.

2.29.6.7 One (1) each type, flow switches chilled and condenser lines.

2.29.6.8 One (1) each type various differential pressure switches.

2.29.7 **SPECIAL REQUIREMENTS**

Rooftop units, HVAC, air handling units, air compressors and distribution/return systems.

2.29.7.1 Wherever the terms "repair or replace are used" in a work authorization request, they shall be understood to mean that all damaged or defective materials or parts are to be repaired or replaced with new materials or parts of the same type, styling, grade, class and reliability from same or equivalent manufacturer. Fully repaired finished units shall duplicate the original units in form, fit function and reliability.

2.29.7.2 No repairs other than those included in monthly preventive maintenance (section 2.30.5) shall be made without prior authorization by the utility services superintendent. The contractor shall present a city work order request form 72-90 with a written report of work to be performed, the estimates of cost of parts. The type and amount of work specified performance shall be authorized only by the division of aviation or DOA representative by the issuance of a work authorization request (war) to fully describe the work.

2.29.8 **HVAC Equipment Inventory**

2.29.8.1 **Rooftop Units-HVAC**

A East Terminal	53 Bohn air handlers
A West Terminal	54 Dunham Bush air handlers
B Terminal	4 Mammoth AHU's
Departures	2 Pace (30 Tons DX)
Arrival	11 Dunham Bush AHU's
Bridge	6 Dunham Bush AHU's
Train & Bus	2 G.E. (20 Tons DX)
L. Level Bag M/U	3 Rupp (Heat-Vent)
Terminal	32 Bohn AHU's

Bag Tunnel B-C	12 Joy Model 45 Venaxial Exhaust Fans
C Terminal	
Departures	2 Pace (20 Tons DX), 1 Pace (60 Tons DX)
Arrival	14 Dunham Bush
Bridge	10 Nesbitt Model RMA 150
Train & Bus	2 G.E. (20 Tons)
Terminal	31 Bohn
Main Terminal	18 Bohn
D Terminal	
Departures	6 Mamouth (Air Handlers)
Arrival	7 Mamouth (Air Handlers)
Bridge	9 Mamouth (Air Handlers)
D & E	5 Mamouth (Air Handlers)
E Terminal	
Departures	18 Mamouth (Air Handlers)
Arrival	8 Mamouth (Air Handlers)
Bridge	10 Mamouth (Air Handlers)
Bus & Train	2 G.E. (20 Tons DX)
F Terminal	

2.29.8.2 One hundred seven (107) HVAC air-handling units located in various mechanical rooms at Philadelphia International Airport and Northeast airports.

2.29.8.3 Northeast Philadelphia Airport - 8 DX units/exhaust fans

2.29.8.4 Overseas Terminal - 6 DX air handlers (loft units)

MAKE	SERIAL NUMBERS	MODEL NUMBERS
#1 Trane	K2K227483	Type M-3
#2 Trane	K2K227984	Type M-35
#3 Trane	K2K227985	Type M-41
#4 Trane	K2K227987	Type M-25
#5 Trane	K2K227986	Type M-35
#6 Trane	K2K227982	Type M-35

2.29.8.5 Main terminal – 14 mechanical rooms 47 air handlers (H/C)

AIR HANDLERS

Location	Type/Model
2.29.8.6 Central Util. Bldg.	
AHU-1	York CS-113-FO-FCLP
AHU-2	York CS-113-FO-FCLP
AHU-3	York CS-113-FO-FCLP
2.29.8.7 Mechanical Room #1	
AHU-1	Chrysler Airtemp AV06
2.29.8.8 Mechanical Room #2	
AHU-2	Centralaire HC215
AHU-4	Centralaire HC211
AHU-3	Centralaire HC216
2.29.8.9 Mechanical Room #4	
AHU-6	Chrysler Airtemp SH06
AHU-7	Centralaire HV216
AHU-8	Centralaire HS211
2.29.8.10 Mechanical Room #6	
AHU-21	Chrysler AV06
AHU-20	Chrysler AV06
2.29.8.11 Mechanical Room #7	
AHU-10	Centralaire HC 10
AHU-5	Chrysler Airtemp HV29
AHU-14	Centralaire HC126
AHU-11	Centralaire HC316
AHU-12	Centralaire HC110
AHU-13	Centralaire HC219
AHU-33	Centralaire HC210
2.29.8.12 Mechanical Room #8	
AHU-17	Chrysler AV08
AHU-19	Chrysler Airtemp AV09
AHU-28	Chrysler Airtemp AV11
AHU-30	Chrysler AV15

	AHU-18	Centralaire HC213
	AHU-27	Chrysler AV11
	AHU-29	Chrysler AV11
	AHU-15	Airtherme HC-118
	AHU-16	Airtherme HC215
	AHU-25	Chrysler AV11
	AHU-26A	Centralaire HC111
	AHU-24	Centralaire HC216
	AHU-15A	Centralaire HC215
2.29.8.13	Mechanical Room #10	
	AHU-10	Westinghouse PHY 4369
2.29.8.14	Mechanical Room #12	
	AHU-69	Westinghouse PHY 4369
	AHU-68	Westinghouse PHY 4369-10
2.29.8.15	Mechanical Room #13	
	AHU-74	Westinghouse VA 1616
	AHU-75	Westinghouse PHY 4369
2.29.8.16	Mechanical Room #14	
	AHU-76	Westinghouse HA 17236
2.29.8.17	Mechanical Room #15	
	AHU	Carrier Airtemp
2.29.8.18	Mechanical Room #16	
	AHU-63	Chrysler HH-36

2.29.9 **RECORDS AND DOCUMENTATION**

Wherever the terms “repair and replace” are used in an Work Request, (W/R), they shall be understood to mean that all damaged or defective materials or parts are to be repaired or replaced with new materials or parts of the same type, style, grade, class and reliability from same or equivalent manufacturer. Fully repaired or finished units shall duplicate the original units in form, fit function and reliability.

No repairs other than those included in monthly or annual preventive maintenance program shall be made without prior authorization by the Utility Services Superintendent. The contractor shall present a written report of work to be performed, the estimated time within which work will be complete, and estimates of parts and any other pertinent terms or conditions. No payments will be made for unauthorized work.

Payment for all work will be billed at labor rated quoted in bid. Parts and material will be reimbursed at contractor's net cost plus a percentage (to be supported by invoices).

Emergency repairs are to be provided at rates quoted in bid. Parts shall be reimbursed at contractor's net cost plus a percentage (to be supported by invoices).

2.30 SCHEDULE H - FACILITY AUTOMATED CONTROL SYSTEMS

2.30.1 The Supervisory Control and Data Acquisition (SCADA) System, the Airfield Lighting Control System (ALCS), and the Building Lighting Control Systems (BLCS) are included in this section.

2.30.2 GENERAL DESCRIPTION

2.30.2.1 Work includes furnishing all labor, supervision, material, tools equipment, transportation, all means of construction necessary and reasonably incidental for the performance of testing, maintenance, procedures, and all other requirements of this specification and which may be necessary to complete the work specified.

2.30.2.2 Except as otherwise specified, materials shall be new. Workmanship and materials shall be of the highest quality and shall at a minimum match the workmanship and material quality of the original installation.

2.30.2.3 Materials purchased under this contract shall be manufactured or approved for the use by the original equipment manufacturer.

2.30.2.4 Work shall include:

2.30.2.4.1 Preventive maintenance service as specified.

2.30.2.4.2 Emergency service as specified, including part, labor, travel and all other expenses.

2.30.2.4.3 Providing system manufacturer technical support services for maintenance, diagnostics and training.

2.30.3 **TECHNICAL DESCRIPTION - SCADA**

2.30.3.1 The SCADA system is a central monitoring and control system for the airport's electrical distribution system. SCADA monitors circuit breaker status, voltages and currents throughout the electrical system, and allows remote operation of some devices. The system is a General Electric Power Leader System employing the General Electric Genius Local Area Network (LAN). The system software is Windows 2000 based Intouch software, including GE PMCS, Cutler Hammer Powernet and Wonderware Intouch .

2.30.3.2 Furnish all labor, tools, equipment, connections, material and work required for the maintenance as specified for the SCADA system. The system consists of six (6) IBM-compatible personal computers with Intel Pentium-4, 1.8 GHz processors, programmable logic controllers, input/output devices, interconnecting wiring and software.

2.30.3.3 The SCADA system consists of the following components:

Six (6) Pentium-4, 1.8GHz IBM-compatible personal computers with Ethernet LAN cards GE Genius LAN card (PCIM), 153.6k, 5SVGA monitors, 1 L2320A Flatron 23” LCD monitor, 6 mice and keyboards and (6) 20 Gigabyte hard disk drive drives.

(3) GE Series 90-70 programmable logic controllers in 9-slot racks, with a total of 12 Genius Bus Controllers, Programmable Processor Modules and Power Supplies.

(87) GE Power Irac power monitoring devices.

(11) GE Ethernet Gateway Serial Port Servers.

(114) GE MicroVersa Trip Unit Circuit Breaker Protective Device.

(52) GE PQM Power Quality Meters.

(16) IQ4000 Power Meters

(12) Digitrip 3000 Circuit Breaker Trip Units

(63) Digitrip Circuit Breaker Trip Units

(2) IQ Data Plus 2 Power Meters

(2) IQ Analysers

(2) Nortel BPS2000 Network Switches with 2 SM fiber ports each

(3) SM GBICs for the Nortel Passport 8600

(1) 4 port copper, 4 port MM fiber Ethernet switch

(2) 4 port copper, 1 port MM fiber Ethernet switch

(3) 5 port MM Fiber, 1 port copper Ethernet hub

(7) copper to MM fiber Ethernet media converters

(2) copper to SM fiber Ethernet media covers

(44) GE Multilin Feeder Protection Relays (either ML-75ML-745 or ML-735).

(6) Modbus Concentrator Protocol Converters

(63) GE Genius Input/Output (I/0) blocks, 8 point

(59) GE Electronic Power Meters

(2) Cutler Hammer D-725 Data Collector Nodes

(2) Cutler Hammer Netlink Ethernet Gateway Serial Port Servers

(2) Master Network Translator Units

(12) Westinghouse Digitrip RMS 800 Circuit breaker trip units.

(1) Mimic Panel Control Wiring Belden #9182

2.30.3.4 The SCADA system monitors the following equipment:

Main Terminal Substation - (29) 15KV circuit breakers

Main Terminal Substation - (30) 5KV circuit breakers

Terminal 'A' West Unit Substations - (108) circuit breakers

Terminal 'A' West Emergency Substation - (6) circuit breakers

Cargo City Substation - (22) 15KV circuit breakers

Cargo City Substation - (18) 5KV circuit breakers

Unit substations - (24) low-voltage circuit breakers

Double-ended unit substations (18) low-voltage circuit breakers

Engine generator sets (2)

Smoke control system (status only)

2.30.3.4.1 Each circuit breaker listed is monitored for three voltages and three currents, open or closed status, and allows opening and closing of the circuit breaker.

2.30.4 **TECHNICAL DESCRIPTION - AIRFIELD LIGHTING CONTROL SYSTEM (ALCS)**

The basic purpose of an airfield lighting system is to operate and monitor airfield lighting and navigation systems. The system is touchscreen controlled at the FAA air traffic control tower, maintenance shop, and in each vault.

The Digitrac Airfield Lighting Control System (ALCS) developed by Crouse-Hinds Airport Lighting Products is designed to provide command and monitoring information in real time, to the air-traffic controllers and to the maintenance staff, as well as historical information on the status of the airfield lighting.

The ALCS includes Human-Machine Interfaces (HMIs), computer systems, communication networks, a computerized CCR interface (Digitrac Interface DI) and complementary equipment.

The ALCS is a fail-safe system that ensures continued operation of the airfield lighting, even if one (1) or all of the computers/controllers in the system fail.

In addition to the control and monitoring functions, the ALCS continuously executes diagnostic programs to locate failure in the system itself, and provides remote access capability services that enable remote diagnostics.

The Digitrac system has an advanced distributed structure, which guarantees its flexibility, modularity and availability. The unique distribution structure of the system simplifies its installation and maintenance. Implementation of the system guarantees that each

controllable element in the system (Constant Current Regulators (CCR), generator, general elements and etc.) has its own control unit which is connected to the ALCS vault communication network.

The Digitrac system includes a user-friendly data entry system built especially for airfield lighting applications, and it supports field programming and downloading techniques that simplify system start-up, modifications and expansions.

The system main components are:

- Human Machine Interfaces (HMIs).
- Computers (tower/vault/maintenance, etc.)
- The airport communication network connecting the tower, lighting vaults, maintenance office, etc.
- The four (4) electrical vault (sub-station) communication networks.
- The CCR interface (Digitrac Interface).

ALCS System Components
The components in the system are as follows:

1. **Control Tower**

Description	**Model**	**Qty.**
20" Flat Panel LCD w/touchscreen	NEC, NIS-NCD-2010-214	2
Industrial computer	Texas Microsystems 3213P	2
Modem	RAD Data Communications SRM-5A	4
15" Color CRT Monitor	NEC E500 MultiSync Enterprise Series Monitor	1
Uninterruptible Power Supply	Tripp Lite SMART 2200 RM	1
PC Video extender transmitter	Black Box AC072A	2
PC Video extender receiver	Black Box AC072A	2
Fast Ethernet Cards		4
Network Switch	Nortel BPS2000 with 2 SM fiber ports	1
Vario Rack	Rittal VR 381551	1
Enclosure Light	Rittal PS 4143	1
Fan Assembly	Rittal SK 3340.230	1
Vario Rack Filter	Rittal VR 3804	1
Speaker	Radio Shack 277-1008	2

2. **Field Lighting Equipment Room**

Description	**Model**	**Qty.**
Industrial computer	Texas Microsystems 3213P	2
15" color CRT	NEC MultiSync E500	2
Fast Ethernet Cards		4

Network Switch	Nortel BPS2000 with 2 SM fiber ports	1
Echelon Modular Transceiver	Lonworks 77030	2
Echelon PCNSI PC Card	Lonworks 35100	2
Vario Rack	Rittal VR 381551	2
Enclosure Light	Rittal PS 4143	2
Fan Assembly	Rittal SK 3340.230	2
Vario Rack Filter	Rittal VR 3804	2
Digitrac Interface	For CCRs, P/N 10056-0148	11
Digitrac Interface	For On-Off Elements P/N 10056-0349	1
Uninterruptible Power Supply	Tripp Lite SMART 2200 RM	1

3. **Field Lighting Vaults No. 2,3,4**

Description	**Model**	**Qty.**		
		Vault 2	**Vault 3**	**Vault 4**
15" Monitors	NEC, MultiSync E500	2	2	2
Industrial Computers	Texas Micro 3213P	2	2	2
Echelon Modular Transceiver	Lonworks 77030	2	2	2
Echelon PCNSI PC Card	Lonworks 35100	2	2	2
Uninterruptible Power Supply	Tripp Lite SMART 2200 RM	1	1	1
Fast Ethernet Cards		4	4	4
Network Switch	Nortel BPS2000 with 2 SM fiber ports	1	1	1
Vario Rack	Rittal VR 381551	2	2	2
Enclosure Light	Rittal PS 4143	2	2	2
Fan Assembly	Rittal SK 3340.230	2	2	2
Vario Rack Filter	Rittal VR 3804	2	2	2
Digitrac Interface	For CCRs, P/N 10056-0148	12	24	11
Digitrac Interface	For On-Off Elements, 10056-0349	0	1	1
Digitrac Interface	For Generator, P/N 10056-0349	0	1	0

4. **Electrical Maintenance Office**

Description	**Model**	**Qty.**
Desktop PC	Micron Client PRO VXE 233 MHz	1
15" Color CRT	NEC MultiSync E500	1
Printer	Hewlett Packard HP LaserJet 6L	1
Uninterruptible Power Supply	Tripp Lite SMART 2200	1
Fast Ethernet Cards		2
Network Switch	Nortel BPS2000 with SM fiber ports	1

5. **Training Station**

Description	**Model**	**Qty.**
Desktop PC	Micron Client PRO VXE 233 MHz	1
15" Color CRT	NEC MultiSync E500	1
Uninterruptible Power Supply	Tripp Lite SMART 2200	1

The system environment is:

Development Environment:	Microsoft Visual C++
Operating System:	Windows NT
Network Protocol:	TCP/IP
Network:	FDDI
Database:	Microsoft Access

System Operation

The air-traffic controllers enter the commands that control the ALCS via the two (2) 20" touchscreens located in the ATCT cab, and one (1) 15" Color CRT Monitor located in the ATCT equipment room. The touchscreens are each driven by an industrial computer, and can be operated by two (2) air-traffic controllers either simultaneously or separately.

The design of the system is such that any terminal in the system can access any page and data available in the system, and can accept commands for all the controllable elements in the system, provided that the relevant terminal or operator has the clearance to access and command those elements. The Philadelphia International Airport ALCS includes eleven (11) terminals: two (2) in the ATCT, one in the maintenance facility, two (2) in each of the three (3) electrical vaults and two (2) in the field lighting equipment room. A further terminal is located is the training station, but this is not connected to the communication network.

The system is flexible enough to allow the introduction of any interlocks related to the interaction between the various terminals (tower and maintenance) and the operational procedures used to define who can do what and how. The tower computer registers the traffic controller action as a command, and in response generates the data for transmission to the Electrical Vaults for execution and to the Maintenance Office and operation terminals for information.

The transmission of data and instructions from the ATCT to the electrical vaults is performed via two (2) FDDI communication networks. Any malfunction in one (1) of the networks transfers the communication to the remaining network, without impairing the ALCS operation. The vault computers receive the air traffic controllers' commands via two VLAN Ethernet networks that reside on a single loop network using a SM fiber backbone, and transmit them to the CCRs via the vault redundant communication network. Any malfunction in one (1) of the VLANs, or in a network interface, transfers the communication to the other VLAN, without impairing the system functionality.
Any malfunction in a single network switch will trigger the network to reconfigure to allow the remaining functional network components

to communicate. Each of the vault redundant communication networks is based on a twisted pair (two wires). Computerized CCR Interface (Digitrac Interface) is connected to each controllable element in the system (CCR, generator and other General Elements). The Digitrac Interfaces are connected to the vault redundant communication network via connectors.

Each Computerized CCR Interface (Digitrac Interface) receives the data relevant to its operation, and executes the command via a fail-safe sub-module. The fail-safe sub-module provides the contact-closure control output to each controllable item, as well as visual indication (using LED's) on the status of the ALCS commands to the controllable items. At the same time, the fail-safe sub-module ensures the functioning of the airfield lighting in the event of failure in the ALCS, even in the event of failure of the electrical vault equipment or even in the Digitrac Interface itself.

The fail-safe sub-module provides a combination of active fail-safe mode (automatic activation of CCRs and/or other elements in case of computer failure) and passive fail-safe mode (continues to execute the last command).

Concurrent with command execution, each Digitrac Interface verifies the status of the CCR (FAA L-827 monitoring) and circuit connected to it, and transfers the data to the ATCT and to the maintenance terminals.

In the case of a failure of any controllable element in the field, the ALCS identifies the type of the failure:

- If the failure is related to the operations aspect of the airport, an immediate alarm message is sent to the tower, maintenance and operation terminals activating the visual/audible alarm.
- If the failure does not affect the operation of the airport, the problem is displayed on the maintenance and operation terminals only.

The tower command functions are duplicated on the electrical vaults' HMI. At the discretion of the air traffic controllers in the tower, total control may be relinquished to the vault. This mode of control is positively maintained until relinquished back to the tower.

The distribution of the command and monitoring functions between all the Digitrac Interfaces significantly increases the reliability and availability of the system, and facilitates system maintenance and troubleshooting. Monitoring of the status of each command output in the vaults, based on positive back-indication from all the relay outputs is provided. This enables the maintenance team to sectionalize malfunctions to the control system or to the CCR itself.

2.30.5 **TECHNICAL DESCRIPTION – BUILDING LIGHTING CONTROL SYSTEM**

2.30.5.1 Terminal A West will contain a building lighting control system.The system will control interior and exterior switching of lighting circuits. Photo cells will measure light levels. During daytime, interior electric lighting will be shut-off to reduce electrical usage. System will control exterior floodlighting for nighttime illumination. System will also control departure roadway lighting providing for higher illumination levels during daytimes than at nighttime's. The system uses a Square D controllable circuit breakers, photo cells, and Siemens building automation system.
Automated Lighting Control Systems (ALCS)

Systems for Terminals A West and F to regulate interior and exterior lighting levels during the daylight periods.

Lutron Equipment - Terminal 'A' West

37 CXP42-2774ML-20-CGP519 42 Circuit Lighting Control Panels

2 GR6MXINP Lighting Control Processor

15 NTOMX-2B-WH Sov Wall Control

3 MX-RPTR Low Voltage Digital Signal Booster

4 OMX-AV
Contact Closure Input Device used to accept input from photo switch

1 Desktop P.C.
(Not on site yet) We will be supplying a laptop PC to meet specification and DOA requirements. However only one PC may be connected to the control system at a time.

2 NTOMX-62JWH
Wall jack to connect the PC to the lighting control system

3 PJ62P-ADPT-1

RS-232 to RS-485 converter. Required to convert the output of the PC into RS-485 protocol.

Maintenance of Lutron Equipment (GP Panels)

Controls – Every 6 Months

Clean front surface of control with a soft towel moistened with a mild soap solution (non- ammonia based). Do not spray cleaning solution onto control as it may reach internal components.

Power Panels

1. Clean any dirt from air vent openings with a vacuum and check for any obstructions which may block air flow. Please maintain 6” of obstructed area on top, bottom and front of power panel.

2. If any extra wiring is brought into power panel, be sure all metal chips, wire strands, insulation or other debris is thoroughly removed before reapplying power.

3. In the unlikely event o damage to dimming equipment, install the bypass jumper into (DH-SH-H) terminal block of the affected circuit. This will eliminate dimming equipment from circuit and apply full power to fixtures.

Fixtures

1. It is important that lamps are maintained properly to prevent what may appear as dimming equipment malfunctions. When lamps begin to fail on a circuit, Lutron recommends group relamping of the entire circuit.

2. Fluorescent lamps must be burned in at full light output for at least 100 hours to achieve proper dimming performance.

2.30.5.2 Maintenance of system will be as directed by the Airport's Maintenance Manager or his designee.

2.30.6 **PREVENTIVE MAINTENANCE SERVICES**

2.30.6.1 SCADA System Periodic Maintenance: Perform the following maintenance procedures at the listed intervals:

2.30.6.1.1 Computer maintenance (monthly)

2.30.6.1.1.1 Clean monitor screens

2.30.6.1.2 Clean keyboard and keyboard contacts.

2.30.6.1.3 Replace printer ink

2.30.6.1.4 Manage disk drive

2.30.6.1.5 Run system diagnostic software to assure proper operation.

2.30.6.1.2 System maintenance (every three months)

2.30.6.1.2.1 Call up each screen on the computer. Verify a reading for each input.

2.30.6.1.2.2 Visually inspect programmable logic controllers (plc) for problems; replace and reprogram as required.

2.30.6.1.2.3 Replace defective or failing cards or other components.

2.30.6.1.2.4 Replace burned-out lamps in mimic panel. Verify that mimic panel indicates the same device status as the computer.

2.30.6.1.3 System analysis, testing and maintenance (every six months)

2.30.6.1.3.1 Submit a plan for system analysis and testing which will simulate or create alarm conditions.

2.30.6.2 ALCS Periodic Maintenance:

2.30.6.2.1 **Quarterly Maintenance**

2.30.6.2.1.1 Clean computer screens, keyboards, equipment racks and Digitrac units

2.30.6.2.1.2 Run system diagnostics software and evaluate system performance.

2.30.6.2.1.3 Optimize system hard disk drives.

2.30.6.2.1.4 Visually inspect digitrac units, cabling, equipment racks, connections, communication components. Correct any items not within original specification.

2.30.6.2.1.5 Call up each screen to verify system.

2.30.6.2.2 **Semi-Annual Maintenance**

2.30.6.2.2.1 Replace defective or failing disk drives, cards or other components.

2.30.6.2.2.2 Simulate single communication link failure to assure proper system operation. Restore system failures to original specifications.

2.30.6.2.2.3 Disconnect 10 lights on 20% of lighting circuits to verify operation of lamp monitoring system. Restore to original specifications.

2.30.6.2.2.4 Review system logs to determine system errors, troubles and faults. Restore to original specifications.

2.30.6.2.2.5 Completely test system uninterruptible power supplies. Report on condition.

2.30.6.2.3 **Annual Maintenance**

2.30.6.2.3.1 Provide minimum 8 hours on site manufacturer technical personnel for complete operational testing, system calibration, and diagnostics. Make necessary software modification for proper and optimal performance of system. Within 14 days of completion of onsite technical support, manufacturer shall provide written report indicating status of system as found, modifications made to system, status of system as left, summary of necessary system upgrades need in next year with pricing, other improvements that may be beneficial with costs, and other pertinent information about the system performance.

2.30.6.2.3.2 Calibrate touchscreen buttons.

2.30.6.2.3.3 Replace printer toner cartridges on an as-needed basis.

2.30.7 **SPECIAL REQUIREMENTS**

2.30.7.1 Service Call and Response Time: Maintenance for failures will be on a demand basis with a response time of 24 hours 7 days a week.

2.30.7.2 Parts: Replace defective or failing parts immediately. Replenish Division of Aviation's spare parts stock to original quantities as soon as practicable. Defective or failing parts not replaceable from Owner's stock shall be replaced by the contractor in the quickest available manner, if such component causes failure, imminent failure or operational malfunction of the system. If original components are no longer available from the manufacturer, provide alternate source for parts.

2.30.7.3 Manufacturer's Support: Periodically factory support may be required to assist with programming functions and computer related services; to support diagnostic and trouble shooting - touch screen maintenance and communications link capability; also during annual service the factory service representative must be on site.

2.30.8 **SPARE PARTS**

2.30.8.1 The Contractor will maintain spare parts in accordance with the manufacturer's recommendations. The parts are to include switches, alarm modules and power supplies. The number of each type should be 10% of the total in the system.

2.30.8.2 Provide the spare parts at the beginning of the contract as directed by the Airport's Maintenance Manger or his designee.

2.30.9 **RECORDS/DOCUMENTATION**

2.30.9.1 All work will be initiated from the airport's work control center through the issuance of a work order. The work control center will only phone and/or radio in priority 1, emergency requests.

2.30.9.2 All hours and parts used will be logged onto the work orders. Work that is not completed at the end of the day will have all of the hours and parts logged to it daily until completed.

2.30.9.3 Submit all proposed PM procedures and support information on approved work sheets, along with recommended

frequencies for approval by the Airport's Maintenance Manager or his designee. The PM information will be entered into the computerized maintenance management system.

2.31 SCHEDULE I -UNINTERRUPTIBLE POWER SUPPLY (UPS)

2.31.1 GENERAL DESCRIPTION

2.31.1.1 Work includes furnishing all labor, supervision, material, tools, equipment, transportation, all means of construction necessary and reasonably incidental for the performance of testing, maintenance procedures and all other requirements of this specification and which may be necessary to complete the work specified.

2.31.1.2 Furnish all labor, tools, equipment, connections, material and work required for the maintenance as specified for the Uninterruptible Power Supply (UPS) System. The system is a Lortec LE3038, 37.5 KVA unit. Maintenance shall include scheduled service and emergency service as specified.

2.31.1.3 Except as otherwise specified, materials shall be new. Workmanship and materials shall be of the highest quality, and shall match as a minimum the workmanship and material quality of the original installation.

2.31.1.4 Materials purchased under this contract shall be manufactured or approved for the use by the original equipment manufacturer.

2.31.1.5 Work shall include:

2.31.1.5.1 Preventive maintenance service as specified.

2.31.1.5.2 Emergency service as directed including parts, labor, travel and all other expenses.

2.31.1.5.3 Hardware and software upgrade to current manufacturers revision to permit enhanced diagnostics, remote access and printable logs. This shall be completed within three (3) months of contract notice to proceed.

2.31.2 TECHNICAL DESCRIPTION

2.31.2.1 The UPS System consists of a three-phase rectifier, a transistor-type pulse-width modulated inverter, and a set of valve-regulated lead-acid batteries. The system operates on a 208Y/120 Volt, 3-phase, 4-wire input, +10%, -15%, 60Hz, ±5%.

2.31.2.2 Output ratings: 30KVA at 0.80 lagging power factor; 208Y/120Volts, ±1% regulation, including combined effects of minimum to maximum AC input voltage, zero to full-rated load and maximum to minimum DC voltage; dynamic regulation ±5% from nominal voltage for 50% step load recovering to within ±1% in 50 ms; harmonic distortion 5% total, 3% single into linear load; overload: 125%-15 minutes, 150%-1 minute, 300%-1 cycle, (inverter) 1000%-1 cycle (bypass); frequency 60Hz, ±0.1%; slew rate < 1 Hz/second; efficiency 88.2% minimum; maximum input current, 142 amps.

2.31.2.3 DC input: 387 to 405 Volts DC float, 405 to 423 Volts equalize; maximum discharge current (@ 297 Volts) 111 amps; efficiency 92.0%.

2.31.2.4 Battery output: 2.25 to 2.27 Volts per cell nominal float; 1.65 Volts per cell minimum discharge voltage at 77 degrees F; 360 Volts nominal total output; 60 minute output at full load (fully charged).

2.31.2.5 Features:

2.31.2.5.1 Digital Monitoring Panel, indicating following parameters:

a. Input voltage
b. Input current
c. Input frequency
d. Output voltage
e. Output current
f. Output frequency
g. "UPS Normal" Light
h. "Low Battery Voltage" Light
i. "UPS overload" Light
j. "Transferred to Bypass" Light
k. "Transfer Not Available" Light
l. "Battery Not Available" Light
m. "Retransfer Inhibited" Light

2.31.2.5.2 Battery Time Remaining Display

2.31.2.5.3 Audible Alarm

2.31.2.5.4 Emergency Power Off Button

2.31.2.5.5 Remote Summary Alarm Contact

2.31.2.5.6 RS232 Output

2.31.2.5.7 Remote Indicator at Communications Center

2.31.2.6 Testing and Maintenance Procedures

2.31.2.6.1 Preventive (Periodic) Maintenance: Perform the following preventive maintenance procedures at the indicated intervals:

2.31.2.6.1.1 Air Filters: Filters, installed in the bottom of the cabinet, eliminate particles from the air which is used to cool the UPS. Check and replace two times a month. Filters are standard fiberglass furnace filters of the following sizes: 15-100 kVA UPS-16"x25"x1"

Complete and thorough cleaning shall be performed quarterly.

2.31.2.6.1.2 Air Flow: Check blower fans for cleanliness and proper operation annually. These are located behind the plastic guard and should only be checked during a period when the UPS is in Maintenance Bypass mode.

2.31.2.6.1.3 Cable Connections: Check cable connections to circuit breaker and switch terminals whenever the system is powered down and at least annually. This necessitates removal of the circuit breaker panel to gain access.

2.31.2.6.1.4 Dial In Self Diagnostics: Check dial in diagnostic and trouble log on a weekly basis and log results. Perform maintenance as required.

2.31.2.6.2 Battery Maintenance

2.31.2.6.2.1 Safety Precautions: Servicing of batteries should be performed or supervised by personnel knowledgeable of batteries and the required precautions as prescribed by the manufacturer shall be followed. Keep unauthorized personnel away from batteries.

When replacing batteries, use the same number and the following type of batteries: sealed lead acid. All batteries in a cabinet shall be from the manufacturer and the same part number.

2.31.2.6.2.2 This contract shall include a complete, life cycle replacement of all batteries. The replacement shall occur during the 3rd year of this contract. Batteries specification shall comply with the manufacturers recommended type.

2.31.2.6.2.3 Determine if the battery is inadvertently grounded. If inadvertently grounded, remove the source of the ground. Contact with any part of a grounded battery can result in electrical shock. The likelihood of such a shock will be reduced if such grounds are removed during installation and maintenance.

2.31.2.6.2.4 Inspection and Periodic Maintenance: This procedure should be performed annually or whenever batteries need to be replaced.

2.31.2.6.2.4.1 Place the battery pack in Maintenance Shutdown condition.

2.31.2.6.2.4.2 Visually inspect the inside of the cabinet for:

a. Leaking acid
b. Corrosion on frame and electrical parts.
c. Loose or discolored electrical connections, especially around the Bus bars, Cable connections and Tray clips.

2.31.2.6.2.4.3 Slide out one battery tray onto a lift hand truck.

2.31.2.6.2.4.4 Inspect each battery post for corrosion or discoloration. If post is discolored or corroded remove battery cable and clean the post and cable connector shiny bright. Replace cable, torque cable connector screw to 75 lb-in (8.5 N-m) and apply a generous amount of grease (Dow Corning silicone grease or equal) to the battery posts and connectors. (All makes of batteries do not require the same torque. When in doubt, refer to battery manufacturer's specifications.)

2.31.2.6.2.4.5 If not removed and cleaned, torque all cable connector screws to 60 lb-in (6.8 N-m).

2.31.2.6.2.4.6 Repeat until all battery trays have been inspected, cleaned and greased.

2.31.2.6.2.4.7 Retighten power cable connections between the DC Disconnect switch and the UPS.

2.31.2.6.2.4.8 Slowly push battery trays back toward the bus bars. Make certain the battery tray clips will properly engage the bus bars, then push the battery trays back as far as possible. When each tray is fully back, replace the two bolts that fasten it to the slide.

2.31.2.6.3 Battery Test: Batteries should be tested whenever a battery-related problem is suspected or at annual intervals. The procedure described is for individual batteries and requires the use of a Balkamp 700-112 Battery Tester or equivalent. The tester is rated for 100 amps, 12 vdc. It checks voltage under load.

Batteries shall be tested in their full-charged state, but not within 24 hours of having been equalized (recharged). Batteries should be left in their trays during testing.

2.31.2.6.3.1 Perform Maintenance Shutdown procedure.

2.31.2.6.3.2 Slide out the desired battery tray onto a lift hand truck.

2.31.2.6.3.3 Test each battery separately.

2.31.2.6.3.4 Using a digital voltmeter which can be read to 0.01 vdc, check the voltage across the posts of the batteries, one at a time. Record the voltage readings for each battery. If the voltage does not read at least 12.40 vdc, replace the battery.

2.31.2.6.3.5 If the battery's voltage is satisfactory, use the battery tester. Attach the red battery tester cable to the positive (+) battery pole; attach the black cable to the negative (-) battery pole.

2.31.2.6.3.6 Press the LOAD switch. (If using a brand of tester other than the Balkamp, follow the tester's operating instructions.)

2.31.2.6.3.7 In approximately 10 seconds, the tester needle should be in the "good" (green) area. If not, replace the battery.

2.31.2.6.3.8 Perform the same tests on all batteries in the cabinet. (Allow the tester to cool between tests.)

2.31.2.6.3.9 For proper operation, each battery in the cabinet should show voltage readings within $\pm$0.10 vdc of their average. If full agreement of battery voltages cannot be obtained, contact the Airport's Maintenance Manager.

2.31.2.6.3.10 Return the battery trays to their normal position.

2.31.2.6.4 Inspection: Annually

2.31.2.6.4.1 **VISUAL INSPECTION** - Inspect the power module and logic boards for cleanliness.

2.31.2.6.4.2 **MECHANICAL INSPECTION** - Inspection of the Connections listed below for proper tightness.

A. Charger Leg
B. Inverter Legs
C. SSW Leg
D. Power Semi- Conductors
E. Subassembly (ies)
F. Power Connections

2.31.2.6.4.3 **ELECTRICAL INSPECTION** - Recording of bypass voltages for:

A. Phase A - Phase B
B. Phase B - Phase C
C. Phase C - Phase A

2.31.2.6.4.4 Recording of logic power supply voltage

2.31.2.6.4.5 Charger check by:

A. Recording of AC input voltage for:
- Phase A - Phase B
- Phase B - Phase C
- Phase C - Phase A

B. Verifying proper:
- DC Walk-up
- DC waveform
- ACUV-SLOW TRIP

C. Recording of DC holding voltage

2.31.2.6.4.6 Inverter Energization by:

A. Verifying proper inverter phase-on

B. Recording of inverter output voltages for:
- Phase A
- Phase B
- Phase A-N
- Phase B - Phase C
- Phase B-N
- Phase C - Phase A
- Phase C-N

C. Verifying proper output waveforms

2.31.2.6.4.7 **BATTERY APPLICATION INSPECTION**

Verifying proper DC Walk-up to float voltage.

Recording of:

A. Float voltage
B. Equalize voltage
C. Battery discharge
D. DCUV warning
E. DCUV Trip

Check frequency band width adjustments

2.31.2.6.4.8 **TRANSFER INSPECTION**

Inspection of SSW leg by:

A. Verifying proper gating
B. Inspection for SCR leakage (Series 3000)

Verifying proper transfers:

A. To the UPS (all three phases)
B. To bypass (all three phases)
C. From UV to bypass
D. Automatically to UPS

2.31.2.6.4.9 **UTILITY OUTAGES INSPECTION**

Repetitive outages by:

A. Verifying proper critical bus stability

Extended outage by:

A. Verifying proper Battery support of load
B. Recording of Battery voltage after during test
C. Verifying proper utility restoration:
- Inverter synchronization
- Charger walk-up
- Recording of charger current limit

Operation of Emergency Generator interface with UPS by verifying proper:

A. Generator auto-start
B. Generator auto-transfer
C. Charger operation
D. Inverter synchronization
E. Restoration of utility

2.31.3 **SPECIAL REQUIREMENTS**

2.31.3.1 Service call and response time: Maintenance for Failures will be on a demand basis 24 hours a day, 7 days a week with a response time of one (1) hour.

2.31.3.2 Replace defective or failing parts immediately from the Division of Aviation's available spare parts stock. Replenish Division of Aviation's spare parts stock to original quantities as soon as practicable. Defective or failing parts not replaceable from owner's stock shall be replaced by the contractor in the quickest available manner, if such component causes failure, imminent failure or operational malfunction of the unit.

2.31.3.3 Annual inspection and testing of UPS shall be witnessed and/or performed by a factory representative certified by the UPS manufacturer. The factory representative shall provide an equipment assessment report identifying the condition of the equipment and any repairs or upgrades necessary.

2.31.3.4 Upgrade/replace UPS control processor to manufacture current version. Processor consists of rack mounted industrial grade computer and accessories. Provide additional upgrades as required to support the manufacturers latest software and remote capabilities. Upgrade UPS software to manufacturer's current version. Provide additional upgrades as required so that the manufacturer's latest version is operating the UPS.

2.31.4 **SPARE PARTS**

2.31.4.1 Replenish the Division of Aviation's spare parts used for service as in 2.31.3.2, above.

2.31.4.2 Provide and maintain on site the following Division of Aviation spare part stock:

- 100% quantity of Fuses
- 1 Each Fan
- Display Panel Printed Wire Board (PWB)
- Power Supply PWB
- Memory PWB
- UPS Interface PWB
- UPS Control Module
- Input Filter
- Output Filter
- Power Assembly
- Temperature Sensing PWB
- Transient Suppressor PWB
- 3 Months' Supply of Air Filters

2.31.5 **RECORDS/DOCUMENTATION**

2.31.5.1 All on demand work will be initiated from the airport's work control center through the issuance of a work order. The work control center will only phone in priority 1, emergency requests.

2.31.5.2 All hours and parts used will be logged onto the work orders. Work that is not completed at the end of the day will have all of the hours and parts logged to it daily until completed.

2.31.5.3 Submit all proposed PM procedures and support information on approved work sheets, along with recommended frequencies for approval by the Airport Maintenance Manager. The PM information will be entered into the computerized maintenance management system to be generated at the set frequencies.

2.32 **SCHEDULE J - SWITCHGEAR**

2.32.1 **GENERAL DESCRIPTION**

2.32.1.1 The work consists of testing, calibration, maintenance, and repair of the Airport's electrical switchgear, substations and equipment as hereinafter specified. The work shall be performed by personnel thoroughly familiar with the equipment, testing, adjusting, and safety standard required. All operational functions shall be by Division of Aviation. Repairs will be by the Contractor.

2.32.1.2 The manufacturers of the medium voltage substation switchgear are: Main Terminal Substation - General Electric Company, Cargo City Substation - General Electric Company, Bernard Henry Substation (Island Avenue) – Cutler Hammer.

2.32.1.3 The substations are in continuous operation and all service interruptions must be carefully coordinated with Airport’s Maintenance Manager or his designee to keep downtime to a minimum. Any interruptions which will cause the disruption of normal Airport operations shall be scheduled between 11:00pm and 5:00am. The Contractor shall provide all manpower, tools, equipment, and transportation to expedite tests and maintenance.

2.32.1.4 Multiple substations fed from the same feeder will have their preventive maintenance tasks accomplished at the same time. Provide sufficient staff to perform specified maintenance simultaneously at up to four substations in order to minimize disruption to DOA or tenant facilities.

2.32.1.5 In addition to items outlined below, preventive maintenance includes compartment heaters and air filter change outs in compartments and substation spaces. Filter changes shall be monthly.

2.32.1.6 The successful bidder must be able to perform at minimum the following tasks:

2.32.1.6.1 Complete calibration, testing on switchgear, Protective relays, meters, instrumentation, substations, all types of transformers, cables and meters.

2.32.1.6.2 Services shall include insulating liquid tests (including PCBs) infrared scanning and cable fault locating, D.C. high potential and double testing.

2.32.1.6.3 The Airport may request of the contractor engineering services which may include, but are not limited to, systems analysis, load studies,coordination studies, short circuit analysis, power factor and emergency evaluations. Said services will be predicated on the prior receipt by the Airport, of a scope of services statement and cost estimate.

2.32.1.7 Labor rates shall include all labor, tools, materials and equipment necessary to perform the switchgear work on the substations specified herein.

2.32.1.8 The inventory of electrical switchgear, substations and equipment include:

Equipment	*Existing*
Medium Voltage Service Switchgear	4
Generator Switchgear	1
Medium Voltage Oil Switches	9
Unit Substations	41
Other Medium Voltage Switching Equipment	24

2.32.2 **TECHNICAL DESCRIPTION**

2.32.2.1 Medium Voltage Substation Equipment

Listed below are locations and descriptions of major medium voltage substation equipment.

2.3.2.1.1 Main Terminal Substation:
Dual Service, Dual Voltage
15 KV Equipment Descriptions
30 GE VBI 13.8-500-3, 1200A
13.2KV rollout type, 250 MVA Rating.

- 2 Main Breakers (P.E.lines)
- 28 Feeder Breakers
- 1 Tie Breaker
- 2 PH SEQ + UV Relays
- 2 Frequency Relays

- 6 Bus Diff. Relays
- 30 Digital Meters (EPM)
- 2 Frequency Relays
- 6 Bus Diff. Relays
- 30 Digital Meters (EPM)
- 2 Basler Neutral o/c Relays
- 2 Basler Dir. o/c Relays
- 32 Schweitzer SEL 551 3PH Digital o/c Relays
- Device 136 VDC Battery Bank & Rectifier/Charger
- Over Voltage Relay
- Device 86 Lockout Relay
- Device 43 Auto/Manual Control
- CB Lift Truck
- LAs
  5 KV Equipment Descriptions
  30 GE type VBI 4.16-350-3, 1200A
  5KV rollout type breakers.
- 6 Trans Diff. Relays
- 3 Tie 5Kv CB's T2,T3, T4
- CB Test Station
- Ground Truck
- 2 Trans Sudden PRS Relay
- 1 PH SEQ + UV Relay
- 36 Digital Meters (EPM)
- 2 Basler Sync Check Relays
- 36 Schweitzer SEL 551 3PH Digital o/c Relays
- 2-8MVA 13.2kV - 4.16 Silicone Filled Transformers
- Power Factor Correction
- 2 Capacitor Banks
- CTs, PTs & CPTs 2 Frequency Relays
- 6 Bus Diff. Relays
- 30 Digital Meters (EPM)
- 2 Basler Neutral o/c Relays
- 2 Basler Dir. o/c Relays
- 32 Schweitzer SEL 551 3PH Digital o/c Relays
- Device 136 VDC Battery Bank & Rectifier/Charger
- Over Voltage Relay
- Device 86 Lockout Relay
- Device 43 Auto/Manual Control
- CB Lift Truck
- LAs
  5 KV Equipment Descriptions
  30 GE type VBI 4.16-350-3, 1200A
  5KV rollout type breakers.
- 6 Trans Diff. Relays
- 3 Tie 5Kv CB's T2,T3, T4
- CB Test Station
- Ground Truck

- 2 Trans Sudden PRS Relay
- 1 PH SEQ + UV Relay
- 36 Digital Meters (EPM)
- 2 Basler Sync Check Relays
- 36 Schweitzer SEL 551 3PH Digital o/c Relays
- 2-8MVA 13.2kV - 4.16 Silicone Filled Transformers
- Power Factor Correction
- 2 Capacitor Banks
- CTs, PTs & CPTs 2 Basler Neutral o/c Relays

2 Basler Dir. o/c Relays

- 32 Schweitzer SEL 551 3PH Digital o/c Relays
- Device 136 VDC Battery Bank & Rectifier/Charger
- Over Voltage Relay
- Device 86 Lockout Relay
- Device 43 Auto/Manual Control
- CB Lift Truck
- LAs

5 KV Equipment Descriptions
30 GE type VBI 4.16-350-3, 1200A
5KV rollout type breakers.

- 6 Trans Diff. Relays
- 3 Tie 5Kv CB's T2,T3, T4
- CB Test Station
- Ground Truck
- 2 Trans Sudden PRS Relay
- 1 PH SEQ + UV Relay
- 36 Digital Meters (EPM)
- 2 Basler Sync Check Relays
- 36 Schweitzer SEL 551 3PH Digital o/c Relays
- 2-8MVA 13.2kV - 4.16 Silicone Filled Transformers
- Power Factor Correction
- 2 Capacitor Banks
- CTs, PTs & CPTs

Emergency Generator Switchgear

5KV Equipment Descriptions

- 3 GE Air Circuit Breakers type VG1 4.16-350-3, 1200A
- Mimic Board with remote operation capability and indicator lights
- 5KV Load Bank
- Generator Control System
- Generator No. 1 & Generator No. 2 & Master Control Switchgear

Sections

- Over Voltage Relay

- Device 136 VDC Battery Bank & Rectifier/Charger
- CTs, LAs & PTs

2.32.2.1.2 Cargo City Substation Dual Service, Dual Voltage

15 KV Equipment Descriptions
20 GE VB1 13.8-500-3, 1200A
13.2KV rollout type, 500 MVA Rating.

- 2 Main Breakers (P.E.lines)
- 17 Feeder Breakers
- 1 Tie Breaker
- 2 PH SEQ + UV Relays
- 6 Bus Diff. Relays
- 22 Digital Meters (EPM)
- 1 Basler SYNC Check Relays
- 2 Basler Dir. o/c Relays
- 24 GE 3PH Digital o/c Relays
- 2 900KVAR Power Factor Correction Capacitor Banks
- Ground Truck
- CB Test Station
- Over Voltage Relay
- Device 86 Lockout Relays
- Device 43 Auto/Manual Control
- CB Lift Truck
- LAs

5 KV Equipment Descriptions
11 GE type VBI 4.16-350-3 1200A
5KV rollout type breakers.

- 6 Trans Diff. Relays
- 2 Trans Sudden PRS Relay
- 2 PH SEQ + UV Relay
- 18 Digital Meters (EPM)
- 1 Basler Sync Check Relays
- 20 GE 3PH Digital o/c Relays
- 2-4MVA 13.2kV - 4.16 Silicone Filled Transformers
- Device 136 VDC Battery Bank & Rectifier/Charger
- CT’s, PT’s & CPT’s

2.32.2.1.3 Bernard Henry Substation (Island Avenue)

15 KV Equipment

Medium Voltage Circuit Breakers
(10) Cutler-Hammer VCP-W; Type 150VCP-W500; Style 8349A24G02
(1) Ground Truck; Manual Ground and Test; Device Type VCP-W)
- CB Test Station
- CB Lift Truck
- Ground Truck
- CTs, PTs & CPTs , LAs

Relay and Metering
(10) Digitrip 3000 Device 51/50/N
(8) IQDP-4000
(2) IQ Analyzer
(10) Lockout Relay 86 Trip/Reset Switch
(8) Device 43A Local/Remote Select Switch
(3) Device 87B-2 ABB - Overcurrent, Overvoltage Bus Differential Relay
(3) Device 27/59 Basler – Under/Over Voltage Relay – Type BE1-27/59
(1) Device 86-1 Lockout Relay (Trip/Reset)
(1) Device 86B-1 Lockout Relay (Trip/Reset)
(1) Device 86V-1 Lockout Relay (Trip/Reset)
(3) Device 43 Remote/Auto/Local Selector Switch

(1) Device 25 ABB – Syncro Verifier Relay
(2) Device 27/47 ABB - Reverse Phase Voltage Relay
(2) Device 27/47X ABB – Type MG-6 Aux Relay
(29) Indicator Lights

2.32.2.1.4 Philadelphia Northeast Airport Substation- Dual Service Single Voltage

5KV Equipment Descriptions
- 3 5KV Air Circuit Breakers Rollout type
- 2 Main Breakers
- 1 Tie Breaker
- 6 5KV Fused Contactors
- 4 Feeder Contactors
- Spare Contactors
- Ammeters
- Voltmeters
- Kilowatthour Meters
- Protective Relays
- Ground Relays

- Phasing Relays
- Voltage and Auxiliary Relays
- Current Transformers
- Potential Transformers

2.32.2.2 **Unit Substations**

2.32.2.2.1 Listed below for information only are unit substations and descriptions of major substation equipment. The work to be performed on an "as required" basis. All liquid filled transformers are classified as non PCB.

2.32.2.2.1.1 Substation TBD

2.32.2.2.1.1.1 15 KV Equipment
2 15KV fused switches - General Electric 13.2KV Type SE 1005-600A
2 15KV Load Break Disconnects - Cutler Hammer
18 Magnum Draw out Breakers Digitrip Trip Units – Cutler Hammer

2.32.2.2.1.1.2 Transformer

2 2000 kVA Dry Type Transformers - Cutler Hammer

2.32.2.2.1.1.3 Relay and Metering

2 Voltage Relays - GE12IAV69B1A
2 Overcurrent Relays - GE12IAC95F1A
1 Overcurrent Relay - GE12IAC25
2 Negative Phase Sequence Voltage Relays GENBV11A3A
2 Watthour meters
2 Voltmeters and control switch
2 3 Phase ammeters and control switch
3 Auto manual transfer and control switches
2 Circuit breaker position indicating lamps
2 UV Relays
1 Auto Transfer System
2 Lightning Protectors
- Power Analyzer
- TU SS Protecion
- Device 25
- Device 43
- Device 59
- Device 63
- Device 86
- CTs, PTs & CPTs, LAs

2.32.2.2.1.1.4 Low-Voltage Circuit Breakers

2 General Electric Type AK-3A-75S- 3000A
1 General Electric Type AKU-3A-25-600A
1 General Electric Type AK-3A-50S-1600A

2.32.2.2.1.2 Substation TBE

2.32.2.2.1.2.1 15KV Equipment

2 15KV Fused switches - General Electric 13.2KV Type SE 1005-600A

2.32.2.2.1.2.2 Transformer

2 1500/1725 KVA - 13200-480Y/277 G.E. Pyranol TX Class OA-30
Gauges - Oil temp pressure, oil level - core hot spot temp.

2.32.2.2.1.2.3 Relay and Metering

2 Voltage Relays - GE121AV69B1A
2 Overcurrent Relays - GE121AC95F1A
1 Overcurrent Relay - GE121AC25
2 Negative Phase Sequence Voltage Relays - GENBV11A3A
2 Watthour Meters
2 Voltmeters and control switch
2 3 phase ammeters and control switch
3 Auto Manual transfer and control switches
2 Circuit breaker position indicating lamps

2.32.2.2.1.2.4 Low Voltage Circuit Breakers

2 General Electric Type AK-3A-755-3000A
12 General Electric Type AKU-3A-25-600A
1 General Electric Type AK-50S-1600A

2.32.2.2.1.3 Substation FPE

2.33.2.2.1.3.1 15KV Equipment

2 15KV Fused Switches - General Electric 13.2KV Type SE 100S-600A

2.33.2.2.1.3.2 Transformer

1500/1725 KVA - 13200-480Y/277 GE Pyranol TX Class OA - 30
Gauges - oil temp and pressure, oil level - core hot spot temp.

2.33.2.2.1.3.3 Relay and Metering

2 Voltage Relays - GE121AV69B1A
2 Overcurrent Relays - GE121AC95F1A
1 Overcurrent Relay - GE121AC25
2 Negative Phase Sequence Voltage Relays - GE-NBV11A3A
2 Watthour Meters
2 Voltmeters and control switch
2 3 phase ammeters and control switches
3 Auto-Manual transfer and control switches
2 Circuit breakers Position indicating lamps

2.33.2.2.1.3.4 Low Voltage Circuit Breakers

2 General Electric Type AK-3A-755-3000A
13 General Electric Type AKU-3A-25-600A
1 General Electric Type AK-3A-50S-1600A

2.32.2.2.1.4 Substation CUB

2.33.2.2.1.4.1 15KV Equipment

2 15KV fused switches - General Electric 13.2KV - Type SE 100s-600A

2.32.2.2.1.4.2 Transformer

2 1000KVA - 13200-480Y/277 GE Pyranol TX Class OA-30 Gauges - Oil temp - pressure, oil level - core hot spot temp.

2.32.2.2.1.4.3 Relay and Metering

2 Voltage Relays - GE121AV69B1A
2 Overcurrent Relays - GE121AC95F1A
1 Overcurrent Relay - GE121AC25
2 Negative Phase Sequence Voltage Relays - GENBV11A3A
2 Watthour Meters
2 Voltmeters and control switch
2 3 phase ammeters and control Switches
3 Auto Manual transfer and control switches
2 Circuit breaker position indicating lamps

2.32.2.2.1.4.4 Low Voltage Circuit Breakers

3 General Electric Type AK-3A-50S-1600A
2 General Electric Type AK-6A-25M
2 General Electric Type AK-3A-25

2.32.2.2.1.5 **SUBSTATION S2A**

2.32.2.2.1.5.1 15KV Equipment

2 x 15KV Motor Operated Switches GE - Type 100E-1-O 600amp
2 x Undervoltage Relays GE - 121AV54E1A
2 x Control Switch
4 x Indicating Lights

2.32.2.2.1.5.2 Transformer

1 x FPE Dry Type Class AA/FA-30
1000/1333 KVA Transformer
13200 - 208Y/120

2.32.2.2.1.5.3 Low Voltage Section

1 x Watthour Meters
1 x Volt Meter and Control Switch
1 x Ammeter Control Switch and CTs

2.32.2.2.1.5.4 Power Circuit Breakers

1 x FPE 100H-1-4000 Amp

2.32.2.2.1.5.5 Molded Case Circuit Breakers

2 x 150A 65,000 AIC @ 240 volts
5 x 300A 65,000 AIC @ 240 volts
2 x 400A 65,000 AIC @ 240 volts
1 x 500A 65,000 AIC @ 240 volts
2 x 600A 65,000 AIC @ 240 volts
2 x 700A 65,000 AIC @ 240 volts
1 x 800A 65,000 AIC @ 240 volts

2.32.2.2.1.6 Substation S2B

2.32.2.2.1.6.1 15KV Equipment

2 x 15KV Motor Operated Switches GE Type 100E-1-OEM-600 amp
2 x Undervoltage Relays GE Type 121AV54E1A
2 x Control Switch
4 x Indicating Lights

2.32.2.2.1.6.2 Transformer

1 x FPE Dry Type Class AA/FA-30

1000/1333KVA Transformer
13200-208Y/120

2.32.2.2.1.6.3 Low Voltage Section

2 x Watthour meters
1 x Voltmeter and Control Switch
1 x Ammeter Control Switch and CTs

2.32.2.2.1.6.4 Power Circuit Breakers

1 x FPE 100H-1-4000 amp - Electrically operated 208/120V Control

2.32.2.2.1.6.5 Molded Case Circuit Breakers

1 x 1000A	65,000 Amps I.C. @240 volts
1 x 175A	65,000 Amps I.C. @240 volts
3 x 600A	65,000 Amps I.C. @240 volts
1 x 350A	65,000 Amps I.C. @240 volts
2 x 300A	65,000 Amps I.C. @240 volts
2 x 400A	65,000 Amps I.C. @240 volts
1 x 150A	65,000 Amps I.C. @240 volts
1 x 1600A	65,000 Amps I.C. @240 volts

2.32.2.2.1.7 **SUBSTATION S3A**

2.32.2.2.1.7.1 15KV Equipment

15KV Switches:
2x15KV Motor Operated Switches GE – Type 100E-1-OEM-600amp

Relays:
2xUndervoltage Relays GE-121AV54E1A

Control Switches:
2 x Control Switch

Indicating Lights:
4 x Indicating Lights

Transformer:
1 x FPE Dry Type Class AA/FA-30 1000/1333 KVA Transformer
13200-208Y/120

2.32.2.2.1.7.2 Low Voltage Section

1 Watthour meter
1 Voltmeter and Control Switch
1 Ammeter Control Switch and CTs
1 Power Circuit Breaker - Electrically operated FPE 100H-1 4000 amp

2.32.2.2.1.7.3 Molded Case Circuit Breakers

1 125 65,000 Amps I.C. @ 240 volts
1 150 65,000 Amps I.C. @ 240 volts
1 250 65,000 Amps I.C. @ 240 volts
6 300 65,000 Amps I.C. @ 240 volts
2 350 65,000 Amps I.C. @ 240 volts
2 400 65,000 Amps I.C. @ 240 volts
2 500 65,000 Amps I.C. @ 240 volts
2 600 65,000 Amps I.C. @ 240 volts
1 1000 65,000 Amps I.C. @ 240 volts

2.32.2.2.1.8 **SUBSTATION S3B**

2.32.2.2.1.8.1 15KV Equipment - Same as S2A

2 x 15KV switches motor operated
2 x Undervoltage Relays 6E121AV54E1A
2 x Control switch
4 x Indicating lights

2.32.2.2.1.8.2 Transformer

1 x FPE Dry Type Class AA/FA-30
1000/1333 KVA Transformer
13200 - 208Y/120

2.32.2.2.1.8.3 Low Voltage Section

1 x Watthour meters
1 x Voltmeter and Control Switch
1 x Ammeter Control Switch and Cts

2.32.2.2.1.8.4 Power Circuit Breakers

1 x FPE 100H-1-4000 amp - Electrically operated 208/120V Control

2.32.2.2.1.8.5 Molded Case Circuit Breakers

1 x 1000A 65,000 Amps I.C. @ 240 volts
3 x 300A 65,000 Amps I.C. @ 240 volts
3 x 400A 65,000 Amps I.C. @ 240 volts
2 x 350A 65,000 Amps I.C. @ 240 volts
1 x 600A 65,000 Amps I.C. @ 240 volts
2 x 800A 65,000 Amps I.C. @ 240 volts
1 x 175A 65,000 Amps I.C. @ 240 volts
4 x 500 65,000 Amps I.C. @ 240 volts

2.32.2.2.1.9 **SUBSTATION S4B**

2.32.2.2.1.9.1 15KV Equipment

2 x 15KV Motor Operated Switches GE Type 100E-1-OEM-600 amp
2 x Undervoltage Relays GE Type 1214V54E1A
2 x Control Switch
4 x Indicating Lights

2.32.2.2.1.9.2 Transformer

1 x FPE Dry Type Class AA/FA-30
1000/1333 KVA Transformer
13200-208Y/120

2.32.2.2.1.9.3 Low Voltage Section

1 x Watthour Meter
1 x Voltmeter and Control Switch
1 x Ammeter Control Switch and Cts
1 x Transformer Temperature Control

Power Circuit Breakers

1 x FPE 100H-1-4000 amp - electrically operated

Molded Case Circuit Breakers

1 x 800A 65,000 Amps I.C. @ 240 volts
1 x 700A 65,000 Amps I.C. @ 240 volts
1 x 600A 65,000 Amps I.C. @ 240 volts
3 x 500A 65,000 Amps I.C. @ 240 volts
2 x 400A 65,000 Amps I.C. @ 240 volts
2 x 300A 65,000 Amps I.C. @ 240 volts
1 x 175A 65,000 Amps I.C. @ 240 volts
1 x 150A 65,000 Amps I.C. @ 240 volts
1 x 500A 65,000 Amps I.C. @ 240 volts

2.32.2.2.1.10 **SUBSTATION BBC**

15 KV Equipment

High Voltage Switches
(2) 15KV Fused switches – Westinghouse 13.2KV WLI 600A

Transformer
(2) 2000/2300 KVA – 13200)-480Y/277 Cutler-Hammer Silicone Filled Class AA/FA Gauges: Temp. Level 480/277 Volt Equipment

Circuit Breakers
(3) Cutler-Hammer Circuit Breaker Type DS632 3200A (Main/ Tie/Main)
(6) circuit breaker indicator lamps (3 each of Red and Green for MTM)
(19) Cutler-Hammer Circuit Breakers Type DS416 6-600A 12-400A 1-200A

Relay and Metering
(22) Digitrip RMS810
(3) IQ Data Plus II
(1) Westinghouse Assemblies Electronic Monitor II

2.32.2.2.1.11 **SUBSTATION S4A**

2.32.2.2.1.11.1 15KV Equipment

2 x 15KV Motor Operated Switches GE Type 100E-1-OEM-600 amp
2 x Undervoltage Relays GE 121AV54E1A
2 x Control Switch
4 x Indicating Lights

2.32.2.2.1.11.2 Transformer

1 x FPE Dry Type Class AA/FA-30 1000/1333 KVA Transformer 13200 - 208Y/120
1 x 10KVA 13,200 120V Oil-O/A Control Transformer

2.32.2.2.1.11.3 Low Voltage Section

1 x Watthour Meters
1 x Volt Meter & Control Switch
1 x Ammeter Control Switch & CTS

2.32.2.2.1.11.4 Power Circuit Breakers

1 x FPE 100H-1-4000 Amp

2.32.2.2.1.11.5 Molded Case Circuit Breakers

2 x 150A 65,000 Amps @ 240 volts
5 x 300A 65,000 Amps @ 240 volts
2 x 400A 65,000 Amps @ 240 volts
1 x 500A 65,000 Amps @ 240 volts
2 x 600A 65,000 Amps @ 240 volts
2 x 700A 65,000 Amps @ 240 volts
1 x 800A 65,000 Amps @ 240 volts

2.32.2.2.1.12 **SUBSTATION ETBB**

5 KV Equipment

High Voltage Switches
(1) 5KV Manual Primary Selector Switch
(1) 5KV Air Load Break Switch
(1) 5KV Auto Transfer Switch

Transformer
(1) 225KVA 4160) – 208Y/120 Transformer 208Y/120 Volt Equipment

Circuit Breakers
(1) Molded Case Circuit Breaker 800A @ 240V
(6) Siemens Circuit Breakers; LSIG 2-400A, 2-300A, 2-200A

Relay and Metering
(1) Overcurrent Relay GE121AC25
(1) Volt Meter, Analog with 1,2,3 N Selector Switch
(1) Ampere Meter, Analog with 1,2,3 N Selector Switch

2.32.2.2.1.13 **SUBSTATION ETBC**

5 KV Equipment

High Voltage Switches
(1) 5KV Manual Primary Selector Switch
(1) 5KV Air Load Break Switch
(1) 5KV Auto Transfer Switch

Transformer
(1) 225KVA 4160) – 208Y/120 Transformer 208Y/120 Volt Equipment

Circuit Breakers
(1) Molded Case Circuit Breaker 800A @ 240V
(7) Siemens Circuit Breakers; LSIG 2-400A, 2-300A, 3-200A

Relay and Metering

(1) Overcurrent Relay GE121AC25
(1) Volt Meter, Analog with 1,2,3 N Selector Switch
(1) Ampere Meter, Analog with 1,2,3 N Selector Switch

2.32.2.2.1.14 **SUBSTATION ETBE**

5 KV Equipment

High Voltage Switches
(1) 5KV Manual Primary Selector Switch
(1) 5KV Air Load Break Switch
(1) 5KV Auto Transfer Switch

Transformer

(1) 300KVA 4160) –480Y/277 Transformer 480Y/277 Volt Equipment

Circuit Breakers
(1) Molded Case Circuit Breaker 800A
(6) Siemens Circuit Breakers; LSIG 4-400A, 4-200A

Relay and Metering
(1) Overcurrent Relay GE121AC25
(1) Volt Meter, Analog with 1,2,3 N Selector Switch
(1) Ampere Meter, Analog with 1,2,3 N Selector Switch

2.32.2.2.1.15 **SUBSTATION ETBD-1**

2.32.2.2.1.15.1 5KV Equipment

1 x 5KV Manual Primary Selector Switch
1 x 5KV Air Load Break Switch
1 x 5KV Auto Transfer Switch

2.32.2.2.1.15.2 Transformer

1 x G.E. Dry Type 225KVA Transformer 4160 - 480Y/277V, 3 phase

2.32.2.2.1.15.3 Low Voltage Section

1 x Overcurrent Relay GE121AC25
1 x Volt Meter, Control Switch and PTs
1 x Ammeter, Control Switch & CTs

2.32.2.2.1.15.4 Molded Case Circuit Breakers

1 x 400A 14,000 amps I.C. @ 480 volts

2.32.2.2.1.15.5 Low Voltage Switches

3 x 200A 600VAC
1 x 100A 600VAC

2.32.2.2.1.16 **SUBSTATION ETBD-2**

2.32.2.1.16.1 5KV Equipment

1 x 5KV Manual Primary Selector Switch
1 x 5KV Air Load Break Switch
1 x 5KV Auto Transfer Switch

2.32.2.2.1.16.2 Transformer

1 x G.E. Dry Type 225KVA Transformer 4160 - 480Y/277v, 3 phase

2.32.2.2.1.16.3 Low Voltage Section

1 x Overcurrent and Relay GE121AC25
1 x Volt Meter and Control Switch
1 x Ammeter, Control Switch & CTs

2.32.2.2.1.16.4 Molded Case Circuit Breakers

1 x 400A 14,000 amps I.C. @ 480 volts

2.32.2.2.1.16.5 Lot Voltage Air Switches

1 x 400A 240VAC
2 x 200A 240VAC
5 x 100A 240VAC
1 x 60A 240VAC

2.32.2.2.1.17 **SUBSTATION ECUB**

2.32.2.2.17.1 5KV Equipment

1 x 5KV Manual Primary Selector Switch
1 x 5KV Air Load Break Switch
1 x 5KV Auto Transfer Switch

2.32.2.2.17.2 Transformer

1 x G.E. Dry Type 112.5KVA Transformer 4160 - 208Y/120V, 3 phase

2.32.2.2.17.3 Low Voltage Section

1 x Overcurrent Relay GE121AC25
1 x Volt Meter and Control Switch
1 x Ammeter, Control Switch & CTs

2.32.2.2.17.4 Molded Case Circuit Breakers

1 x 400A 10,000 amperes 40VAC

Low Voltage Air Switches

3 x 200A 240VAC
4 x 100A 240VAC

2.32.2.2.1.18 **SUBSTATION TBA**

<u>15 KV Equipment</u>

High Voltage Switches
(2) 15KV Fused switches – Siemens Interrupter Switch Type QB 600A

Transformer

(2) 1000/1333 KVA – 13200)-480Y/277 International Transformer Corporation; Type HV15HTUL; Class AA/FA;

480/277 Volt Equipment

Switch Gear
Siemens
Circuit Breakers
(3) Siemens Low Voltage Power Circuit Breaker; Type RL; 1600A
(7) Siemens Low Voltage Power Circuit Breaker; Type RL;

Relay and Metering
(4) Device 27 Undervoltage Relay
(3) Volt Meter; Analog with 1,2,3 N Selector Switch
(3) Ampere Meter; Analog with 1,2,3 N Selector Switch
(10) Siemens Static Trip III RMS-TSIG-T Relay
(4) Device 27 Basler – Undervoltage Relay; Model BE1-27
(2) Device 52 GE – Watthour Meters; Model DSM-64
(7) Ampere Meters, Analog with 1,2,3 N Selector Switch

2.32.22.1.19 **SUBSTATION FCA**

15 KV Equipment

High Voltage Switches
(2) 15KV Fused switches – Siemens Interrupter Switch Type QB 600A

Transformer
2000/2667 KVA – 13200)-480Y/277 ABB; Class AA/FA;

480/277 Volt Equipment

Switch Gear
Siemens

Circuit Breakers
(3) Siemens Low Voltage Power Circuit Breaker; Type RL; 1600A
(7) Siemens Low Voltage Power Circuit Breaker; Type

Relay and Metering
(3) Volt Meter; Analog with 1,2,3 N Selector Switch
(3) Ampere Meter; Analog with 1,2,3 N Selector Switch
(10) Siemens Static Trip III RMS-TSIG-T Relay
(4) Device 27 Basler – Undervoltage Relay; Model BE1-27
(2) Device 52 GE – Watthour Meters; Model DSM-64
(7) Ampere Meters, Analog with 1,2,3 N Selector Switch

2.32.2.2.1.20 **SUBSTATION TV-1**

15 KV Equipment

High Voltage Switches
(1) Load Break Switch (Oil Filled) Powell-ESCO Co.; Style MA-K
(2) 15KV Fused switches – Westinghouse 13.2KV WLI 600A

Transformer
(2) 500/665 KVA – 13200)-208Y/120 Westinghouse; Class AA/FA; Dry Type1

208Y/120 Volt Equipment

Switch Gear
(1) Westinghouse Pow R Line C Switchboard; 2000A Supply/Section Rating; 50K RMS Sym. Ampere @ 240V

Circuit Breakers
(3) Westinghouse SPB 100 Low Voltage Power Circuit Breakers 2000A
(8) Branch Circuit Breakers (Unknown Current/Make)

Relay and Metering
(3) RMS 800
(3) IQ Data Plus II (Main/Tie/Main)

2.32.2.2.21 **SUBSTATION TV-2**

15 KV Equipment

High Voltage Switches
(1) Load Break Switch (Oil Filled) Powell-ESCO Co.; Style MA-K
(2) 15KV Fused switches – Square D 13.2KV HVL Load Current Interrupter Switch 600A

Transformer
(2) 2000/2667 KVA - 13200)-480Y/277 Square D Power Dry Insulated VPI Dry Type Transformer

480/277 Volt Equipment

Switch Gear
(1) Square D Switchboard

Circuit Breakers
(3) Square D SE Electronic Trip Circuit Breakers 3200A
(15) Square D Circuit Breakers 5-800A, 9-600A, 1-640A

Relay and Metering
(2) I Q Data Plus II

2.32.2.2.22 **SUBSTATION TV-3**

15 KV Equipment

High Voltage Switches
(1) Load Break Switch (Oil Filled) Powell-ESCO Co.; Style MA-K
(2) 15KV Fused switches – Westinghouse 13.2KV WLI 600A

Transformer
(2) 500/665 KVA – 13200)-208Y/120 Westinghouse; Class AA/FA; Dry Type1

208Y/120 Volt Equipment

Switch Gear
(1) Westinghouse Pow R Line C Switchboard; 2000A Supply/Section Rating; 50K RMS Sym. Ampere @ 240V

Circuit Breakers
(3) Westinghouse SPB 100 Low Voltage Power Circuit Breakers 2000A
(6) Branch Circuit Breakers (Unknown Current/Make)

Relay and Metering
(3) RMS 800
(3) IQ Data Plus II (Main/Tie/Main)

2.32.2.2.1.23 **SUBSTATION TV-3.2**

15 KV Equipment

High Voltage Switches
(1) Line1/Line 2 Select Switch
(1) 15KV Fused Switch

Transformer
(1) 300KVA 13200)-480Y/277V Transformer

208Y/120 Volt Equipment

Switch Gear
(1) Siemens PSC Switchboard

Circuit Breakers
(1) Secondary Main 500A

Relay and Metering
(1) Watthour Meter GE; Model DSM-65
(1) Volt Meter; Analog with 1,2,3 N Selector Switch
(1) Ampere Meter; Analog with 1,2,3 N Selector Switch

2.32.2.2.1.24 **SUBSTATION TV-4**

15 KV Equipment

High Voltage Switches
(1) Load Break Switch (Oil Filled) Powell-ESCO Co.; Style MA-K
(2) 15KV Fused switches – Westinghouse 13.2KV WLI 600A

Transformer
(1) 500/665 KVA – 13200)-208Y/120 Westinghouse; Class AA/FA; Dry Type1

208Y/120 Volt Equipment

Switch Gear
(1) Westinghouse Pow R Line C Switchboard; 2000A Supply/Section Rating; 50K RMS Sym. Ampere @ 240V

Circuit Breakers
(3) Westinghouse SPB 100 Low Voltage Power Circuit Breakers 2000A
(6) Branch Circuit Breakers (Unknown Current/Make)

Relay and Metering

(3) RMS 800
(3) IQ Data Plus II (Main/Tie/Main)

2.32.2.2.1.25 **SUBSTATION TV-5**

15 KV Equipment

High Voltage Switches
(2) 15KV Fused switches – Westinghouse 13.2KV WLI 600A

Transformer
(1) 500KVA 13200) -208Y/120V Westinghouse Dry Type Transformer; Class AA/FA

208Y/120 Volt Equipment

Switch Gear
(1) Westinghouse Pow R Line Switchboard

Circuit Breakers
(3) Westinghouse System Pow R Breakers SPM 100 2000A
(9) Westinghouse Branch Breakers with ground fault protection. 1-1400A, 8-600A

Relay and Metering
(3) RMS 800
(2) I Q Data Plus II

2.32.2.2.1.26 **SUBSTATION TV-6**

15 KV Equipment

High Voltage Switches
(1) Load Break Switch (Oil Filled) Powell-ESCO Co.; Style ST1T2
(2) 15KV Fused switches – Westinghouse 13.2KV WLI 600A

Transformer
(2) 500KVA 13200) -208Y/120V Westinghouse Dry Type Transformer

208Y/120 Volt Equipment

Switch Gear
(1) Westinghouse Pow R Line C Switchboard; 2000A

Circuit Breakers
(3) Westinghouse System Pow R Breakers SPM 100 2000A
(6) Westinghouse Branch Breakers with ground fault protection. 600A

Relay and Metering
(3) RMS 800
(2) I Q Data Plus II

2.32.2.2.1.27 **SUBSTATION ETBA**

5 KV Equipment

4.16 KV Switches
(2) 5KV Fused switches – Siemens Switch 600A
(1) Primary Select Control Interlock of the main fused switches

Transformer
(1) 225 KVA – 4160)-480Y/277 ITE Power Transformer; Type HV05HTUL;

480/277 Volt Equipment

Switch Gear
Siemens I-T-E Switchboard Type PSC

Circuit Breakers
(1) Siemens Low Voltage Power Circuit Breaker 400A
(8) Low Voltage Power Circuit Breakers; 1-300A, 4-60A, 2-50A, 1-20A

Relay and Metering
(1) I_T_E Sensitrip III Solid State Relay (Secondary Main)
(1) Volt Meter; Analog with 1,2,3 N Selector Switch
(1) Ampere Meter; Analog with 1,2,3 N Selector Switch
(1) Device 52 GE – Watthour Meters; Model DSM-65

2.32.2.2.1.28 **SUBSTATION EFCA**

5 KV Equipment

4.16 KV Switches
(2) 5KV Fused switches – Siemens Switch 600A
(1) Primary Select Control Interlock of the main fused switches

Transformer
(1) 225 KVA – 4160)-480Y/277 ITE Power Transformer; Type HV05HTUL;

480/277 Volt Equipment

Switch Gear
Siemens I-T-E Switchboard Type RC III

Circuit Breakers
(1) Secondary Main 400A
(8) Low Voltage Power Circuit Breakers; 1-200A, 4-60A, 3-45A, 2-25A, 1-15A

Relay and Metering
(1) Volt Meter; Analog with 1,2,3 N Selector Switch
(1) Ampere Meter; Analog with 1,2,3 N Selector Switch
(1) Device 52 GE – Watthour Meters; Model DSM-65

2.32.2.2.1.29 **SUBSTATION EBBC**

5 KV Equipment

High Voltage Switches
(2) 5KV Fused switches - Westinghouse 4.16KV WLI 600A

Transformer
(1) 750/852 KVA – 4160)-480Y/277 Cutler-Hammer; Silicone Filled; Class AA/FA; Gauges: Temp., Level

480/277 Volt Equipment

Circuit Breakers
Cutler-Hammer Circuit Breakers Type DS416; 3-1200A 1-800A 7-600A 2-400A
(6) Circuit breaker indicator lamps (3 each of Red and Green for Main/Tie/Main)

Relay and Metering
(13) Digitrip RMS810
(3) IQ Data Plus II
(1) Westinghouse Assemblies Electronic Monitor II

2.32.2.2.1.30 **SUBSTATION STP**

15 KV Equipment

High Voltage Switches
15KV Fused switches - GE Model S-9727, B2484

Transformer
2000/2666 KVA - 13200Δ-480Y/277 GE; Class AA/FA; TYPE Vent

480/277 Volt Equipment

Circuit Breakers
(3) GE Low Voltage Power Circuit Breaker Type AKR-7D-100; (Main/Tie/Main) 1600A
(6) Circuit breaker indicator lamps (3 each of Red and Green for MTM)
(10) GE Low Voltage Power Circuit Breaker Type AKR-7D-100; 1-1600A, 3-800A, 2-500A, 2-400A, 2-300A

Relay and Metering
(13) MicroVerse Trip Plus Units
(1) Device 43 Loca;/Remote Selector
(2) Power Measurement Ltd. 3710 ACM
(2) Device 27-2 GE AC Undervoltage Relay
(2) Device 60-2 GE Unbalance Relay

2.32.2.2.1.31 **SUBSTATION 1C1-N1 (TERMINAL A West)**

15 KV Equipment

High Voltage Switches
(1) 15KV Fused switches - GE Model S-9727, B2484

Transformer
(2) 2500/3333 KVA - 13200Δ 480Y/277 General Electric Dry Type Class AA/FFA 115°C Rise Gauges: Temp., Level

480/277 Volt Equipment

Circut Breakersi
(3) GE WavePro Circuit Breaker Type 3000A (Main/Tie/Main)
(1) Circuit Breaker Indicator Lamp
(24) GE WavePro Circuit Breaker Type 1-600A 23-800A

Relay and Metering

2.32.2.2.1.32 **SUBSTATION 1T1-N3 (TERMINAL A West)**

15 KV Equipment

High Voltage Switches
(1) 15KV Fused switches - GE Model S-9727, B2484

Transformer
(2) 2500/3333 KVA - 13200 Δ 480Y/277 General Electric Dry Type Class AA/FFA 115°C Rise Gauges: Temp., Level

480/277 Volt Equipment

Circuit Breakers
(3) GE WavePro Circuit Breaker Type 3000A (Main/Tie/Main)
(1) Circuit Breaker Indication Lamp
(20) GE WavePro Circuit Breaker Type 1-600A 19-800A

Relay and Metering

2.32.2.2.1.33 **SUBSTATION 1T1-N5 (TERMINAL A West)**

15 KV Equipment

High Voltage Switches
(2) 15KV Fused switches - 600A

Transformer
(2) 2500/3333 KVA - 13200 Δ 480Y/277 General Electric Dry Type Class AA/FFA 115°C Rise Gauges: Temp., Level

480/277 Volt Equipment

Circuit Breakers
(3) GE WavePro Circuit Breaker Type 1000A (Main/Tie/Main)
(1) Circuit Breaker Indicator Lamp
(16) GE WavePro Circuit Breaker Type 18-100A 1-800A

Relay and Metering

2.32.2.2.1.34 **SUBSTATION 1T4-N6 (TERMINAL A West)**

15 KV Equipment

High Voltage Switches
(2) 15 KV Fused Switches - 600A

Transformer
(2) 2500/3333 KVA - 13200 Δ 480Y/277 General Electric Dry Type Class AA/FFA 115°C Rise Gauges: Temp., Level

480/277 Volt Equipment

Circuit Breakers
(3) GE WavePro Circuit Breaker Type 3000A (Main/Tie/Main)
(1) Circuit Breaker Indicator Lamp
(21) GE WavePro Circuit Breaker Type 1-600A 23-800A

Relay and Metering

2.32.2.2.1.35 **SUBSTATION 1C1-E2 (TERMINAL A West)**

15 KV Equipment

High Voltage Switches
(2) 5 KV Fused Switches - 600A

Transformer
(2) 750/1000 KVA - 4160 Δ 480Y/277 General Electric Dry Type Class AA/FFA 115°C Rise Gauges: Temp., Level

480/277 Volt Equipment

Circuit Breakers
(3) GE Insulated Circuit Breaker Type 100A (Main/Tie/Main)
(1) Circuit Breaker Indicator Lamp
(16) GE Molded Case Circuit Breaker Type 15-100A 1-200A

Relay and Metering

2.32.2.2.1.36 **SUBSTATION 1T1-E4 (TERMINAL A West)**

15 KV Equipment

High Voltage Switches
(2) 5KV Fused Switches - 600A

Transformer
(2) 750/1000 KVA - 4160 Δ 480Y/277 General Electric Dry Type Class AA/FFA 115°C Rise Gauges: Temp., Level

480/277 Volt Equipment

Circuit Breakers
(3) GE Insulated Circuit Breaker Type 1000A (Main/Tie/Main)
(1) Circuit Breaker Indicator Lamp
(19) GE Molded Case Circuit Breaker Type 15-100A 1-200A

2.32.2.2.1.37 **SUBSTATION S4C (TERMINAL D HAMMERHEAD)**

2.32.2.2.1.37.1 15KV Equipment
16 Cutler Hammer Magnum Draw out Breakers with Digitrip Trip Units
2 Cutler Hammer 15 KV, Load Break Disconnects
1 Auto Transfer System

2.32.2.2.1.37.2 Transformer

2 Cutler Hammer Dry Type 2000KVA Transformer

2.32.2.2.1.37.3 Relay and Metering

2 Power Meters
Device 43
Device 86
Device 27
Device 59
Tuss Protection
Power Analyzer
CTs, PTs & CPTs, Las
2 UV Relays

2.32.2.2.1.38 **SUBSTATION TBF (TERMINAL F)**

2.32.2.2.1.38.1 15KV Equipment

14 Cutler Hammer Magnum Draw out Breakers with Digitrip Trip Units
2 Cutler Hammer 15 KV, 600amp Load Break Disconnects
1 Auto Transfer System

2.32.2.2.1.38.2 Transformer

2 Cutler Hammer Dry Type 2000KVA Transformer 13200 - 480Y/277v, 3 phase

2.32.2.2.1.38.3 Relay and Metering

2 Power Meters
Device 43
Device 86
Device 27
Device 59
Phase Sequence/Loss of Phase
TU SS Protection
CTs, PTs & CPTs, LAs

2.32.2.2.1.39 **SUBSTATION ETBF (TERMINAL F)**

2.32.2.2.1.39.1 5KV Equipment

3 Cutler Hammer SPB-100 Breaker with Digitrip Trip Units
2 Cutler Hammer 5000V, 600AMP Load Break Disconnects
1 5KV Auto Transfer System

2.32.2.2.1.39.2 Transformer

2 Cutler Hammer Dry Type 500KVA Transformer 41600 - 480Y/277v, 3 phase

2.32.2.2.1.39.3 Circuit Breakers

13 Molded Case Breakers

2.32.2.2.1.39.4 Relay and Metering

2 Power Meters
Device 43
Device 86
Device 27
Device 59
Phase Sequence/Loss of Phase
TU SS Protection
CTs, PTs & CPTs, Las

2.32.2.2.1.40 **SUBSTATION FLV-3**

2.32.2.2.1.40.1 5KV Equipment

1 S&C 600A, 5 KV Load Break Disconnect
4 Allen Bradley Contactors 5KV
3 Westinghouse SPB 800 Frame Digitrip RMS-800 Trip Units
1 Auto Transfer System
2 Power Measurements 3710 ACM Meters

2.32.2.2.1.40.2 Circuit Breakers
10 Molded Case Breakers

2.32.2.2.1.40.3 Relay and Metering

TU SS Protection
IQ Power Analyzer
CTs, PTs & CPTs, LAs

2.32.2.2.1.41 **SUBSTATION FLV-4**

2.32.2.2.1.41.1 5KV Equipment

3 Insulated Case Breaker Bolt in Type SPB Westinghouse 800AMP Frame Digitrip RMS-810 Trip Units
1 Auto Transfer System

2.32.2.2.1.41.2 Transformer

2 500KVA Oil Filled Transformers

2.32.2.2.1.41.3 Circuit Breakers
10 Molded Case Breakers

2.32.2.2.1.41.4 Relay and Metering

2 UV Relays
TU SS Protection
IQ Power Analyzer
CTs, PTs & CPTs, LAs

2.32.2.3 Medium Voltage Switches

2.32.2.3.1 Oil Filled Automatic Transfer Switch. Powell ESCO Co. Oil Filled Load Break Switch Style C800, 600A

- Motor Operated Automatic Transfer Mechanism.

2.32.2.3.1.1 1 - Field Lighting Equipment Room.
2.32.2.3.1.2 2 - Field Lighting Vault 3.
2.32.2.3.1.3 5 - Substations TV-1,2,3,4,6.
2.32.2.3.1.4 1 - Field Lighting Vault 2.

2.32.2.3.2 Site Distribution Exterior Loop Switch (Air and Liquid Filled)

2.32.2.3.2.1 Main Terminal Substation: 4 - 15 KV Loop Switches.
2.32.2.3.2.2 Satellite Thermal Plant: 2 - 15KV Loop Switches.
2.32.2.3.2.3 Terminal A West: 4 - 15KV Loop Switches.
2.32.2.3.2.4 Terminal F: 2 - 15KV Loop Switches.

2.32.2.3.3 Medium Voltage Contactors

2.32.2.3.3.1 Field Lighting Equipment Room: 3 - Allen Bradley 5KV Circuit Breakers, Remotely Operated

2.32.2.3.4 Medium Voltage Air Switches; Metal Enclosed Switchgear Fused; High Voltage Switch

2.32.2.3.4.1 Field Lighting Equipment Room: 3 - 4.16KV 600A Switches
2.32.2.3.4.2 Field Lighting Vault 3: 2 - 4.16KV 600A Switches
2.32.2.3.4.3 Bernard Henry Substation: 3 - 15KV 600A Switches
2.32.2.3.4.4 Tunnel B: 1 - 15KV 600A Switch.

2.32.2.4 Test and Maintenance Specifications

2.32.2.4.1 5 or 15 KV Air Circuit Breakers

1) Visually inspect (quarterly)
2) Clean (quarterly)
3) Lubricate the operating mechanism, bearings, linkages and pivot points with D50H38 grease (quarterly)
4) Inspect all contacts (quarterly)
5) Measure contact resistance, record readings (quarterly)
6) Measure all wipes and gaps, record data (semi-annually)
   - arcing contact wipes
   - prop clearance
   - primary contact wipe
   - primary contact gap
   - trip latch wipe
   - trip latch clearance
7) Inspect arc chutes, phase barriers, supports and primary bushings for tracking or corona damage (quarterly)
8) Inspect arc chute blow-out coil insulation for tracking or corona damage (quarterly)
9) Inspect all control devices and control wiring (semi-annually)
10) Test for proper operation both manually and electrically. Perform five (5) close/trip operations each. (semi-annually)
11) Vacuum clean to remove dust and debris from cubicles. (quarterly)
12) Inspect all primary contact finger assemblies/stabs, clean off old grease and apply a thin film of new contact grease, D50H38. (quarterly)
13) Perform a megger test from each phase to ground and between phases with a 2500 volt megger - record all readings. (semi-annually)
14) Perform a high potential AC Hipot test for one (1) minute. (semi-annually)5 KV breaker - 9000 volts 15 KV breaker - 27000 volts
15) Perform time motion test using a cinn. time recorder. (semi-annually)
16) Provide written test and inspection form for each breaker with all test data, repairs made and recommendations. (quarterly)

2.32.2.4.3 **5 OR 15 KV BREAKER CUBICLES**

1) Visually inspect (quarterly)

2) Clean (quarterly)
3) Inspect door seals, adjust doors to insure a tight seal, replace seals found to be worn or damaged. (annually)
4) Inspect door filters, replace as required. (monthly)
5) Lubricate the elevating worn gears, linkages, etc. with D50H38 grease. (quarterly)
6) Test racking system by operating system up and down (without breaker) to insure safety shutter and interlocks work properly. (semi-annually)
7) Test all raise and lower limit switches, replace as required. (semi-annually)
8) Inspect all control wiring for cracked or damaged insulation. (semi-annually)
9) Inspect all control devices, switches, relays indicating lights etc. Replace or repair as required. (semi-annually)
10) Inspect all compartment heaters and control wiring, repair or replace as required. (semi-annually)
11) Inspect all fuses for proper size (per manufacturers spec) and clean fuse clips. (quarterly)
12) Replace overhead light bulbs as required.
13) Remove rear compartment covers, inspect current transformers, bus run backs, supports and control wiring. (semi-annually)
14) Open P.T. rollout drawers, inspect and clean all P.T.'s, inspect safety shutters, control wiring, clean and inspect fuses. (semi-annually)
15) Spot paint any rusted area (interior only) in either front or rear compartments (annually)

2.32.2.4.3 **5 OR 15KV AIR SWITCHES**
(Manually or electrically operated)

1) Visually inspect (quarterly)
2) Clean (quarterly)
3) Inspect all contacts (semi-annually)
4) Inspect arc chutes (semi-annually)
5) Lubricate the operating mechanism and linkages with D50H38 grease. (quarterly)
6) Clean all phase barriers, bushings and supports, check for tracking or corona damage. (quarterly)
7) Check for proper operation both manually and electrically. (semi-annually)
8) Check for proper contact and arcing blade alignment. (semi-annually)
9) Inspect compartment strip heater and control wiring, replace or repair as required. (semi-annually)

10) Inspect all control devices, relays, switches indicating lamps, etc. and control wiring. (semi-annually)
11) Inspect C.P.T. and P.T.'s along with their H.V. cables, supports, fuses, and bushings. (semi-annually)
12) Remove all H.V. power fuses, clean fuse clips, test for proper spring pressure, clean fuses, and re-install. (quarterly)
13) Inspect all door seals, replace any worn or damaged gaskets as required. (annually)
14) Spot, clean and paint any rusted areas on interior only. (annually)
15) Perform a megger test for each phase to ground and between phases with a 2500 volt meter - record all readings. (semi-annually)
16) Measure contact resistance and record readings. (semi-annually)
17) Provide written test and inspection form for each switch with all test data, repairs made and recommendations. (quarterly)

2.32.2.4.4 **5 OR 15KV LIQUID FILLED SWITCHES**
(Manually or electrically operated)

1) Visually inspect. (quarterly)
2) Clean. (quarterly)
3) Record liquid level. (quarterly)
4) Record visual leaks. (quarterly)
5) Test oil samples. (annually)
6) Lubricate mechanisms. (annually)
7) Top off oil levels, replace gaskets (oil filled auto transfer switch). (bi-annually)
8) Hi potential test oil switch. (bi-annual)
9) Operate and test automatic switch. (bi-annually)

2.32.2.4.5 **PROTECTIVE RELAYS & METERS**

1) Visually inspect for physical damage. (annually)
2) Inspect cover gasket, glass. (annually)
3) Inspect for presence of foreign material in magnet gaps, moisture, condition of spiral spring, disc clearance, rust, and clean all contacts. (quarterly)
4) Check mechanically for freedom of movement, proper travel and alignment, tightness of mounting hardware and tap screws and clean all shorting contacts. (quarterly)
5) Test and calibrate for: (quarterly)
   - Zero set
   - Pick-up and drop-out
   - Time delay and instantaneous functions
   - Pick-up targets and seal-in functions
   - Tests shall be performed at three (3) points on performance curves.
   - Provide test and inspection form for each relay or meter with test data and recommendations.

2.32.2.4.6 **AUTO TRANSFER SYSTEMS & REMOTE CONTROLS**

1) Test the auto-transfer system at each substation by simulating a power failure on each incoming utility line. Insure tie breakers, or submains operate (close-trip) properly. (annually)
2) Test emergency generator breaker system at main terminal substation, both 5 and 15 KV. (semi-annually)
3) Test remote control operation of each breaker at main terminal substation from mimic bus panel located inside the CUB building. (annually)

2.32.2.4.7 **DRY TYPE TRANSFORMER**

1) Check primary, secondary, and ground connections. (annually)
2) Tighten all bolted connections. (annually)
3) Vacuum clean to remove dust, and clean and inspect insulators. (semi-annually)
4) Inspect spacers and pancake windings. (annually)
5) Check for loose iron or damaged insulation. (annually)
6) Inspect for signs of overheating. (annually)
7) Megger test high-to-low to ground. (semi-annually)
8) Perform turns ratio tests. (semi-annually

2.32.2.4.8 **LIQUID FILLED TRANSFORMER**

1) Record temperature (quarterly)
2) Record pressure (quarterly)
3) Record liquid level (quarterly)
4) Record visual leaks (quarterly)
5) Test oil samples (annually)
6) Test insulation resistance (annually)
7) Test winding ratios (annually)
8) Tighten all terminations (annually)

2.32.2.4.9 Low Voltage Breaker Tests (air circuit breakers, only molded case circuit breakers excluded)

The circuit breaker will be removed from its compartment, the compartment will be thoroughly cleaned. (annually)

Arc chutes will be removed, inspected, and cleaned. (annually)

All interior components will be cleaned with high pressure air and/or special electrical cleaning solvents. (annually)

Main contacts and electrical current carrying assemblies will be inspected for burning, pitting, etc. (semi-annually)

The trip mechanism will be inspected for friction and wear. (semi-annually)

The entire operating mechanism will be lubricated. (semi-annually)

The breaker will be closed manually to insure proper operation of the closing and latching mechanisms. The breaker will be tripped manually by way of the mechanical trip pushbutton. (semi-annually)

Time current characteristic tests will be performed by passing 300% rated current through each phase for time delay and monitoring time trip. These times will be compared with manufacturer's published values. (annually)

Instantaneous pick-up current tests will be determined by finding current level at which

breaker trips out in less than two (2) cycles. (annually)

The breaker will be tested in accordance with manufacturers recommendations.

2.32.2.5 **Infrared and Ultrasonic Scanning (semi-annually)**

2.32.2.5.1 **General**

2.32.2.5.1.1 The infrared and ultrasonic scanning services subcontractor shall be by a recognized independent scanning service experienced in scanning electrical switchgear and cable terminations.

2.32.2.5.1.2 The scanning subcontractor shall provide all material, equipment, labor, and technical supervision to perform the inspections.

2.32.2.5.1.3 This inspection is to provide system reliability information for the maintenance and emergency repair to the switchgear.

2.32.2.5.1.4 Daily reports are required in addition to a final summary report.

2.32.2.5.1.5 All quantities are approximate and in accordance with the information available at the time the specification was written.

2.32.2.5.1.6 Scanning services subcontractor shall visit site and verify all quantities and working conditions.

2.32.2.5.1.7 All inspections shall be in accordance with the following applicable codes and standards except as provided otherwise herein.

2.32.2.5.1.7.1 National Electrical Testing Association - NETA

2.32.2.5.1.7.2 Insulated Cable Engineers Association - ICEA

2.32.2.5.1.7.3 Institute of Electrical and Electronic Engineers - IEEE

2.32.2.5.1.7.4 OSHA Part 1910, Subparts 1910.308

2.32.2.5.1.8 The scanning service subcontractor shall be experienced in the inspection of electrical equipment for a period of not less than five (5) years.

2.32.2.5.1.9 The thermographic inspection shall be done with AGA thermographic equipment or equal equipment approved by the Airport's Maintenance Manager or his designee.

2.32.2.5.1.10 The ultrasonic inspection shall be performed with Biddle (Catalog No. 565250) leak and corona detecting equipment, or equal equipment approved by the Airport's Maintenance Manager or his designee.

2.32.2.5.1.11 The scanning operator shall be trained in infrared equipment operations, thermographic analysis, and certified by equipment manufacturer or an independent training facility.

2.32.2.5.1.12 Scanning subcontractor shall be responsible for removal and replacement of all panel covers, switchgear panels, and other objects obstructing the scanning of electrical equipment.

2.32.2.5.1.13 Documentation for each point scanned shall be submitted as follows:

2.32.2.5.1.13.1 Points with a temperature gradient of less than one degree "C" shall be reported on an 8-1/2" x 11" report form and noted No Action required.

2.32.2.5.1.13.2 Points with a temperature gradient of one degree or more shall be reported on an 8-1/2" x 11" report form. The report form shall include a 3" x 5" Polaroid photograph of the point scanned. Thermogram approximately 3" x 5" and a thermographic analysis. The thermographic analysis shall include temperature measurements, analysis of problem, and recommendation of corrective action.

2.32.2.5.1.13.3 The ultrasonic intensity shall be indicated on a meter with a 0-10 linear scale. The meter readings shall be recorded on a report form and Polaroid photograph.

2.32.2.5.1.13.4 Submit a bound copy of scan photographs, reports and recommendations to the Airport's Maintenance Manager or his designee within two (2) weeks after completion of thermographic inspection.

2.32.2.5.2 Equipment to be scanned: The following switchgear and associated equipment shall be scanned annually:

2.32.2.5.2.1 **Main Terminal Substation**

- Capacitor bank connections
- 15KV switchgear (terminations, compartment, relay, and metering compartment.)
- Transformer, scan bushings and cooling fins
- Cable vault, scan cables at the point of entry into the elbow up to switchgear
- Battery cells and connections.
- Documentation (See 2.32.5.6).

2.32.2.5.2.2 **Cargo City Substation**

- 15KV switchgear (terminations, compartment, relay and metering compartment).
- 5KV switchgear (terminations, compartment, and relay compartment).
- Transformers, scan bushings and cooling fins.
- Cable Vault, scan cables at the point of entry into the elbow up to switchgear.
- Documentation (See 2.32.5.6)

2.32.2.5.2.3 **Bernard Henry Substation**

- 15KV switchgear (terminations, compartments, relay, and metering compartment).
- 15KV fused switches (terminations, compartments).
- Transformers, scan bushings and cooling fins
- Low voltage panelboards
- Documentation (See 2.32.5.6)

2.32.2.5.2.4 Scanning is required at each substation's feeder cable terminations. Infrared scanning of feeder cables throughout the underground manhole distribution system is not required.

2.32.2.5.2.5 **Unit Substations**

- 15KV/5KV switches (terminations, compartment, relay and metering compartment).
- 15KV fused switches (terminations, compartment)
- Transformers, scan windings and terminations.
- Low voltage distribution section
- Documentation (See 2.34.5.6)

2.32.2.6 **Torque Testing (annually)**

2.32.2.6.1 All exposed bolted bus joints shall be torque tested once a year.

2.32.2.6.2 Set torque wrench for 5% less than specified torque requirement for first pass. Bolts found to be loose at this setting shall then be re-torqued to specified setting.

2.32.2.7 **Emergency Generator Testing Support Services**

Semi-annual emergency generating system testing is performed. Provide support services to facilitate the testing process. Tests occur between 0000 - 0300 hours on a Sunday morning.

2.32.2.7.1 Provide weather protection tarps at the Main Terminal substation front and rear compartments for both the 5 and 15KV switchgear. Install tarps the day before the scheduled test. Remove tarps within 24 hours after the test has been completed.

2.32.2.7.2 Provide the services of Philadelphia Electric Equipment Company to monitor the tests and generator performance parameters. Verify switchgear relay and control system performed in accordance with original specifications. If system does not function as originally specified determine appropriate repairs and corrective measures. Prepare and submit report on switchgear operation within one week of generator test.

2.32.3 **SPECIAL REQUIREMENTS**

2.32.3.1 Where Contractor interrupts any electrical or other service due to damaging equipment or cable through his negligence, he shall be required to repair or replace the equipment or cable immediately, working continuously to restore service until satisfactory to the Division of Aviation. Repair, replacement or both shall be at the discretion of the Division of Aviation and at the expense of the Contractor.

2.32.3.2 All testing equipment utilized shall be the latest models available.

2.32.3.3 The Contractor shall notify the Division of Aviation of the intent to perform any work which requires service interruption and shall proceed with such work only after receiving a time schedule approved by the Division of Aviation. The Division of Aviation shall have the right to cancel or delay the time of any service interruption. The Contractor shall provide personnel and equipment to assist in the proper coordination of service interruptions. Prepare tenant advisory notices for all interruptions 7 days in advance of scheduled interruptions. Distribute to approved tenant 72 hours in advance of scheduled interruption.

2.32.3.4 The disposal or disposition of all damaged cable lengths or equipment associated with any circuit failure shall be at the discretion of the Airport's Maintenance Manager of his designee.

2.32.3.5 Service call and response time: Maintenance for failures will be on a demand basis 24 hours a day, 7 days a week with a response time of one (1) hour. Travel time to and from the Airport’s will not be allowed as a separate payable charge.

2.32.4 **PARTS**

2.32.4.1 Any parts furnished under this contract for additional corrective work as directed shall be newly manufactured and latest current model in production at the time of closing of this proposal. All parts and service must be warranteed for minimum of 90 days that will commence upon acceptance of the equipment by the City. During this period, the vendor shall provide maintenance and make all necessary repairs and adjustments and provide parts replacement to the City at no charge.

2.32.5 **RECORDS/DOCUMENTATION**

2.32.5.1 All work will be initiated from the Airport's work control center through the issuance of a work order. The work control center will only phone in Priority 1, emergency requests.

2.32.5.2 All hours and parts used will be logged onto the work orders. Work that is not completed at the end of the day will have all of the hours and parts logged to it daily until completed.

2.32.5.3 Submit all proposed PM procedures and support information on approved work sheets, along with recommended frequencies for approval by the manager of maintenance. The PM information will be entered into the computerized maintenance management system to be generated at the set frequencies.

2.32.5.4 At the completion of all work, a final submittal should be made of all daily reports, all test and maintenance records, and a summary of the "as found" and "as left" conditions with conclusions and recommendations. Submittal shall be looseleaf bound, indexed, and in a logical order for ready reference and update for future maintenance and test work.

2.32.5.5 Sample Forms for all report and test results shall be submitted for approval. Forms shall be revised until they are determined acceptable by the Airport's Maintenance Manager or his designee.

2.32.5.6 **Infrared Scanning**

A record of each inspection and all maintenance operations shall be maintained. The record will show:

2.32.5.6.1 Date, time, and names of personnel

2.32.5.6.2 Describe whether it was a full or partial inspection.

2.32.5.6.3 Provide pertinent environmental data; weather conditions for the area on outdoor gear, temperature and humidity for indoor gear and provide general comments on atmospheric conditions. When equipment is de-energized for several days, records should be kept for each day of outage.

2.32.5.6.4 Record any unusual conditions or apparent changes observed since last inspection.

2.32.5.6.5 List all maintenance procedures performed or needed, with specific reference to apparatus location. Identify the switchgear by unit number, and the main bus, breaker, phase, or device requiring maintenance.

2.32.5.6.6 All data to be organized and logged in a format approved by the Airport's Maintenance Manager or his designee.

2.33 SCHEDULE K - HIGH VOLTAGE CABLE REPAIR

2.33.1 GENERAL DESCRIPTION

2.33.1.1 Work required includes furnishing all labor, supervision, materials, tools, equipment including independent lighting, transportation and all means of construction necessary and reasonably incidental for the location, inspection and repair of 5 KV and 15 KV cable faults.

2.33.1.2 Work areas included are Philadelphia International Airport and Philadelphia Northeast Airport.

2.33.2 TECHNICAL DESCRIPTION

2.33.2.1 **Scope of Work Required - This will be in two (2) phases:**

- Investigation of fault
- Repair of fault

2.33.2.1.1 **Phase One: Investigation**

2.33.2.1.1.1 **Specifications for Locating Cable Fault:**

- Division of Aviation Responsibility
- Will assist in establishing route of the cable
- Will assist in locating all manholes and handholes
- Will assist in identifying all related service equipment and terminations
- Will assist in isolating faulted circuit

2.33.2.1.1.2 Contractors Responsibility

- Lock and tag out all related service equipment
- Physically disconnect all cables from switches, breakers, load breaks, transformers and related service equipment
- Perform shield continuity test
- Perform an insulation resistance test
- Equipment: 2500 V.D.C. Megger, 100,000 Megohms sensitivity
- Megg each conductor with the other two grounded
- Determine the extent of the damage
- Prove that all remote loads are disconnected

- If failure has occurred in such a manner that a low reading fault cannot be established on a phase using a megger, then a high potential D.C. test must be performed to establish a test failure and a low resistance fault path
- Test voltage will not exceed 60% of factory test voltage
- Test voltage will be applied in 1 KV increments
- Each step will be held for one minute
- Peak voltage will be applied for 10 minutes
- Test voltage will be applied to each phase with the other two grounded
- The test set will be similar to a Biddle Cat. #220110 capable of reading .01 microamperes and utilizing full wave bridge rectification circuits
- After a low resistance fault has been established, proceed to locate fault utilizing the thumping technique. Thumping technique shall not be performed on cables greater than 8 years old. Use bi-section method for fault locating by bearing splices in the middle of the HV cable runs and echo locating. Replace slices.
- Thumping voltage should be adjusted to the normal phase to phase line voltage
- Thump one circuit at a time with the other two grounded. All manhole covers should be removed and holes dewatered. There should be sufficient personnel on hand to listen at each manhole so the thumping time is kept to an absolute minimum.
- Detailed written report of findings with the following:
- Test results and readings
- Estimate of repairs required
- Estimate of time required
- Estimate of wire required
- Estimate of connections, terminals and splices

2.33.2.1.2 **Phase Two: Repair of Fault**

2.33.2.1.1 Upon presentation and approval of the Airport's Maintenance Manager, or his designee, the repair phase (phase two) can be initiated. Contractor shall pump out manholes and handholes when required.

The Contractor shall obtain from the manufacturer an installation manual or set of instructions which addresses such aspects as cable construction, insulation type, cable diameter, bending radius, cable temperature, lubricants, coefficient of friction, conduit cleaning, storage procedures, moisture seals, testing for and purging moisture, etc. The Contractor shall then perform pulling calculations.

Cable Installation Plan and Procedure: Cable shall be installed strictly in accordance with the cable manufacturer's recommendations. Each circuit shall be identified by means of a fiber, laminated plastic, or non-ferrous metal tags, or approved equal, in each manhole, handhole, junction box, and each termination.

Cable Inspection: The cable reel shall be inspected for correct storage positions, signs of physical damage, and broken end seals. If end seal is broken, moisture shall be removed from cable in accordance with the cable manufacturer’s recommendations.

Duct Cleaning: Duct shall be cleaned with an assembly that consists of a flexible mandrel, 1/4 inch less than inside diameter of duct, 2 wire brushes, and a rag. The cleaning assembly shall be pulled through conduit a minimum of 2 times or until less than a volume of 8 cubic inches of debris is expelled from the duct.

Duct Lubrication: The cable lubricant shall be compatible with the cable jacket for cable that is being installed. Application of lubricant shall be in accordance with lubricant manufacturer's recommendations.

Cable Installation: The Contractor shall provide a cable feeding truck and a cable-pulling winch. The Contractor shall provide a pulling grip or pulling eye in accordance with cable manufacturer's recommendations. The pulling grip or pulling eye apparatus shall be attached to polypropylene or manilla rope

followed by lubricant front-end packs and then by power cables. A dynamometer shall be used to monitor pulling tension. Pulling tension shall not exceed maximum permissible from approved calculations. The Contractor shall not allow cables to cross over while cables are being fed into duct. For cable installation in cold weather, cables shall be kept at 10 degrees C (50 degrees F) temperature for at least 24 hours before installation.

Electric Manholes: Cables shall be routed around the interior walls and securely supported from walls on cable racks. Cable routing shall minimize cable crossover, provide access space for maintenance and installation of additional cables, and maintain cable separation in accordance with ANSI C2.

2.33.3 **SPECIAL REQUIREMENTS**

2.33.3.1 Contractor Qualifications

2.33.1.1 Certifiable past performance

2.33.1.2 Ability to respond to service calls within a one (1) hour period.

2.33.1.3 Sufficient equipment and personnel to perform within the scope of this requirement contract.

2.33.1.4 Appropriate licensing

2.33.3.2 Where contractor interrupts any electrical or other service due to damaging equipment or cable through his negligence, he shall be required to repair or replace the equipment or cable immediately, working continuously to restore service until satisfactory to the Division of Aviation. Repair, replacement or both shall be at the discretion of the Division of Aviation and at the expense of the contractor.

2.33.3.3 All testing equipment utilized shall be the latest models available.

2.33.3.4 The contractor shall notify the Division of Aviation of the intent to perform any work, which requires service interruption and shall proceed with such work only after receiving a time schedule approved by the Division of Aviation. The Division of Aviation shall have the right to cancel or delay the time of any service interruption. The contractor shall provide personnel and equipment to assist in the proper coordination of service interruptions.

2.33.3.5 The disposal or disposition of all damaged cable lengths or equipment associated with any circuit failure shall be at the discretion of the Airport's Maintenance Manager or his Designee.

2.33.3.6 Service call and response time: Maintenance for failures will be on a demand basis 24 hours a day, 7 days a week with a response time of one (1) hour.

2.33.4 **ABOVE GROUND AND AERIAL CABLE REPAIRS**

2.33.4.1 Contractor shall perform maintenance on above ground cable systems. These systems include cable, poles (timber and other types), guys, messengers, insulators pole mounted transformers, weatherheads, and other accessories.

2.33.4.2 Contractor shall furnish all necessary materials, equipment, trucks and labor necessary to install and maintain aerial cable system. This includes but not limited to line truck with pole auger and bucket lift. Number of trucks as required.

2.33.4.3 Immediate de-energize and remove fallen cables.

2.33.4.4 Provide maintenance and protection of traffic in accordance with Penn DOT standards. This includes but not limited to flagmen, cones, warning signs and flashing arrows.

2.33.5 **SPARE PARTS**

2.33.5.1 A supply of splice kits and terminations shall be maintained on site at all times to facilitate quick response to fault repairs. As items are used, inventory shall be immediately replaced.

2.33.6 **RECORDS/DOCUMENTATION**

2.33.6.1 All work will be initiated from the Airport's work control center through the issuance of a work order. The work control center will only phone in Priority 1, emergency requests.

2.33.6.2 All hours and parts used will be logged onto the work orders. Work that is not completed at the end of the day will have all of the hours and parts logged to it daily until completed.

2.33.6.3 Submit all proposed PM procedures and support information on approved work sheets, along with recommended frequencies for approval by the manager of maintenance. The PM information will be entered into the computerized maintenance management system to be generated at the set frequencies.

2.34 **SCHEDULE L - FIRE ALARM SYSTEMS**

2.34.1 **GENERAL DESCRIPTION**

2.34.1.1 The work shall include but not be limited to furnishing labor, equipment, materials, apparatus, supplies, and supervision necessary to provide testing and inspection services for the Fire Alarm and Detection System throughout Philadelphia International Airport. All work shall be in accordance with NFPA 72, 1999, National Fire Alarm Code and The International Building Code 2003. Annual certification of the system shall be performed in accordance with the Tinicum Township and the City of Philadelphia Fire Prevention Code.

2.34.2 **TECHNICAL DESCRIPTION**

2.34.2.1 The Fire Alarm and Detection System at the Philadelphia International Airport is a networked system comprised of 45 addressable nodes throughout the campus. These nodes are connected via various Class 'A' copper and fiber network loops and report back to the main fire alarm control room located in Rm. T-15, in Terminal C. The system is monitored via a graphic fire control system, which is located in the communications also located in Terminal C.

2.34.2.2 Field wiring (signaling line circuits, strobe circuits, speaker circuits, etc.) are wired Class 'B', with the exception of the majority of the 'A' East complex which houses the AutoPlex control system - currently configured as Class 'A'. Field devices include manual pull stations, smoke detectors, heat detectors, duct smoke detectors, contact monitor modules, control modules or addressable relays, strobes, speaker strobe combination, and horn strobe combination. Each node or Data Gathering Panel (DGP), located within the airport terminals A-West through F, accomplishes notification through voice evacuation. There are some panels located throughout the campus, which notify occupants via strobe and horn strobe combination. The Fire Alarm and Detection system interfaces with the following systems (monitor and control functions): tenant fire alarm panels, fire suppression systems, baggage handling systems, smoke control and mechanical HVAC systems, elevator and escalators, security and compartmentation door control.

2.34.2.3 Device Count Information is attached in Attachment E: Fire Alarm Equipment List

2.34.3 **PREVENTIVE MAINTENANCE**

2.34.3.1 All detectors' sensitivity shall be checked during the first year of the contract, and every alternate year thereafter. After the second calibration test, where sensitivity tests indicate that the detector has remained within its listed and marked sensitivity range (or 4-percent obscuration light gray smoke, if not marked), the length of time between calibration tests shall be permitted to be extended to a maximum of 5 years. Where the frequency is extended, records of detector-caused nuisance alarms and subsequent trends of these alarms shall be maintained.
In zones or areas where nuisance alarms show an increase over the previous year, calibration tests shall be

performed. The TFX system should have the ability to accomplish this testing via printout from any node on the campus.

2.34.4 **INSPECTIONS/CERTIFICATIONS**

2.34.4.1 Testing of the Fire Alarm system shall adhere to the latest requirements of NFPA 72. At a minimum, the following requirements shall be met:

2.34.4.1.1 - Qualified *Personnel:*

Qualified personnel shall be permitted to include, but limited to individuals who are:

- Factory trained and certified
- National Institute for Certification in Engineering Technologies (NICET) fire alarm certified International Municipal Signal Association (IMSA) fire alarm certified
- Certified by state or local authority
- Trained and qualified personnel employed by an organization listed by a national testing laboratory for the services of fire alarm systems (i.e. UL)

2.34.4.1.2 - Notification:

- Before proceeding with any testing, all personnel who receive alarms and all building occupants must be notified. A tenant advisory shall be issued on a monthly basis and coordinated through DOA Maintenance. At the conclusion of testing, those previously notified shall be notified that testing has concluded.

- The owner's designated representative and service personnel shall coordinate system testing to prevent interruption to critical building systems or equipment.

- Prior to system testing, the system certificate and the information regarding the system and system alterations, including specifications, wiring diagrams, and floor plans shall be made available by the owner or designated rep, to the service provider.

- Upon completion of nightly testing, a report shall

be generated and submitted to DOA Maintenance, outlining system status prior to and after testing is completed. The report shall also detail any failed devices that need repair. The report format shall be submitted and approved prior to the start of contract testing and inspections.

2.34.4.1.3 - Test Methods*:* (Please reference NFPA 72 for details*)*

2.34.4.1.4 - Functional Test Frequencies: (Summary)

- Control Equipment – Annually
- Batteries – ***(please reference NFPA 72 for details)***
- Amplifiers – Annually
- Duct Smoke Detectors – Annually
- Heat Detectors – Annually
- Manual Pull Stations – Annually
- Smoke Detectors – Annually
- Tamper Switch Monitors – Coordinate with Schedule F
- Flow Switch Monitors – Coordinate with Schedule F
- Control Modules and Monitor Modules – Annually
- Audio/Visual Circuits – Annually
- Network Transmission – Annually
- Fire Alarm Programming Matrix – Monthly (per respective area)
- System Interface Testing – Monthly (per respective area)

2.34.5 **RECORDS/DOCUMENTATION**

2.34.5.1 Permanent records of all testing and inspections shall be produced and provided to the owner as well as kept on file by the service provider. Inspection and testing forms shall comply with requirements of NFPA 72 and the DOA. All records of inspections, certification will be provided to the Airport's Maintenance Manager or his designee.

These documents will include, but are not limited to NFPA Testing Reports, Maintenance Reports, Testing Drawings (hand mark-ups with testing notes), and any correspondence with PHL divisions and local authority having jurisdiction.

2.34.5.2 Upon completion of testing for a particular node, a certification package shall be produced and submitted to the owner for his files. Each package, at a minimum, shall

include the following: Executive Summary, Testing Procedures, NFPA Testing Forms, FA Input/Output Matrix Report, AHJ Approval Form.

2.34.6 **SPECIAL REQUIREMENTS**

2.34.6.1 Testing shall be performed between the hours of 10 PM and 6 AM, nightly.

2.34.6.2 Coordination with necessary departments of the airport will be performed:

2.34.6.2.1 DOA Operations

2.34.6.2.1.1 Prior to the start of testing and the conclusion of testing Airport 20, Engine 78, Tinicum Fire Department, and Door Control will be notified.

2.34.6.2.1.2 Schedule of testing will be coordinated with the Airlines, in regards to heavy traffic of incoming and outgoing flights.

2.34.6.2.1.3 Schedule of testing will be coordinated with Redwood Properties for devices located within the concession spaces.

2.34.6.2.1.4 Schedule of testing will be coordinated with Airport operations when special access is required within the building.

2.34.6.2.2 DOA Engineering

2.34.6.2.2.1 System Functionality reports will be provided to DOA Engineering regarding the performance of the system in regards to the requirements outlined in the code as well as objectives of the Engineers of Record.

2.34.7 **PERSONNEL REQUIREMENTS**

2.34.7.1 The contractor must have skilled personnel to achieve the Airport's objective in reducing and eliminating any needless losses to the Division of Aviation, our employees and the public caused by decreased efficiency, work interruptions, equipment breakdowns, or property damage. Service Companies shall hold a level III certification, minimum, by the National Institute for Certification in Engineering or a Professional Engineer's License in the State of Pennsylvania.

2.35 **SCHEDULE M - FENCING AND GUIDERAILS**

2.35.1 **GENERAL DESCRIPTION**

2.35.1.1 FAA REGULATED AREA FENCING: This item shall consist of maintaining, furnishing and erecting, replacing, repairing, chain-link fence and appurtenances, such as privacy inserts, as well as manual and automated security gates in accordance with these specifications or established by Airport's Maintenance Manager or his designee. Materials to be used shall be new and acceptable to the Airport's Maintenance Manager or his designee.

2.35.1.2 **AIRPORT SECURITY FENCING:** This item shall consist of maintaining, furnishing and erecting, replacing, repairing, chain-link fence, snow fence, temporary fence and appurtenances, such as privacy inserts, as well as manual and automated security gates in accordance with these specifications or established by Airport's Maintenance Manager or his designee. Materials to be used shall be new and acceptable to the Airport's Maintenance Manager or his designee.

2.35.1.3 **GUIDE RAIL:** This item shall consist of maintaining and construction of new guide rail of the type indicated, resetting of existing guide rail, and removal and replacement of existing guide rail, and precast concrete highway median barriers including all appurtenances and hardware, in accordance with these specifications or as established by the Airport's Maintenance Manager or his designee. Materials to be used shall be new and acceptable to the Airport's Maintenance Manager or his designee.

2.35.1.4 **SECURITY GATES:** This item shall consist of maintaining Airport security gates on an as needed basis to maintain

site security including swing, slide and lift gates, gate operators, lift arms, loop detectors, control system, safety devices, including all appurtenances and hardware, in accordance with these specifications or as established by the Airport's Maintenance Manager or his designee. Materials to be used shall be new and acceptable to the Airport's Maintenance Manager or his designee.

2.35.2 **TECHNICAL DESCRIPTION**

2.35.2.1 **CHAIN LINK FENCING:**

2.35.2.1.1 Fabric: The fabric shall be woven with a 9-gauge, 2 inch mesh, raised height;

- galvanized steel wire, conforming to the requirements of ASTM A 392, Class 2;
- polyvinyl chloride coated steel, conforming to the requirements of ASTM F688, Class 2b;
- aluminum alloy, conforming to the requirements of ASTM F1183;
- zinc - 5% aluminum mischmetal, conforming to the requirements of ASTM F1345, Class 2.

The type of fabric to be used shall match adjacent fabric of existing fencing, or as directed by the Airport's Maintenance Manager or his designee.

2.35.2.1.2 Barbed Wire and Barbed Wire Arms: Barbed wire shall be 2 strands 12-1/2 gauge;

- zinc-coated, conforming to the requirements of ASTM A121, Class 3, Chain Link Fence Grade;
- aluminum-coated, conforming to the requirements of ASTM A585, Class II, wire with 4-point barbs spaced on 5" centers.

The type of barbed wire to be used shall match adjacent barbed wire of existing fencing, or as directed by the Airport's Maintenance Manager or his designee.

2.35.2.1.3 Posts, Rails, and Braces: Posts, rails, and braces furnished for use in conjunction with zinc-coated, zinc - 5% aluminum mischmetal alloy coated, or aluminum coated steel fabric shall be of zinc-coated steel, zinc/polymer-coated steel, or zinc-5% aluminum mischmetal alloy coated steel framework. Those furnished for use in conjunction with aluminum alloy fabric shall be aluminum alloy. Line posts, rails, and braces shall be:

- galvanized steel pipe Schedule 40, conforming to the requirements of ASTM F1083;

- zinc/polymer-coated steel pipe, conforming to the requirements of ASTM A569 or ASTM A446, Grade D. Exterior coating shall be in accordance with ASTM F1234, Type B. Interior coating shall be in accordance with ASTM F1234, Type B or D;

- vinyl-coated steel, conforming to Federal Specification RR-F-191/3;

- structural shapes, conforming to the requirements of ASTM A572, Grade 45, and shall be galvanized in accordance with the requirements of ASTM F1234, Type A;

- roll formed, sections shall be fabricated from material meeting the requirements of ASTM A570, Grade 45, and shall be galvanized in accordance with the requirements of ASTM F1234, Type A, or coated with zinc-5% aluminum mischmetal alloy in accordance with ASTM F1234, Type C;

- aluminum alloy, conforming to the requirements of ASTM B429, alloy 6063-T6, Schedule 40, for extruded pipe and tube, and shall conform to the requirements of ASTM B221, alloy 6063-T6, for extruded bar, shape, and tube.

Post, rails, and braces shall demonstrate the ability to withstand testing in salty spray in accordance with ASTM B117 as follows:

Exterior: 1,000 hours with a maximum of 5% red rust.

Interior: 650 hours with a maximum of 5% red rust.

The dimensions of the posts, rails, and braces shall be in accordance with Tables I through VI of Federal Specification RR-F-191/3.

The type of posts, rails, and braces to be used shall match adjacent posts, rails, and braces of existing fencing, or as directed by the Airport's Maintenance Manager or his designee.

2.35.2.1.4 Security Gates (Manual): Gate frames shall consist of:

- galvanized steel pipe;
- polymer-coated steel pipe;
- aluminum alloy pipe; and shall conform to the specifications for the same material under Paragraph 2.35.2.1.3. The fabric shall be of the same type material as used in the fence, whether existing or new.

2.35.2.1.5 Wire Ties and Tension Wires: Wire ties for use in conjunction with a given type of fabric shall be of the same material and coating weight identified with the fabric type. Tension wire shall be 7 gauge marcelled steel wire with the same coating as the fabric type and shall conform to ASTM A824.

2.35.2.1.6 Miscellaneous Fittings and Hardware: Miscellaneous steel fittings and hardware for use with:

- zinc-coated;
- aluminum coated;
- zinc-5% aluminum mischmetal alloy coated;

Steel fabric shall be of commercial grade steel or better quality, wrought or cast as appropriate to the article, and sufficient in strength to provide a balanced design

when used in conjunction with fabric posts, and wires of quality specified herein. All steel fittings and hardware shall be protected with a zinc coating applied in conformance with ASTM A153. Miscellaneous aluminum fittings for use with aluminum alloy fabric shall be wrought or cast aluminum alloy. Barbed wire support arms shall withstand a load of 250 pounds (113 kg) applied vertically to the outermost end of the arm.

2.35.2.1.7 Concrete: Concrete shall be a commercial grade with a minimum 28-day compressive strength of 2500 psi (17,240 kPA).

2.35.2.1.8 Marking: Each roll of fabric shall carry a tag showing the kind of base metal (steel, aluminum, or aluminum alloy number), kind of coating, the gauge of the wire, the length of fencing in the roll, and the name of the manufacturer. Posts, wire, and other fittings shall be identified as to manufacturer, kind of base metal (steel, aluminum, or aluminum alloy number), and kind of coating. The condition of materials to be used shall meet the satisfaction of the Airport's Maintenance Manager or his designee.

2.35.2.1.9 **Security Gates: (Automated)**

2.35.2.1.9.1 **Slide Gate Operator:** The hydraulic gate operators shall be capable of continuous duty operation at a speed of two (2) feet per second, minimum, with soft start and stop and instant reverse. Operators are be Model 222 SS EX, or equal. Each hydraulic gate operator is a self-contained unit including an electric motor, pump reservoir, hydraulic motors and control valve. The unit enclosure is weatherproof and corrosion-resistant and equipped with a tamper switch and a UL-approved cylinder lock (per UL 437, Key Locks).

2.35.2.1.9.2 **Lift Arm Operator:** Operation shall be electronically controlled with motor driven gear linkage. Heavy duty gear box with 60:1 ratio, connected with harmonic transfer linkage. Uses all-weather synthetic gear oil. Handles arms up to 14 feet long using a 1/2 HP continuous duty motor with built-in overload protection. Built-in safety reverse if the arm does not reach the fully down position within 4 seconds Built-in input indicator lights give the status of UP, DOWN and SAFETY inputs. All solid state control board with plug-in connection. Built-in mode selection switches allowing for external loop control, built-in time delay and degree of arm travel. "Door King" Model 1601.

2.35.2.1.9.3 **Photoelectric Sensors:** The Infrared photoelectric Sensors shall be Model PB-20, with a sealed optical system to prevent interference by insects, as manufactured by Pulnix Corporation or approved equal. Operation shall be retroreflective type using a pulse modulated infrared LED and reflector.

2.35.2.1.9.4 **Loop Detector:** System shall provide detection of metal vehicles at gate entrances and provide relay outputs for control of gates and lift arms. This system consists of induction loops installed in pavement, induction loop detectors, loop wiring, power wiring and control wiring to gate operator and lift arm operator. Thloop detector shall be suitable for use with loop inductance of 30-1000 microhenries.

Signal output isolation shall be provided by two built-in output relays, which shall interface the detector with associated equipment. The loop detectors are manufactured by Intersection Development Corp. Model No. 326-24SF, or equal.

2.35.2.1.9.5 **Gate Edge**: The Gate Safety Edge System shall consist of gate mounted, electrically activated sensing edges as manufactured by

Miller Edge Co., or approved equal. The battery operated radio transmitters and receivers used to transmit the safety edge information back to the PLC shall be manufactured by Stanley Gate Operator Products, or approved equal.

2.35.2.2 **GUIDE RAIL:**

2.35.2.2.1 **Rails:** The Contractor shall construct guide rail per PADOT requirements and as shown on PADOT Standard Drawings and as follows:

2.35.2.2.1.1 **Rail Element:** AASHTO M180, Class A, Type 2; mark to show the approximate radius of curved rails.

2.35.2.2.1.2 Rubbing Rails: Fabricate from steel, ASTM A570, with mechanical properties in accordance with ASTM A36. Galvanize in accordance with AASHTO M111. Shop form, when required, on curves having a radius of less than 150 feet, as follows:

- Notch flanges to form a curve with a series of chords of equal lengths not exceeding 1 foot 6 inches (for radii from 0 to 29 feet), 3 feet (for radii from 20 feet to 100 feet), and 6 feet 3 inches (for radii from 100 feet to 150 feet); cut notches to the proper angle and weld.

- Form so the midpoint of the chord is tangent to the curve.

- Mark to show the approximate radius of curvature.

2.35.2.2.2 **Terminal Sections:** Terminal sections shall Conform to the requirements of AASHTO M180, Class A, Type 2.

2.35.2.2.3 Posts: Posts for the construction/repair of guide rail shall be:

- Steel I Beam Posts (AASHTO M183 or ASTM A769). Galvanize in accordance with AASHTO M111.

- Steel C-posts and Channel Posts shall be

fabricated from steel, ASTM A570, with mechanical properties in accordance with ASTM A36. Galvanize in accordance with AASHTO M111.

- Breakaway Cable Terminal Posts (AASHTO M183), Galvanize in accordance with AASHTO M111.

2.35.2.2.4 Offset Brackets: As shown on the PADOT Standard Drawings, using the same type of material and treatment as the posts to which the brackets are to be attached.

2.35.2.2.5 Miscellaneous Material: As shown on the PADOT Standard Drawings and as follows:

2.35.2.2.5.1 Nuts, Bolts, and Washers (ASTM A307). Galvanize in accordance with ASTM A153 or ASTM B454.

2.35.2.2.5.2 Base Plates, Post Plates, End Post Support Angles, and hardware (AASHTO M183). Galvanize base plates and hardware after fabrication, in accordance with AASHTO M111. Do not punch, drill, grind, cut, or weld after galvanizing. Repair minor abrasions of galvanized surfaces with two coats of galvanizing paint.

2.35.2.2.5.3 Breakaway Cable Terminal Hardware, Anchor Plate, and Cable Assembly.

2.35.2.2.5.3.1 High-strength bolts, nuts, and washers: High, strength, carbon steel bolts for structural joins, including suitable nuts and plain hardened washers, AASHTO M164 (ASTM A325).

Conform to the physical requirements of AASHTO M164 (ASTM A325), and to atmospheric corrosion resistance requirements equal to that of AASHTO M222 steel for high strength bolts, nuts, and washers to be used with AASHTO M222 steel, unpainted.

2.35.2.2.5.3.2 Conform to the dimensions and identification markings specified in AASHTO 10.3.1.7.

2.35.2.2.5.3.3 Provide a lot number on the supplier's certification, which corresponds to that appearing on the shipping package and the certification Form CS-4171. Note on the supplier's certification when and where all testing was done, including the rotational-capacity tests indicated below, and include zinc thickness when galvanized bolts and nuts are used.

2.35.2.2.5.3.4 Provide AASHTO M164 (ASTM A325) bolts with a maximum hardness of 33Rc, and a maximum tensile strength of 150 ksi for bolts 1 inch or less in diameter, and 120 ksi for larger bolts.

2.35.2.2.5.3.5 Provide Grade 2H or DH nuts for black or galvanized fasteners. Over tap nuts for galvanized fasteners to the minimum amount required for the fastener assembly. Provide nuts, bolts, and washers with the manufacturer's markings on them.

2.35.2.2.5.3.6 Lubricate all galvanized nuts with a lubricant at the time of field installation. Provide black bolts "oily" to the touch when installed.

2.35.2.2.5.3.7 Subject black and galvanized high strength fasteners to a rotational capacity test in accordance with AASHTO M164, Section 8.5, and meet the following requirements:

2.35.2.2.5.3.8 Go through two times the required number of turns (from snug tight condition) indicated in the 1988 Interim AASHTO Bridge Specification, Table 10.17.B, in a Skidmore-Wilhem Calibrator, or equivalent tension measuring device, without stripping or failure.

2.35.2.2.5.3.9 During this test, record a maximum tension equal to or greater than 1.15 times the Required Fastener Tension indicated in AASHTO Table 10.17A.

2.35.2.2.5.3.10 Do not allow the measured torque to produce the required fastener tension or exceed the value obtained by the following equation:
Torque = 0.25 PD, where:

Torque = Measured Torque (ft-lbs)P = Measured Bolt Tension (lbs)
D = Nominal Diameter (ft)

2.35.2.2.5.3.11 Proof load test bolts in accordance with ASTM F606, Method 1. Wedge test full size bolts in accordance with Section 8.3 of AASHTO M164. Wedge test galvanized bolts after galvanizing. Proof load test nuts in accordance with AASHTO M291. Proof load test nuts to be used with galvanized bolts after galvanizing, over-tapping, and lubricating.

2.35.2.2.5.3.12 Galvanize cable assembly and bolts, nuts, and washers, in accordance with ASTM A153.

2.36.2.2.5.3.13 Anchor plates, as specified in Section 2.2.5(b).

2.35.2.2.5.3.14 Cable assembly with a minimum breading strength of 40,000pounds.

2.35.2.2.5.4 Rotating Bracket: Fabricate from malleable cast iron, ASTM A47, or structural steel, ASTM A36. Galvanize in accordance with AASHTO M11.

Galvanizing: Unless otherwise specified, galvanize metal parts, in accordance with AASHTO M180, Table II, Type 2.

2.35.2.2.6 Galvanizing Paint: Refer to PADOT Bulletin 26.

2.35.2.2.8 Welding: All welding shall be performed in accordance with the requirements of the American Welding Society (AWS).

2.35.2.2.9 **Certification:**

2.35.2.2.9.1 General: Material will be accepted on the basis of inspection, testing, or certification, as directed by the Airport's Maintenance Manager or his designee. Unless otherwise specified, the City will perform acceptance sampling and testing.

2.35.2.2.9.2 When specified, make or have made, tests of samples of material, unless otherwise designated, in accordance with methods described in Standard Specifications for Highway Materials and Methods of Sampling and Testing of AASHTO and supplements, or, if the required method is not described, make tests in accordance with Standards and/or Tentatives of ASTM or other testing procedures adopted by the PADOT.

2.35.2.2.9.3 Provide the necessary personnel, as directed or specified, to assist in collecting and transporting samples to the test site, and to assist in the verification of the accuracy of scales, measures, and testing equipment.

2.35.2.2.9.4 **Quality Control:**

Perform necessary quality control testing, including those tests specified to be performed under the direction and observation of the inspector, as specified in PADOT Publication 408, Section 106.03(a)2.

2.35.2.2.9.5 **Certification:**

2.35.2.2.9.5.1 When specified by the Airport's Maintenance Manager or his designee, submit dated certification, Form CS-4171 supplied by the PADOT, from the manufacturer, fabricator, or producer that items furnished meet specifications

Unless otherwise directed, retain the original, signed certification at the manufacturer's fabricator's, or producer's location. Send a copy of the original certification at the manufacturer's fabricator's, or producer's location. Send a copy of the original certification

to the project with each shipment. Do not incorporate any material in the work, unless approved by the Airport's Maintenance Manager or his designee, until a properly completed certification arrives on the project.

2.35.2.2.9.5.2 Notify the manufacturer, fabricator, or producer of these requirements. Accept responsibility for all certification for all materials arriving at the project site. Materials delivered to the project site that are of questionable quality may be sampled, tested, and approved by Airport's Maintenance Manager or his designee before incorporation in any work. Random quality assurance samples may be selected by the Airport's Maintenance Manager or his designee from the material delivered to the project site or at the place of supply prior to delivery.

2.35.3 **SERVICE CALL AND RESPONSE TIME**

2.35.3.1 Chain Link Fence: Maintenance repair of designated security fencing will be on a demand basis 24 hours a day, 7 days a week, with a response time of (2) hours. All other fencing repairs will be performed on an as needed basis, with a response and completion time as directed by the Airport's Maintenance Manager or his designee. In the event the repair quantities exceed the inventory quantities, the contractor shall make suitable temporary repairs until proper repairs can be completed.

2.35.3.2 **Guide Rail:** Maintenance repair of guide rail will be performed on an as needed basis, with a response and completion time as directed by the Airport's Maintenance Manager or his designee.

2.35.4 **SPARE PARTS**

The Contractor will maintain spare parts in accordance with the manufacturer's recommendations. The Contractor shall stock, or have availability to perform maintenance repairs within the time schedule as described in Section 3.

2.35.5 **RECORDS/DOCUMENTATION**

The Contractor will forward to the City copies of all maintenance services performed and any trouble call reports.

2.35.5.1 All work will be initiated from the Airport's work control center through the issuance of a work order. The work control center will only phone in Priority 1, emergency requests.

2.35.5.2 All hours and parts used will be logged onto the work orders. Work that is not completed at the end of the day will have all of the hours and parts logged to it daily until completed.

2.35.5.3 Submit all proposed PM procedures and support information on approved worksheets along with recommended frequencies for approval by the manager of maintenance. The PM information will be entered into the computerized maintenance management system to be generated at the set frequencies.

2.36 **SCHEDULE N - BIRD CONTROL**

2.36.1 **GENERAL DESCRIPTION**

2.36.1.1 It is the intent of this specification to describe a bird control program, very large in scope over a vast area and a diverse number of species involved. Successful bidder is to employ the most modern, sophisticated methods without killing roosting, nesting, migrating or feeding birds from Philadelphia International Airport and Philadelphia Northeast Airport.
Contractor shall not use any chemical or device that may injure maim, or cause illness to birds. Contractor is responsible for any and all licenses and permits that are required by Federal, State, and Local Governments. Contractor shall not use any chemical or device that may cause injury or discomfort to the traveling public. Placement of materials shall be as directed by the Airport's Maintenance Manager.

2.36.1.2 Contractor is to remove, expel, and/or relocate birds from Philadelphia International Airport and Philadelphia Northeast Airport. All work to include but not be limited to pigeons, swallows, sparrows, ducks, gulls, geese and any other bird infestation to include any migratory, roosting or breeding from every conceivable area throughout the facility. Contractor is responsible for cleaning and closing any and all roosting areas, using cement blocks or aluminum sheets fitted to maintain aesthetics of surrounding structures. Contractor shall be responsible for any and all scaffolds and/or lifting devices and maintenance of traffic needed for rooftop and under eaves operations. Contractor shall be responsible

for re-applying chemical repellents that may become ineffective because of weather conditions, sunlight or any other factors that may render applied substance useless.

2.36.1.3 **AREAS TO BE CLEANED AND TREATED** (Representative listed areas but work not limited to these areas)

2.36.1.3.1 Terminal "A East" Arrival: All roof areas, bus areas behind terminal, underneath bridge areas, beam structures, canopy, pipes and signs, and connecting bridges.

2.36.1.3.2 Terminal "A East" Departure: All roof areas, signs, underneath bridge areas, building overhangs, beam structures, pipe and eaves.

2.36.1.3.3 Terminal "A/B" Train Platforms: All roof areas, underneath bridge areas, canopy under train platform, signs, pipes and eaves.

2.36.1.3.4 Terminal "B/C" Arrival: All roof areas, commercial vehicle areas behind terminal, underneath bridge areas, beam structures, canopies, pipes and signs, underneath garages "A/B/C" public access eave areas, and connecting bridges.

2.36.1.3.5 Terminal "B/C" Departure: All roof areas, signs, underneath bridge areas, beam structures, canopy pipes and eaves.

2.36.1.3.6 Terminal "C" Arrival: All roof area, bus areas behind terminal, underneath limousine road bridge areas, beam structures, pipes and signs, underneath garages "A/B/C" public access eave areas, and connecting bridges.

2.36.1.3.7 Terminal "C" Departure (Communications Center & Police): All roof areas, signs, underneath bridge areas, beam structures, canopy pipes and eaves.

2.36.1.3.8 Terminal "C/D" Train Platforms: All roof areas, underneath bridge areas, canopy under train platform, signs, pipes and eaves.

2.36.1.3.9 Terminal "D" Arrival: All roof areas of bridge behind terminal, bus areas behind terminal, underneath garage D public access eave and connecting bridges.

2.36.1.3.10 Terminal "D" Departure: All roof areas underneath bridge areas, beam structures, pipes and eaves. All above areas to be treated with bird repellent, anti-roosting compounds and screening where necessary.

2.36.1.3.11 Terminal "E" Train Platform: All roof areas, underneath bridge areas, canopy under train platform, signs, pipes and eaves.

2.36.1.3.12 Terminal "E" Arrival: All roof areas, bus areas behind terminal, underneath bridge areas, beam structures, pipes and signs. All areas to be treated with bird repellents, anti-roosting compounds and screening where necessary.

2.36.1.3.13 Terminal "E" Departure: All roof areas, bus areas behind terminal, underneath bridge areas, beam structures, pipes and signs. All above areas are to be treated with bird repellent, anti-roosting compounds and screening where necessary.

2.36.1.3.14 Interior terminal areas when necessary.

2.36.1.3.15 Bridges Interconnecting Terminals: All roof area, beneath bridges

2.36.1.3.16 On the Airfield-Side: All areas that are applicable (i.e., concourses, out bound bag areas, tunnels, etc.).

2.36.1.3.17 Terminal A West: All roof areas, area beneath 3rd floor spanning over departure road and train, bridge areas, signs and eaves

2.36.1.3.18 Terminal F: All roof areas, bridge to Terminal E, signs and eaves.

2.36.1.3.19 Philadelphia Northeast Airport: Areas as required.

2.36.2 **TECHNICAL DESCRIPTION**

2.36.2.1 Monthly inspections shall be performed to establish a preventive maintenance program within the first six-months to be approved by the Airport's Maintenance Manager.

2.36.3 **SPECIAL REQUIREMENTS**

2.36.3.1 Contractor shall perform or meet the following:

2.36.3.1.1 Provide response to calls within a 24 hour period.

2.36.3.1.2 Show evidence of sufficient equipment to successfully comply with required work.

2.36.3.1.3 Be capable of doing the necessary construction and installation work required to successfully comply with Bird Control Program.

2.36.3.1.4 Clean up and remove all excrement and other bird remains from areas which have been secured and/or treated.

2.36.4 **SPARE PARTS**

An appropriate supply of nylon screen and anchors shall be maintained at the facilities. As inventory is used it shall be replaced.

2.36.5 **RECORDS/DOCUMENTATION**

Records shall be maintained at Philadelphia International Airport in accordance with the requirements of regulatory agencies. Contractor shall deliver an up-to-date listing of records every six (6) months.

2.36.5.1 All work will be initiated from the airport's work control center through the issuance of a work order. The work control center will only phone in priority 1, emergency requests.

2.36.5.2 All hours and parts used will be logged onto the work orders. Work that is not completed at the end of the day will have all of the hours and parts logged to it daily until completed.

2.36.5.3 Submit all proposed PM procedures and support information on approved work sheets, along with recommended frequencies for approval by the manager of maintenance. The PM information will be entered into the computerized maintenance management system to be generated at the set frequencies.

2.37 **SCHEDULE O - AIRFIELD SUPPORT SERVICES**

2.37.1 **GENERAL DESCRIPTION**

2.37.1.1 The Contractor shall furnish labor, equipment, tools and materials as required to remove and prune trees and brush at Philadelphia International and Northeast Airports as directed by the Airport's Maintenance Manager or his/her designee.

2.37.1.2 The Contractor shall furnish all labor, materials, equipment, tools and supplies for the removal of rubber deposits on runways at Philadelphia International Airport and Philadelphia Northeast Airport as per specifications herein. This work shall consist of removing accumulated rubber deposits from the touchdown area of runways by high-pressure water and chemicals as specified herein. Runways are bituminous.

2.37.1.3 The Contractor shall furnish labor, equipment, tools and materials as required to perform maintenance of the runway coefficient of friction measuring instruments in accordance with FAA regulations of 4 runways at Philadelphia International Airport.

2.37.1.4 The Contractor shall furnish all labor, materials, supervision, expertise, equipment, tools and supplies for the maintenance of Animal Damage Control measures for managing wildlife hazards to aircraft and public safety at the Philadelphia International Airport and Philadelphia Northeast Airport.

2.37.1.5 The Contractor shall furnish all labor, equipment, tools, and materials as required to provide maintenance support of the Aircraft Rescue and Fire Fighting Training Facility (ARFFT) live fire trainer A-2000 and associated propane fuel supply and vaporizer system.

2.37.1.6 The Contractor shall furnish all labor, material, equipment, tools, and incidentals necessary to perform repair of asphalt and concrete pavements in specified areas of the airside operations area. Locations and methods of pavement repair shall be as determined by the Airport Maintenance Manager.

2.37.1.7 The Contractor shall furnish all labor, material, equipment, tools, and incidentals necessary for the removal of pavement markings and line striping in specified areas of the airside operations area. Locations for marking removal and limits of work shall be as determined by the Airport Maintenance Manager or his/her designee.

2.37.2 **TECHNICAL DESCRIPTION - GROUNDSKEEPING**

2.37.2.1 The maintenance shall include pruning and removal of trees and brush as well as log removal work. Also, work includes the supply of materials such as pesticides, herbicides, fertilizers, growth retardants and seed.

Pruning, tree and stump removal shall be performed as required in accordance with standard horticultural practices.

2.37.2.2 **MATERIALS (EXTERIOR)**

2.37.2.2.1 **Insecticides:** Dormat oil spray; Diazinon, Sevin, Isotox. Insecticide to be applied with a spreader-sticker as directed by the manufacturer or equal with EPA approval.

2.37.2.2.2 **Fertilizer:** 10-6-4 50% natural organic by weight. Weed and feed, 10-6-4 commercial fertilizer shall conform to the requirements of the PA Act of 1956, EPA and U.S. Department of Agriculture requirements.

2.37.2.2.3 **Herbicides:** Round-up, Dyclomec, Treflaw 5G or equal as approved in accordance with EPA and U.S. Department of Agriculture requirements.

2.37.2.2.4 **Turf Growth Retardant:** Embark, BK800, Surf, Krovar I, Arsonal and Elanco Cutless 50W to be applied in Spring and Fall at a rate of 50 gal. Per acre on utility turf areas and at a rate of 100 gal. Per acre to control vegetation. For bidding purposes the cost quotes shall cover specified and non-specified brand products in the Turf Growth Retardant category.

2.37.2.2.5 **Seed:** All grass seed must be "Blue Tag Certified" to insure quality. Seed is to be packaged in 50 lb. bags. Any grass seed substitution shall include the latest turf grass ratings from the National Turfgrass Evaluation Program of the U.S. Department of Agriculture. Any substitution (due to availability) must be pre-approved by the City. All seed furnished must be of current manufacturer and be warranted as new.

2.37.2.2.6 **Mulch:** Double ground hardwood mulch moisture content not to exceed 17% by weight.

2.37.2.2.7 Contractor shall deliver all chemicals and seed to locations designated by the City.

2.37.2.3 **SPECIAL REQUIREMENTS**

2.37.2.3.1 **WORK HOURS (EXTERIOR)**

Work to begin at job site no earlier than 7:30 A.M. and to conclude no later than 4:30 P.M.; unless approved by the Division of Aviation, no work permitted on Saturdays, Sundays, or holidays.

2.37.2.3.2 **PERSONNEL QUALIFICATIONS (EXTERIOR)**

Foreman: Shall have a minimum of five years tree removal experience and be licensed to apply all insecticides and pesticides in compliance with Federal and State pesticide acts and registration requirements

Work Crew: The work crew is to include all tools and equipment as necessary to complete the tasks outlined in Section 5. The composition and size of the work crew will be approved by the DOA prior to beginning work.

All personnel assigned to this contract will be required to display in full view and at all times the proper Airport identification.

The Director of Aviation or his/her designated representative reserves the right to stop the work of the Contractor and his/her work crew if it is determined that the crew members are not qualified to perform the duties, as described, or the public health and welfare is compromised.

2.37.2.3.3 **MATERIAL SAFETY DATA INFORMATION**

Material Safety Data Sheets (MSDS) shall be submitted to the Division of Aviation for all materials to be used. Materials shall conform to Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended.

To comply with the Pennsylvania Community and Worker Right to Know Act of 1984, the City of Philadelphia requires bidders to submit with their bid a copy of the MSDS pertinent to the product(s) used or to the service(s) offered. Additionally, successful bidders are required to provide to the receiver an MSDS prior to, or accompanying, the first shipment and subsequent to any revision to the MSDS during the duration of the contract.

For those products or substances which the bidder believes exempt from the State regulation to provide MSDS, the City requires those bidders to provide with their bid written and signed documentation of the exemption by citing the specific applicable section of the state law upon which the exemption from MSDS provision is based.

Labeling of Chemical Substances

Bidders for the provision of product(s) or service(s) must meet legal requirements under the Pennsylvania Community Worker Right Act of 1984 for the labeling of chemicals and of hazardous substances. For those products or substances which the bidders believe exempt from State labeling regulations, the City requires those bidders to provide with their bid written and signed documentation of the exemption from the labeling requirement is based.

The Material Safety Data Sheet of any other product information submitted by bidder in connection with this bid for purposes or product description, information and specifications only. Bidder agrees that any additional terms or conditions contained therein, including, but not limited to, disclaimers or limitation of liability, do not become part of the bid.

2.37.2.4 **ADDITIONAL REQUIREMENTS**

2.37.2.4.1 Method of Payment

Pruning and removal will be paid for the actual area of work rounded up the ten nearest square yards.

Soluble chemical products will be paid for at the bid price in concentrate form.

2.37.2.5 **SPARE PARTS**

No chemicals will be permitted to be stored on the premises.

2.37.2.6 **RECORDS/DOCUMENTATION**

2.37.2.6.1 The Contractor shall submit written monthly reports to the Division of Aviation.

2.37.2.6.2 All work will be initiated from the Airport's work control center through the issuance of a work order. The work control center will only phone in Priority 1, emergency requests.

2.37.3 **TECHNICAL DESCRIPTION - RUNWAY RUBBER REMOVAL**

2.37.3.1 Successful bidder shall furnish all labor, materials, equipment, tools and supplies for the removal of rubber deposits on runways at Philadelphia International Airport and Philadelphia Northeast Airport as per specifications herein.

2.37.3.2 This work shall consist of removing accumulated rubber deposits from the touchdown area of runways by high-pressure water and/or chemicals as specified herein. Runways are bituminous.

NOTE: Included in this bid are specifications for chemicals for rubber removal (refer to 2.37.3.9.1, below). Each bidder must visit the site and deliver specs that meet the included specifications as a minimum. Any bidder not doing so will be disqualified.

2.37.3.3 Contractor shall perform this work without damage to the pavement surface and grooving, runway lights, joint sealers and sealants. The integrity of the pavement grooving shall not be destroyed, but the rubber shall be at least 95% removed.

2.37.3.4 The Contractor shall, at his expense, repair any damage caused to the satisfaction of the Airport's Maintenance Manager or his designee.

2.37.3.5 Before and after removal of rubber deposits, DOA shall take friction measurements in accordance with FAA Advisory Circular AC150/5320-12A, latest edition. After removal of rubber deposits, the average friction under self-wetting conditions at 40 mph shall be 80 or greater. If the average friction is less than 80 for each 500 ft. measured, Contractor shall, at his expense, repeat rubber removal until the required average friction is obtained.

2.37.3.6 The use of abrasive material, salt water, brackish water, or water containing undesirable matter is not permitted.

2.37.3.7 **EQUIPMENT**

Rubber removal equipment shall consist of a high-pressure water pump system capable of pressures in excess of 6,000 p.s.i. The pumping unit shall be truck mounted, and deliver the water through an approved spray bar with approved nozzles. It shall be capable of removing at least 10,000 square feet per hour, traveling between 0.5 and two (2) miles per hour. The equipment shall be quipped with a rotary nozzle system capable of removing a 24-48" wide strip in one pass. A demonstration may be required prior to award. Equipment shall be safe and maintained in satisfactory working condition on the job at all times.

2.37.3.8 **LABOR**

The Contractor shall provide all labor necessary to properly operate and maintain the equipment. The labor shall be totally familiar with the equipment and the rubber removal operation, and so certified in writing by the Contractor. Contractor shall list five (5) similar jobs successfully completed with verifiable points of contract.

2.37.3.9 **REMOVAL METHOD**

The primary touchdown area (heavier deposits) shall be cleaned first. Work shall begin at the runway centerline and proceed uniformly toward the runway edges. The Contractor will continue his operation in the areas designated by the Engineer until ordered to stop by the Engineer.

2.37.3.9.1 The operations shall continue as long as the Engineer finds that rubber is being effectively removed. If, in the opinion of the Engineer, equipment fails to perform as specified, or rubber removal is not being accomplished in a satisfactory manner, without damaging the pavement, the Engineer will order the operation stopped, and the Contractor will be paid up to the "Stop Order". The Contractor will <u>not</u> be permitted to begin again until they demonstrate that the equipment can perform as specified.

2.37.3.9.2 The Contractor shall measure the pH of the fluid/s to be used for each rubber removal application and submit the pH measurement of the fluid/s for the Engineer's approval before use.

2.37.3.10 **PRODUCT**

Product intended with this bid should meet or exceed the specifications as listed.

2.37.3.10.1 A formula which has been specifically developed to soften vulcanized rubber on asphalt landing strips, thereby permitting intensive cleaning, hosing down with water at high pressure.

2.37.3.10.2 **DIRECTIONS:**

Dilute as follows: 1 part to 6 parts water.

Spray the solution onto the runway, ensuring that the entire surface in question has been thoroughly covered.

Hose down the surface with water, at high pressure.

2.37.3.10.3 **SPECIFICATIONS:**

The following Material Safety Data Sheet (MSDS) information for sodium hydroxide (NaOH) is included for reference purposes.

Type Rubber-Softener
Form Transparent Liquid
Color Blue
Odor Ether
pH 12.8 - 13.5
Density 10.6 lbs/gal.
1.06 kg/litre Flash Point None
Biodegradability 99.5%

SECTION II HAZARDOUS INGREDIENTS			
COMPOSITION	%	FORMULA	HAZARD DATA
Sodium hydroxide	----	NaOH	Irritant, corrosive - Vapor is a narcotic

SECTION III PHYSICAL DATA

Boiling Point °C (°F)	82 - 105	Specific gravity (H^2O)	1.06
Vapor Pressure (mm Hg)	N.A.	percent volatile by volume (%)	91.5%
Vapor Density (air = 1)	N.A.	percent of activity (%)	15%
Solubility in Water	Soluble	pH	12.8 - 13.5
Appearance and Odor	Clear blue liquid with an ether odor		

SECTION IV FIRE AND EXPLOSION HAZARD DATA	
Flash point (method used) °C (°F) None (Closed Cup)	Flammable limits % volume in air
Extinguishing Media	
Special fire fighting procedures Wear protective apparatus. Heated material emits harmful vapors. Unusual fire and explosion hazards	

SECTION V HEALTH HAZARD DATA
Effects of Overexposure and first aid procedures
Skin Irritation or burns. Flush greatly with water; wash skin with hot soapy water.
Eyes Irritation or burns. Flush with water for at least 15 minutes and seek medical attention.
Inhalation Dizziness, anesthesia, headache. Remove victim from area and restore breathing if required. Seek medical attention if necessary.
Ingestion Nausea, anesthesia, irritation of burns. Drink Large quantities of water, milk or diluted vinegar; seek medical attention as soon as possible

SECTION VI REACTIVITY DATA				
Stable	X	Yes	No	Conditions to Avoid: Keep away from excessive heat
Incompatible Materials Acids and strong oxidizing materials				
Hazardous decomposition materials				
Polymeri-zation		Yes	No	Conditions to Avoid

SECTION VII SPILL OR LEAK PROCEDURES

Steps to be taken Wear adequate protective equipment. Small quantities: Flush with water. Large quantities: Absorb with sand; pick up and flush greatly with water.
Waste disposal method Landfill absorption material in an approved site, material is 99.5% biodegradable.

SECTION VIII SPECIAL PROTECTION INFORMATION	
Respiratory protection Organic canister mask (in closed area)	
Ventilation	Local exhaust - desirable Mechanical - in closed area only
Protective gloves - P.V.C.	Eye protection
Other	

2.37.3.10.3 Contractor may use NaOH or other equal commercially available product. Use of other equal product will require Contractor to submit MSDS test results where used, and other information in accordance with federal, state, and local regulations. Use of other products shall be as approved by the Airport's Maintenance Manager or his designee.

2.37.3.11 **SPECIAL REQUIREMENTS**

2.37.3.11.1 **GENERAL**

All operations to perform this work shall be subject to the approval of the Engineer in accordance with the requirements for the work area. Work will be performed at times determined by Director of Aviation or designee.

2.37.3.11.2 **CLEAN-UP**

Sweeping/vacuuming operations will be performed by the Contractor Operator.

Waste materials of rubber deposits removed and water used shall be collected immediately and hauled off Airport property. All related costs including laboratory tests shall be borne by the Contractor.

Work shall comply to all applicable federal, state, and local regulations. All penalties and citations incurred will be borne by the Contractor.

Contractor shall prevent waste materials from flowing into the field area outside the runway pavement.

2.37.3.11.3 **MOBILITY**

The Contractor shall have the capability of removing his equipment from the runway within five (5) minutes of notice. The runway shall be left in a condition suitable for operations.

The Contractor may obtain water from Airport water hydrants designated by the Engineer. Contractor shall furnish all equipment, water trucks and labor to deliver water from the water hydrants to the work site.

2.37.3.11.4 **DEFINITION OF AREAS**

Areas to be cleaned shall be clearly marked out in advance by the Engineer.

2.37.3.11.5 **TEMPERATURE RESTRAINTS**

When weather forecasts predict 35°F or below, the Contractor shall not operate his equipment but shall postpone operations until the temperature is at 35°F and rising. No payment will be made for this down time.

2.37.3.11.6 **CHEMICAL APPROVAL**

2.37.3.11.6.1 After award and prior to performance, the Contractor shall submit its chemical specification for approval.

Arrangements for site inspection and submission of chemical specifications are to be made to the Airport’s Maintenance Manager or his designee.

2.37.3.12 **RECORDS/DOCUMENTATION**

2.37.3.12.1 All work will be initiated from the Airport's work control center through the issuance of a work order. The work control center will only phone in Priority 1, emergency requests.

2.37.3.12.2 All hours and parts used will be logged onto the work orders. Work that is not completed at the end of the day will have all of the hours and parts logged to it daily until completed.

2.37.3.12.3 Submit all proposed PM procedures and support information on approved work sheets, along with recommended frequencies for approval by the Airport’s Maintenance Manager or his designee. The PM information will be entered into the maintenance management system to be generated at the set frequencies.

2.37.4 **TECHNICAL DESCRIPTION – RUNWAY FRICTION MEASURING EQUIPMENT**

2.37.4.1 **RUNWAY FRICTION MEASURING EQUIPMENT**

Successful bidder shall furnish all labor, materials, equipment, tools and supplies to maintain the runway friction measuring equipment at Philadelphia International Airport as specified herein.

2.37.4.2 **EQUIPMENT**

The runway friction measuring equipment to be maintained are the Mu Meters, towed vehicle types Mark IV Model #E-813 (quantity 2) and Mark V Ultra Model #10784 of Douglas Equipment Ltd, Cheltenham, Gloucestershire, England and the Ford Taurus vehicle as modified from U.S. Friction Tester in Gainsville, Florida according to City Office of Fleet Management Specification Code 83000a.42.

2.37.4.3 **LABOR**

The Contractor shall provide all labor necessary to maintain, test, upgrade and operate the runway friction measuring equipment in compliance with ASTM E-670 and FAA Advisories AC #150/5345-1U, AC #150/5320-1B and AC #150/5200-30A, latest editions thereof. The labor shall be experienced with the equipment, the maintenance, the testing, and the operation, and so certified in writing by the Contractor.

2.37.4.4 **SPECIAL REQUIREMENTS**

The Contractor shall notify the D.O.A. of software revisions and enhancements to the runway friction measurement computer units within five (5) days after announced availability of the revised or enhanced software. The Contractor shall deliver and install the software revisions and enhancements with documentation and instruction as scheduled and approved by the Airport's Maintenance Manager or his designee.

2.37.4.5 **EQUIPMENT MAINTENANCE**

Additional parts, special tools, and labor required for the maintenance, testing, operation, and upgrade of the runway friction measuring equipment, instruction on work performed, and acceptance of work completed shall be provided as Contract Extras.

The Contractor shall perform preventive maintenance on the runway surface measuring equipment as an on demand service including inspection, calibration, repair, testing, operation, and training.

2.37.4.6 **RECORDS/DOCUMENTATION**

2.37.4.6.1 The Contractor shall perform preventive maintenance on the runway surface measuring equipment in accordance with the manufacturers

specifications including inspection, calibration, repair, testing, operation, and training.

The Contractor shall prepare a Draft Evaluation Report and deliver on site promptly after work completion. Final Evaluation Report shall be delivered within three (3) weeks after work completion.

2.37.4.6.2 All work will be initiated from the Airport's work control center through the issuance of a work order. The work control center will only phone in Priority 1, emergency requests.

2.37.4.6.3 All hours and parts used will be logged onto the work orders. Work that is not completed at the end of the day will have all of the hours and parts logged to it daily until completed.

2.37.4.6.4 Submit all proposed PM procedures and support information on approved work sheets, along with recommended frequencies for approval by the Airport's Maintenance Manager or his designee. The PM information will be entered into the maintenance management system to be generated at the set frequencies.

2.37.5 TECHNICAL DESCRIPTION - WILDLIFE HAZARDS MANAGEMENT

2.37.5.1 The direct control wildlife hazard reduction program will provide immediate, short-term protection of human health and safety from the hazards associated with wildlife-aircraft collisions.

2.37.5.2 SCOPE OF WORK

2.37.5.2.1 This work will require periodic environmental and/or biological assessments (ecological study) by trained persons familiar with United States Department of Agriculture, Animal and Plant Health Inspection Service, Animal Damage Control Agency Acts and Agreements, and other state, and local laws to address. Periodic assessments will be requested and these studies will occur on demand in accordance with this paragraph.

a. The Airport's Wildlife Hazard History,
b. The daily and seasonal numbers, movements, and activities of wildlife species at and near the Airport,
c. The habitats and land uses of the Airport and surrounding areas.
d. Other conditions in accordance with FAR, Part 139.337.

2.37.5.2.2 The Contractor shall alleviate problems, when wild animals (i.e. deer and bird/waterfowl) present a threat to public health or safety, as directed by the Airport's Maintenance Manager or his designee by means of exclusion, habitat management, harassment/frightening, application of chemical repellents, population reduction (capture and translocation) and population reduction (lethal).

2.37.5.3 **SPECIAL REQUIREMENTS**

2.37.5.3.1 The Contractor must be familiar with related programs and policies of the following parties:

- Federal Aviation Administration (FAA)
- U.S. Department of Agriculture (USDA)
- 0.Pennsylvania Game Commission
- N. J. Division of Fish, Game, and Wildlife
- U.S. Fish and Wildlife Service
- The Wildlife Society, Washington, D.C.

2.37.5.3.2 The Contractor will be responsible for obtaining all necessary expertise, licenses and permits to engage in the work specified herein and to provide Wildlife Hazard Management plans, personnel for implementation and training, for the Airport to remain compliant with FAR, Part 139.337.

2.37.5.4 **RECORDS/DOCUMENTATION**

2.37.5.4.1 All work will be initiated from the Airport's work control center through the issuance of a work order. The work control center will only phone in Priority 1, emergency requests.

2.37.5.4.2 Accurate field records will be kept and will include (1) all information collected on wildlife activity, (2) the site location(s), (3) the name of the observer, and (4) any other relevant information.

2.37.5.4.3 Submit all proposed PM procedures and support information on approved work sheets, along with recommended frequencies for approval by the Airport's Maintenance Manager or his designee. The PM information will be entered into the Computerized Maintenance Management System (CMMS) to be generated at the set frequencies.

2.37.6 **TECHNICAL DESCRIPTION - AIRCRAFT RESCUE AND FIRE FIGHTING TRAINING (ARFFT) LIVE FIRE TRAINER A-2000**

2.37.6.1 The Contractor shall furnish all labor, equipment, tools, and materials as required to provide maintenance support of the Aircraft Rescue and Fire Fighting Training Facility (ARFFT) live fire trainer A-2000 and associated propane fuel supply and vaporizer system

2.37.6.2 **SCOPE OF WORK**

2.37.6.2.1 Two (2) planned preventive maintenance support visits annually by OEM trained technician. This service will include the following.

2.37.6.2.1.1 Check operating performance of all fireplaces and making adjustments as necessary.

2.37.6.2.1.2 Clean and/or replacing all filter elements.

2.37.6.2.1.3 Inspect all fans, blowers, and lubricate bearings.

2.37.6.2.1.4 Inspect all pilot spark igniters and replace as required.

2.37.6.2.1.5 Inspect all pilot spark flame rods and replace as required.

2.37.6.2.1.6 Inspect the fuel control station and make necessary adjustments as required.

2.37.6.2.1.7 Clean the fuel control station inlet strainer.

2.37.6.2.1.8 Inspect and calibrate all gas detection assemblies and replace sensor elements as required.

2.37.6.2.1.9 Inspect and adjust all smoke generators.

2.37.6.2.1.10 Inspect programmable logic controller battery and replace as required.

2.37.6.2.1.11 Clean equipment cabinets.

2.37.6.2.2 The Contractor shall provide on-call corrective maintenance support by OEM trained technician with 24 hours response during normal daytime business hours Monday through Friday (excluding holidays), including all parts, materials, and labor to implement necessary repairs.

2.37.6.3 **SPECIAL REQUIREMENTS**

2.37.6.3.1 All operations to perform this work shall be subject to the approval of the Engineer in accordance with the requirements for the work area. Work will be performed at times determined by Director of Aviation or designee.

2.37.6.4 **RECORDS/DOCUMENTATION**

2.37.6.4.1 All work will be initiated from the Airport's work control center through the issuance of a work order. The work control center will only phone in Priority 1, emergency requests.

2.37.6.4.2 Submit all proposed PM procedures and support information on approved work sheets, along with recommended frequencies for approval by the Airport's Maintenance Manager or his designee. The PM information will be entered into the Computerized Maintenance Management System (CMMS) to be generated at the set frequencies.

2.37.7 **TECHNICAL DESCRIPTION- MINOR PAVEMENT REPAIRS**

2.37.7.1 The Contractor shall furnish all labor, material, equipment, tools, and incidentals necessary to perform repair of asphalt and concrete pavements in specified areas of the airside operations area. Locations and methods of pavement repair shall be as determined by the Airport Maintenance Manager.

2.37.7.2 **SCOPE OF WORK**

2.37.7.2.1 The Contractor shall provide on-call pavement repairs, using materials and methods determined acceptable by the Airport's Maintenance Manager, or his/her designee.

2.37.7.2.2 All operations necessary to perform this work will be subject to the approval of the Airport Maintenance Manager or his/her designee in accordance with the requirements of the work area.

2.37.7.2.3 The limit of work area shall be as determined by the Airport Maintenance Manager or his/her designee.

2.37.7.3 **RECORDS/DOCUMENTATION**

2.37.7.3.1 All work will be initiated from the Airport's work control center through the issuance of a work order. The work control center will only phone in Priority 1, emergency requests.

2.37.7.3.2 All labor hours and repair parts used will be logged onto the work orders. Work that is not completed at the end of the day will have all of the hours and parts logged to it daily until completed.

2.37.7.3.3 Submit all proposed PM procedures and support information on approved work sheets, along with recommended frequencies for approval by the Airport's Maintenance Manager or his designee. The PM information will be entered into the maintenance management system to be generated at the set frequencies.

2.37.8 TECHNICAL DESCRIPTION – PAVEMENT MARKING (LINE STRIPING) REMOVAL

2.37.8.1 The Contractor shall furnish all labor, material, equipment, tools, and incidentals necessary for the removal of pavement markings and line striping in specified areas of the airside operations area. Locations for marking removal and limits or work shall be as determined by the Airport Maintenance Manager, or his/her designee.

2.37.8.2 SCOPE OF WORK

2.37.8.2.1 The contractor shall remove pavement markings (paint) by self-contained shot blasting equipment. Contractor shall submit and obtain the Airport Maintenance Manager's approval for the method to be used, prior to commencement of work.

2.37.8.2.2 Removal of existing pavement markings by painting over them with black (or other camouflaging color) paint, or by milling, is not acceptable. The method used shall not materially damage the surface or texture of the existing pavement.

2.37.8.2.3 Contractor shall not use paint or liquid asphalt to cover existing pavement markings.

2.37.8.3 RECORDS/DOCUMENTATION

2.37.8.3.1 All work will be initiated from the Airport's work control center through the issuance of a work order. The work control center will only phone in Priority 1, emergency requests.

2.37.8.3.2 All labor hours and repair parts used will be logged onto the work orders. Work that is not completed at the end of the day will have all of the hours and parts logged to it daily until completed.

2.37.8.3.3 Submit all proposed PM procedures and support information on approved work sheets, along with recommended frequencies for approval by the Airport's Maintenance Manager or his designee. The PM information will be entered into the maintenance management system to be generated at the set frequencies.

2.38 **SCHEDULE P - BUILDING MOUNTED SIGNAGE**

2.38.1 **GENERAL DESCRIPTION**

2.38.1.1 The work includes but is not limited to furnishing labor, transportation, equipment, materials, supplies, supervision necessary to furnish and install new signage, relocate existing signage, replace panels in existing signage and repair damaged signage at the Philadelphia International Airport (PHL) and Philadelphia Northeast Airport (PNE).

2.38.1.2 Airport signage work shall be carried out in accordance with standards and procedures as directed by the Airport's Maintenance Manager or his designee.

2.38.2 **TECHNICAL DESCRIPTION**

2.38.2.1 **Signs**

2.38.2.1.1 Functional categories of signs consist of directional, identification, informational, security and warning. The requirements of this specification include interior building pendant mount, ceiling mount, wall mount, individual letter and ground mount. Additionally, exterior building wall mount, individual letter mount and ground mount signs are also covered by these requirements. Sign types may be externally or internally illuminated, non-illuminated, braille and dynamic display.

2.38.2.2 **Manufacturers**

Subject to compliance with the requirements, manufacturers offering products that may be incorporated in the work include, but are not limited to, the following:

2.38.2.2.1 **(Injection Molded ABS Plastic Frames, Tactile Sign, Braille):**

APCO 388 Grant Street, SE Atlanta, GA 30312 404-688-9000

ASI Sign Systems 2433 W. Westmoreland Street Philadelphia, PA 19129 215-229-2900

Spanjer Brothers, Inc. 1160 North Howe Street Chicago, IL 60610 800-772-6537

2.38.2.2.2 (Aluminum Extrusions):

Sign Comp 5009 West River Drive Comstock Park, MI 49321 616-784-0405

Spandex USA 185 Walnut Street P.O. Box 1891 Allentown, PA 18105
215-434-9889 800-331-1891

2.38.2.2.3 (Adhesives/Fasteners):

3M Industrial Specialties Div. 15 Henderson Drive
West Caldwell, NJ 07007 201-575-3757 800-221-1455

GE Silicone Routes 4 and 32 Waterford, NY 12188 800-255-8886

2.38.2.2.4 (Vinyl Film):

3M Commercial Graphics Division 15 Henderson Drive
West Caldwell, NJ 07007 800-221-1455

2.38.2.2.5 (Specialty Lighting):

Visual Comfort Lighting A Division of ALC 159 Express Street
Plainview, NY 11803 516-681-4930

2.38.2.2.6 (Organic Coatings):

Akzo Coatings, Inc.6369 Old Peachtree Road Norcross, GA 30071
404-448-4511 800-451-2173

Matthews Paint Company 400 South Merchantile Court Wheeling, IL 60090
708-537-9200 800-323-6593

2.38.2.2.7 (Cast Acrylic Sheet):

GE Plastics One Plastics Avenue Pittsfield, MA 01201 800-451-3147

Rohm and Haas Company Independence Mall West Philadelphia, PA 19105
215-592-3000

2.38.2.2.8 (LED Signs):

Translux 110 Richards Avenue Norwalk, Conn 06854
800-243-5544 800-462-2716 (Service)

2.38.2.2.9 (Brushed Aluminum/Series 325):

Charleston Industries, Inc. Architectural signage Systems
101 Industrial Drive Charleston, MS 38921
1-800-647-2384 (phone) 1-800-413-0454 (fax)

2.38.2.3 **Materials**

2.38.2.3.1 General: Provide custom fabricated signs composed of metals of the forms and types which comply with requirements of referenced standards and which are free from surface blemishes where exposed to view in the finished unit. Exposed-to-view surfaces exhibiting pitting, seam marks, roller marks, "oil canning," stains, discolorations or other imperfections on finished units are not acceptable.

2.38.2.3.2 Cast Acrylic Sheet: Provide cast (not extruded or continuous cast) methyl methacrylate monomer plastic sheet, (1/4" or 1/8" thick) sizes and thicknesses indicated on drawings, with a minimum flexural strength of 16,000 psi when tested in accordance with ASTM D790, a minimum allowable continuous service temperature of 176 deg. F. (80 deg C), and the following general types:

1. **Opaque Sheet:** Where sheet material is indicated as "opaque", provide colored opaque acrylic sheet colors and finishes indicated.

2.38.2.3.3 **Aluminum Sheet:** Provide aluminum sheet of alloy and temper recommended by the aluminum producer or finisher for the type of use and finish indicated, and with not less than the strength and durability properties specified in ASTM B209 for 5005-H15. Thickness .125 as noted on graphic drawings.

2.38.2.3.4 **Aluminum Extrusions:** Provide aluminum extrusions of alloy and temper recommended by the aluminum producer or finisher for the type of use and finish indicated, and with not less than the strength and durability properties specified in ASTM B221 for 6063-T5. Wall thickness .125 as noted on graphic drawings.

2.38.2.3.5 **Vinyl Film:** Provide opaque nonreflective vinyl film, 0.0035 inch minimum thickness, with pressure-sensitive adhesive backing, suitable for exterior as well as interior applications.

2.38.2.3.6 **ABS Plastic:** Provide high-impact thermoplastic composed of copolymers of acrylonitrile, butadiene, and styrene.

2.38.2.3.7 Fasteners: Use concealed fasteners of adequate length, thickness and strength to secure sign materials.

Provide concealed fasteners for interconnection of custom fabricated signs components and for their attachment to other work except where

exposed fasteners are unavoidable or are the standard fastening method.

1. **Metal Fasteners:** Provide non-ferrous metal fasteners that are not corrosive to sign materials and mounting surfaces.

   Provide Phillips flat-head machine screws for exposed fasteners, unless otherwise indicated. Locate fasteners where they will be inconspicuous.

2. **Reclosable Fasteners:** Use 3M dual lock brand pressure sensitive adhesive polylefin self-engaging type reclosable fastening material, or approved equal.

2.38.2.3.8 Anchors and Inserts: Use nonferrous metal or hot-dipped galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

2.38.2.3.9 Colored Coatings for Plastic Sheet and Aluminum: Use colored coatings. including inks and paints for copy and background colors, that are recommended by manufacturers for optimum adherence to specified surfaces and are nonfading for the application intended.

2.38.2.3.10 Welding Electrodes and Filler Metal: Type and alloy of filler metal and electrodes as recommended by producer of metal to be welded, complying with applicable AWS specifications, and as required for color match, strength and compatibility in the fabricated items.

2.38.2.3.11 Sheet Metals: Provide sheet metals selected for their surface flatness, smoothness and freedom from surface blemishes where exposed to view in the finished unit. Do not use materials whose exposed surfaces exhibit pitting, seam marks, roller marks, variations in flatness exceeding those permitted by referenced standards for stretcher-leveled metal sheet, stains, discoloration or other imperfections.

1. Stainless Steel Sheet: ASTM A167, Type 302 or 304, stretcher leveled, 0.0500 inch (16 gage) with bright, directional polish: AISI No. 4 finish.

2. Increase metal thickness or reinforce metal with concealed stiffeners or backing materials or both as required to produce surfaces whose variations in flatness exceed those permitted by referenced standards for stretcher-leveled metal sheet and to impart sufficient strength for use indicated.

2.38.2.3.12 Paint for Exposed Electrical (Raceways): Alkyd Enamel Paint for exposed conduits, junction boxes, ballast boxes and other raceway components exposed to view: 3 Coat Alkyd enamel paint system in color to be selected by Engineer. Provide materials equal to Benjamin Moore Regal Aquavelvet.

2.38.2.4 **Fabrication**

2.38.2.4.1 Form custom fabricated signs to required shapes and sizes, with true curves, lines and angles. Provide components in sizes and profiles indicated, but not less than required to comply with requirements indicated for structural performance.

2.38.2.4.2 Allow for thermal movement resulting from the following maximum change (range) in ambient temperature, in the design, fabrication, and installation of installed metal assemblies to prevent buckling, opening up of joints and overstressing of welds and fasteners. Base design calculations on actual surface temperatures of metals due to both solar heat gain and night time sky heat loss.

Temperature Change (Range): 100 deg. F, (55.5 deg C).

2.38.2.4.3 Provide necessary rebates, lugs and brackets for assembly of units. Use concealed fasteners wherever possible.

2.38.2.4.4 Welded Connections: Comply with AWS for recommended practices in shop welding. Provide welds behind finished surfaces without distortion or discoloration of exposed side. Clean exposed welded joints of all welding flux, and dress on all exposed and contact surfaces.

2.38.2.4.5 Provide castings that are sound and free of warp or defects which impair strength and appearance.

2.38.2.4.6 Finish exposed surfaces to smooth, sharp, well-defined lines and arises.

2.38.2.4.7 Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation, in a location not exposed to view after final assembly.

2.38.2.4.8 Furnish inserts and other anchorage devices for connecting custom fabricated signs to walls, ceilings and structure as indicated on the drawings. Fabricate anchorage devices which are capable of withstanding loadings imposed by installation and maintenance of signs, removal and replacement of sign panels. Coordinate anchorage devices with supporting structure.

2.38.2.5 **Panel Signs**

2.38.2.5.1 General: Comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.

1. Produce smooth, even, level sign panel surfaces, constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally.

2. Modular Construction: Sign panels are to be completely interchangable with other sign panels of the same size and type.

2.38.2.5.2 Unframed Panel Signs: Fabricate signs with edges mechanically and smoothly finished to conform with the following requirements:

1. Material: Aluminum

2. Corner Condition: Square corners

3. Welded Connections: Fabricate sign framing for interconnection of members by concealed internal welds, which eliminate surface grinding, using fittings designed and fabricated for this purpose, to the extent practicable.

4. Nonwelded Connections: Where required, fabricate custom fabricated signs for interconnection of members by means of concealed mechanical fasteners and fittings unless otherwise indicated. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.

5. Coordinate sign fabrication with clock provided by others. Install brackets, fittings, and fasteners to facilitate installation by others. Pre-drill brackets and sign body to accept clock and wiring connections and to insure proper alignment with cut-out in face of sign. Make minor adjustments in sign depth if required to accommodate device provided.

2.38.2.5.3 **Framed Panel Signs:** Fabricate frames to profile indicated; comply with the following requirements for materials and corner conditions:

1. Material: Aluminum, extruded.

2. Material: Injection molded ABS plastic.

3. Corner Condition (Aluminum): Square corners.

4. Corner Condition (Plastic): Corners rounded to radius indicated.

2.38.2.5.4 Cylindrical Signs: (Sign type C06-SP) Fabricate Signs to shape and profile indicated; comply with the following requirements for materials and corner conditions:

1. Material: Stainless Steel, 16 gage (or heavier if required), No. 4 finish.

2. Continuously weld all joints and seams except where other methods of joining are indicated; grind, fill, and dress welds to produce smooth flush exposed surfaces in which welds are invisible after final finishing is completed.

3. Provide sign with a bottom panel, attached with fasteners concealed from view when installed in an upright position. Bottom panel is intended to prevent any loss of sand ballast from unit. Install within each unit 50lbs of dried, sterilized sand.

2.38.2.5.5 Brackets: Fabricate brackets and fittings for bracket-mounted signs from extruded aluminum to suit sign panel construction and mounting conditions indicated. Factory-paint brackets in matching the background color of the sign panel. Provide EPDM separation material for concrete or masonry installations to prevent any electrolytic action.

2.38.2.5.6 Graphic Content and Style: Provide sign copy that complies with the requirements indicated for size, style, spacing, content, position, material, finishes, and colors of letters, numbers, and other graphic devices.

1. Raised Copy: Cut characters from opaque integral color cast acrylic sheet. Produce precisely formed characters with square cut edges free from butts and cut marks. Chemically weld cut characters to panel surface.

   a. Panel Material: Cast acrylic sheet with integral opaque color.

2. Applied Copy: Die-cut characters from vinyl film with pressure-sensitive adhesive backing. Apply copy to the exposed fact of the sign panel.

a. Panel Material: Aluminum sheet with opaque color coating surface applied.

2.38.2.6 Dimensional Letters

2.38.2.6.1 Cutout Letters: Cut letters from 1/4" solid sheet material as indicated. Produce precisely cut characters with square cut, smooth edges. Comply with requirements indicated for finish, style, and size.

1. Material: Cast acrylic sheet with opaque color coating applied to face and edges.

2.38.2.7 Finishes

2.38.2.7.1 Colors and Surface Textures: For exposed sign material that requires selection of materials with integral or applied colors, surface textures or other characteristics related to appearance, provide color matches indicated, or if not indicated, as selected by the Engineer from the manufacturer's standards.

2.38.2.7.2 Metal Finishes: Comply with NAAMM "Metal Finishes Manual" for finish designations and applications recommendations.

2.38.2.7.3 Aluminum Finishes: Finish designations prefixed by "AA" conform to the system established by the Aluminum Association for designating aluminum finishes.

1. Baked Enamel Finish: AA-M4xC12C42R1x (Mechanical Finish: Manufacturer's standard, other nondirectional textured; Chemical Finish: chemical conversion coating, acid chromate-fluoride-phosphate pretreatment; Organic Coating: as specified below). Apply baked enamel in compliance with paint manufacturer's specifications for cleaning, conversion coating, and painting.

   a. Organic Coating: Thermosetting modified acrylic enamel primer/topcoat system complying with AAMA 603.8 except with a minimum dry film thickness of 1.5 mils, 30% matte finish.

   b. Color: Uniform, Matching Manufacturers Specified color or existing Terminal A signs as specified below:
      (A) White: Match 3M Scotchcal 3650, White or 3M Scotchlite 550-10, White.

      (B) Flat Black: Match Matthews Acrylic Polyurethane 41-306 signal Jet Black.

      (C) Black: Match Matthews Acrylic Polyurethane 41-335 Black Anodic.

(D) Burgandy: Match existing Terminal A sign background color.

(E) Teal: Match Finnaren & Haley 5534D, Lot 688.

(F) Aluminum: Clear anodized aluminum finish.

(G) Red: Match 3M Scotchcal, 3621 Tomato Red.

(H) Blue: Match 3M Scotchlite High Intensity Blue, 3875.

2. Class II Clear Anodized Finish: AA-M12C22A31 (Mechanical Finish: as fabricated, nonspecular; Chemical Finish: etched, medium matte; Anodic Coating: Class II Architectural, clear film thicker than 0.4 mil).

3. Paint Finish on Exposed conduits and junction boxes: Color to be selected by Engineer. Paint all exposed conduits and electrical junction and ballast boxes installed as a part of the work of this section with the following 3 coat system:

a. 1st Coat: Alkyd Enamel Underbody

b. 2nd Coat: Regal Aquavelvet as manufactured by Benjamin Moore Co.

c. 3rd Coat: Regal Aquavelvet as manufactured by Benjamin Moore Co.

Tint 1st coat to color selected for finish coats. Protect surrounding surfaces from paint. Restore all surfaces damaged by the painting operation to their original condition to the satisfaction of the Engineer.

2.38.2.8 **Installation**

2.38.2.8.1 General: Locate sign units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions.

1. Install signs level, plumb, and at the height indicated, with sign surfaces free from distortion or other defects in appearance.

2. Provide anchorage devices and fasteners where necessary for securing custom fabricated signs items to in-place construction; including, threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws and other connectors as required.

3. Perform cutting, drilling and fitting required for installation of custom fabricated signs. Set products accurately in location, alignment and elevation, plumb, level and true, measured from established lines and levels. Provide temporary bracing or anchors in formwork for items which are to be built into concrete, masonry or similar construction.

4. Fit exposed connections accurately together to form tight, hairline joints or, where indicated, with uniform reveals and spaces for sealants and joint fillers. Where cutting, welding and grinding are required for proper shop fitting and jointing of custom fabricated signs items, restore finishes to eliminate any evidence of such corrective work.

5. Do not cut or abrade finishes which cannot be completely restored in the field. Return items with such finishes to the shop for required alterations, followed by complete refinishing or provide new units as required.

6. Install concealed gaskets, joint fillers, insulation and flashings as the work progresses, so as to make work weathertight, soundproof or lightproof as required.

7. Corrosion Protection: Coat concealed surfaces of aluminum, which will be in contact with grout, wood, or dissimilar metals, with a heavy coat of bituminous paint or zinc chromate primmer. Install sheet EPDM separation material for concealed surfaces of aluminum in contact with concrete or masonry. Do not adhere EPDM to concrete or masonry surfaces.

2.38.2.8.2 Wall mounted Panel Signs: Attach panel signs to wall surfaces using the methods indicated below:

1. Vinyl-Tape Mounting: Use double-sided foam tape, of thickness indicated, to mount signs to smooth, nonporous surfaces. Do not use this method for vinyl-covered or rough surfaces.
2. Silicone-Adhesive Mounting: Use liquid silicone adhesive recommended by the sign manufacturer to attach sign units to irregular, porous, or vinyl-covered surfaces. Use VHB double-sided vinyl tape to hold the sign in place until the adhesive has fully cured.
3. Shim Plate Mounting: Provide concealed aluminum shim plates 1/8 inch thick, with predrilled and countersunk holes, at locations indicated and where other mounting methods are not practicable. Attach the plate with fasteners and anchors suitable for secure attachment to the substrate. Attach panel sign units to the plate using the method specified above.

   Provide 1/8 inch thick, with predrilled and countersunk holes, at locations indicated and where other mounting methods are not practicable. Attach the plate with fasteners and anchors suitable for secure attachment to the substrate. Attach panel sign units to the plate using the method specified above.

2.38.2.8.3 Ceiling and Pendant Mounted Units: Provide brackets, fittings and hardware as appropriate for mounting sign units to existing overhead support structures. Attach hardware to ceilings with concealed fasteners and anchoring devices to comply with manufacturers directions.

Provide shim plates in thickness required, predrilled at locations indicated and where required to align sign units plumb and level. Provide tapered shims where supporting structure has sloping surface (such as precast concrete roof tees) to the extent required, as determined by survey of field conditions.

2.38.2.8.4 Posts: Provide the manufacturer's standard 0.125-inch thick structural aluminum tubing extruded from 6063, T5 alloy, with vertical slots to engage sign panels. Provide stop blocks in slots to hold panels in position. Include post caps. fillers, spacers, junction boxes, access panels, and related accessory items required for a complete installation. Comply with the following requirements for post shape, finish, and mounting method.

1. Pendant Mounted Signs: (Sign Type B07). Provide extruded aluminum posts finished to comply with the following requirements:

a. Post Shape: 3 inch by 7 inch rectangular.

b. Finish: Manufacturer's standard semigloss paint finish with ultraviolet inhibitors.

c. Post Mounting Method: Provide sign posts of length required for installation with flange or plate welded to end of post for fastening to structure with anchor bolts. Provide holes in plate for anchor bolts.

2. Ground Mounted Signs: (Sign Type B20). Provide extruded aluminum posts finished to comply with the following requirements:

a. Post Shape: 3 inch by 3 inch (nominal) square.

b. Finish: Clear anodized satin finish.

c. Mounting Methods: Provide sign posts of required length for sleeve mounting. Short "stub-up" posts shall be set in concrete or epoxy grouted into core drilled pavement as indicated on drawings. Fit sign posts over short "stub-up" posts and bolt at base as detailed on drawings.

3. Ground Mounted Zone Signs: (Series 325).

a. Post Shape: 3 inch by 3 inch (nominal) square.
b. Finish: Brushed
c. Mounting Methods: Same as Ground Mounted Signs.
d. Sign Box Shape: 19 inch by 90 inch made from standard frame all four sides
e. The 90 inch sides have stop block post filler attached so as to give no reveal between box and post.
f. Sign box will have aluminum panels installed both sides. Panels to have standard mill finish.

2.38.2.8.5 Panels: Provide smooth, even, level sign panel surfaces constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally from corner to corner.

1. Framed Hollow Box Type Panels: Provide framed hollow box sign message panels finished to comply with the following requirements:

a. Panel Material: 0.125 inch thick opaque acrylic sheet.

Finish: Manufacturer's standard semigloss paint finish with ultraviolet inhibitors.

b. Panel Material: 0.125 inch thick aluminum sheet.

Finish: Surface applied reflective vinyl lamination as indicated on drawings.

c. Frames and Changeable Message Panels: Fabricate to profile indicated; comply with the following requirements:

Material: Extruded aluminum.

Finish: Match finish of the panel.

Corner Condition: Square corners

2.38.2.8.6 Graphic Content and Style: Provide sign copy to comply with the requirements indicated for sizes, styles, spacing, content, positions, materials, finishes, and colors of letters, numbers, symbols, and other graphic devices.

1. Frisket Copy on Opaque Color Coated Panel Surface: Provide reverse applied plotter cut frisket characters for masks prior to applying continuous opaque color coating to the panel second surface.

2. Applied Copy: Dis cut characters from reflective vinyl film with adhesive backing. Apply copy to the exposed face of the sign panel.

3. Computer Routed Panel Faces: Provide continuous aluminum panels with complete routed through sign messages. Finish aluminum panel as required and back up with translucent acrylic sheet for internal illumination.

2.38.2.8.7 Illuminated Units: Illuminate sign panel faces in the manner indicated using standard and custom lighting components including fluorescent tubes, fixtures, and other components. Conceal wiring within the sign units. Coordinate electrical characteristics with those of the power supply provided.

1. Fluorescent Tubes: Provide high output cool white fluorescent tubes of the number indicated:

Illuminated signs 8'-0" wide or less shall have a single lamp.

Illuminated signs over 8'-0" wide shall have 2 equal length lamps.

2. Ballasts: Provide low temperature, 120v and 277v, 60Hz, 800Ma high power factor, U.L. Listed, Class "P", low

energy, exterior type fluorescent lamp ballasts that comply with Certified Ballast Manufacturers Association standards and carry the CBM label. Maximum ballast case operating temperature of 75 degrees C.

3. Electrical Raceways: Provide rigid and flexible conduit connectors as required to connect to the building system. Minimize exposed conduit runs and conceal conduits within the building construction to the extent possible. Exposed conduit runs are to be rigid conduit except as indicated otherwise or as approved by the Engineer. Run conduits at right angles to the existing structural and architectural features. Make provisions for servicing concealed connections to the building system. Paint conduits, fittings, junction boxes and other electrical raceway components when exposed to view. Color to be selected by Engineer.

4. Voltage Requirements:

   a. Voltage for illuminated signs shall be 120 or 277 volts.

   b. Contractor shall verify voltage requirements of all areas and properly coordinate voltage with sign construction.

2.38.2.8.8 Core drill concrete holes for sleeve inserts required for installation of ground mounted post and panel signs. Use templates, instructions, and directions provided by suppliers of items to be attached.

1. Seal concrete pavement surface around posts with a non-shrinking epoxy grout to prevent water penetration.

2.38.2.8.9 Pour Concrete Footings for Sleeve Inserts: Provide formed concrete footings (3500 PIS concrete) to depth and size required for mounting sign posts over sleeve inserts.

2.38.2.8.10 Install signs level, plumb, and at the height indicated, with sign surfaces free from distortion or other defects in appearance.

2.38.3 **SPECIAL REQUIREMENTS**

2.38.3.1 **Delivery and Handling**

2.38.3.1.1 Delivery: Provide protective covering or crating as recommended by the manufacturer to protect sign components and surfaces against damage during transportation and delivery.

2.38.3.1.1.1 Coordinate time of delivery so that signs can be installed within 24 hours of receipt at the project site.

2.38.3.1.1.2 Tag, code, or label each sign component for identification during installation.

2.38.3.1.2 Handle signs carefully to prevent breakage, surface abrasion, denting, soiling, and other defects. Comply with the manufacturer's handling instructions for unloading components subject to damage.

2.38.3.1.2.1 Inspect sign components for damage upon delivery. Do not install damaged sign components. Repair minor damage to signs, provided the finished repair is equal in all respect to the original work and is acceptable to the Engineer; otherwise remove and replace damaged sign components.

2.38.4 **MAINTENANCE**

2.38.4.1 Semi-annually all airline curbside signs will require the following maintenance.

2.38.4.1.1 Inspect mounting fixtures and repair as needed.

2.38.4.1.2 Inspect hardware and repair/replace as needed.

2.38.4.1.3 Inspect electrical components and repair/replace as needed.

2.38.4.1.4 Total re-lamping.

2.38.4.1.5 Clean signage system.

2.38.5 **RECORDS/DOCUMENTATION**

2.38.5.1 The contractor will forward to the City copies of all maintenance services performed and any trouble call reports.

2.38.5.2 All work will be initiated from the Airport's work control center through the issuance of a work order. The work control center will only phone in priority 1, emergency requests.

2.38.5.3 All hours and parts used will be logged onto the work orders. Work that is not completed at the end of the day will have all of the hours and parts logged to it daily until completed.

2.38.5.4 Submit all proposed PM procedures and support information on approved worksheets along with recommended frequencies for approval by the Airport's Maintenance Manager or his designee. The PM information will be entered into the maintenance management system to be generated at the set frequencies.

2.39 **SCHEDULE Q - GLASS, PLASTIC REPLACEMENT**

2.39.1 **GENERAL DESCRIPTION**

2.39.1.1 Work required includes furnishing all labor, supervision, materials, tools, equipment, transportation and all means of construction necessary and reasonably incidental for the replacement of all glass, mirrors, plastic and framing, and removal of present glass, mirrors or plastic and any requirements described in these specifications and which may be necessary to complete the contract. Also included will be tinting of clear glass to match surrounding tinted glass.

2.39.1.2 **GLASS, PLASTIC REPLACEMENT**

Furnish all labor, materials, and work required for the replacement of various types of glass and plastic as specified in and around the Terminal Buildings and adjacent facilities to the Philadelphia International Airport, and Philadelphia Northeast Airport.

2.39.2 **TECHNICAL DESCRIPTION**

2.39.2.1 Except as otherwise specified, all materials shall be new and both workmanship and materials shall be of the best quality. Upon request, the Contractor shall furnish satisfactory evidence as to the kind and quality of any materials used throughout the facility.

2.39.2.2 Where manufacturer's name, brand and or trademark is referred to throughout these specifications, it has been selected to establish a standard of quality for the materials and/or apparatus required. Materials of different manufacturers considered equal to the materials specified must be pre-approved by DOA for the work.

2.39.2.3 All new glass, mirrors and plastic must be of the same quality, type thickness and tinting as that previously installed in like positions.

2.39.2.4 Accurate measurements must be taken in the field, by the Contractor, in order to allow for proper clearance established by the trade. Sizes are given for guidance only.

2.39.2.5 The same manner, type, workmanship and quality of installation must be as that originally made.

2.39.2.6 The glass types are as described below.

Glass Types - Description
¼" Clear tempered or heat absorbing T-Window
¼" Tinted tempered or heat absorbing T-Window
1" Clear insulated tempered or heat absorbing T-Window
1" Tinted insulated tempered or heat absorbing T-Window
Rough herculite ¾"
Tempered polished plate glass door and side lights ¾" complete with aluminited aluminum top and bottom shoes
¼" clear Mirrors as used in Restrooms
¼" Clear tempered or heat absorbing glass in aluminum frame
¼" tinted tempered or heat absorbing glass in aluminum frame
1" Clear insulated heat absorbing or tempered glass in aluminum frame
1" Tinted insulated heat absorbing or tempered glass in aluminum frame
1" Clear insulated annealed glass in aluminum frame
1" Tinted insulated annealed glass in aluminum frame
1" Clear insulated, tempered interior, laminated exterior in aluminum frame
1" Tinted insulated, tempered interior, laminated exterior in aluminum frame
1-1/2" Clear insulated, tempered interior, 1/2'" laminated exterior in aluminum frame
1-1/2" Tinted insulated, tempered interior, ½" laminated exterior in aluminum frame
1" Clear insulated, tempered interior, laminated exterior, Low E coating in aluminum frame
1" Tinted insulated, tempered interior, laminated exterior, Low E coating in aluminum frame

3/8" Clear tempered glass in aluminum frame
3/8" tinted tempered glass in aluminum frame
¾" laminated glass, (2)3/8" clear glass with clear or white translucent interlayer
3/8" clear laminated glass
½" clear laminated glass
½" Acuosta-Pane 39 (Globe Amerida)in aluminum frame
¼" heat strengthened Spandrel Glass
Flight Information Display (FIDS)Cabinet glass
¾" Plexiglass for temporary closure, installed and removed
½" Plexiglass for temporary closure, installed and removed
¼" Plexiglass for temporary closure, installed and removed
Tinting film applied to existing glass
Resealing of glass including removal, new gasket/seals, replacement and cleaning, per linear foot of glass perimeter
3/8" Clear annealed laminated bent glass

Glass Types - Description
1-1/8" Insulated; Tinted Tempered Glass (Exterior) 3/8" Vinyl Laminated Glass (Interior)
1" Insulated; Tinted Tempered Glass (Exterior) Clear Tempered Glass (Interior)
1" Insulated; Tinted Tempered Glass (Exterior) Annealed Glass (Interior)
¼" Uninsulated; Tinted Tempered Glass (Exterior)
3/8" Uninsulated; Tinted Tempered Glass (Exterior)
1" Insulated; Tinted Tempered Glass (Exterior) 3/8" Vinyl Laminated Glass (Interior)
1-1/8" Insulated; Tinted Tempered Glass (Exterior) 3/8" Vinyl Laminated Glass (Interior)

Glass Types - Description

1" Insulated; Exterior Lite ¼" Thk Laminated, Graylite Interior Lite ¼" Thk Laminated, Clear Glass
3/8' Spandrel glass; Laminated
3/8" Spandrel glass; Laminated, To Match Glaze
3/8" Azurlite glass; Laminated

Glass Types - Description
1" Vision glass - Clear Annealed Glass (Exterior) Clear Laminated Glass (Interior)
1" Vision glass - Clear H.S. with Reflective Coating (Exterior) Clear Annealed Glass (Interior)
1" Spandrel glass - Reflective Coating Tempered (Exterior) Tempered Glass (Interior)
Glass fins - Clear Annealed Laminated Glass Clear Liquid Resin Interlayer (Polished Edges)
1" Vision glass - Clear Tempered Glass (Exterior) Clear Laminated Glass (Interior)
1" Vision glass - Clear Heat Strengthen (Exterior) Clear Annealed Glass (Interior)
1" Vision glass - Clear Heat Strengthen (Exterior) Clear Tempered Glass (Interior)
1" Vision glass - Clear H.S. with Reflective Coating (Exterior) Clear Tempered Glass (Interior)
1" Vision glass - Clear Heat Strengthen (Exterior) Clear Laminated Glass (Interior)
1" Vision glass – Clear Heat Strengthen w/ reflective coating (Ext.) Clear Laminated glass (Interior)

2.39.3 **GENERAL REQUIREMENTS**

2.39.3.1 Glazing Services: Successful bidder may be called upon from time to time to take measurements and install glass and plastic at PHL and/or PNE. This service will be limited to 1/4" plate or larger for installation within the Airport facilities.

Glazing services shall consist of the unloading, distribution and installation of all glass and plastic as required. Installation shall include ALL moldings, sealants, mastics, silicones, vinyl, rubber, putty, plastic and caulking of glass to glass and glass to metal. This service shall include all transportation.

2.39.3.2 Measurements: Measurement of work sites to be completed within two concurrent work days after notification from the Airport's Maintenance Manager or his designee to vendor that glass must be replaced.

2.39.3.3 Installation: Installation should be completed within specified period listed below after the glass has been measured.

2.39.3.3.1 1/4" glass (all types): One week (7 calendar days)

2.39.3.3.2 1/2" glass (all types): One week (7 calendar days)

2.39.3.3.3 Insulating glass: Two weeks (14 calendar days)

2.39.3.3.4 Tempered glass (all types) Five weeks (35 calendar days)

If vendor fails to meet the above specified completion dates, the Division of Aviation may require a change in service provider and deduct the mark-up of the vendor for the work.

2.39.3.4 Inspection of the Work: The Airport's Maintenance Manager or his designee may inspect the work in progress or preparation. The Contractor shall assist in the inspection.

2.39.3.5 Correction of Work Before Final Payment: The Contractor shall promptly remove from the premises materials failing to conform to the contract. The Contractor shall, at his expense, perform re-work as required to satisfactorily complete the work.

2.39.3.6 Installation Equipment: The price furnished in Section 5 to install glass shall include all necessary tools, equipment, labor, and equipment necessary for the complete replacement of glass. The price shall include but not limited to the cost of scaffolding, lifts, hoist or other apparatus need to install glass up to and including the top of the second level. Additional compensation for access to the work area may be authorized for installations above the second level. The price furnished in Section 5 shall also include maintenance and protection of traffic when area on sidewalks and/or roadways need to be used to access the work area.

2.39.3.7 Basis of Payment: The price per square foot of glass furnished in Section 5 shall be paid for the quantity of glass installed, not ordered, and shall include glazing, transportation, and any costs related thereto.

2.39.3.8 Special Rules and Regulations: The Contractor shall conform to the rules and regulations of the Federal Aviation Administration for Airport

operations and such local rules for safety and security as the Federal Aviation Administration or the Airport operations officials shall be transmitted to the Contractor by the Airport's Maintenance Manager or his designee, except in cases of emergency. In cases of emergency governing the safety of traffic on the Airport, the Contractor shall at all times coordinate his operations through the Airport and will remove any equipment as required by the Airport's Maintenance Manager or his designee.

2.39.3.9 **Non-Interference with Airport Activities**

2.39.3.9.1 All work done by any person, firm or corporation (including with limitation, the Contractor, and contractor, any agent or employee thereof) in connection with this project shall be performed.

In compliance with all rules, regulations and directives governing the operation and activities of aircraft, vehicles and personnel at the Philadelphia International Airport, and Philadelphia Northeast Airport with due regard for the continuous operation of an access to the egress of passengers and of Airport.

2.39.3.9.2 Contractor shall carry on his work concurrently with other construction work now being done or later to be done by others at the Airport.

2.39.3.9.3 Contractor shall conduct his work so as not to interfere with the traffic of other construction Contractors engaged in other projects at the Airport.

2.39.3.10 **Clean Up**

2.39.3.10.1 Contractor shall intermittently remove waste debris and glass so that at no time shall there be undue accumulations.

2.39.3.10.2 Upon completion, the Contractor shall leave areas in a clean condition and clean glass inside and out so it is free of finger marks, grease, dirt, etc. Removed glass becomes the property of the Contractor.

2.39.3.11 **Guarantee**

Contractor shall guarantee that he will replace all T-window and thermopane glass for a period of five (5) years following the completion of the contract, supplying all material, equipment and labor at no cost to the City, which has had a seal failure or where breakage has been caused to either the in-board or out-board pane other than by exterior foreign objects. All glass other than T-window or thermopane shall carry the normal guarantee of one (1) year of material and workmanship required by the City as outlined in the standard contract requirements.

2.39.3.12 **Time of Completion**

Contractor shall perform the work at the site in a vigorous manner. All work on non-stocked items shall be completed within 24 hours after delivery of material. The Contractor shall prepare his proposal on the basis of completing the work within the specified time. Temporary measures will be required within one hour to secure the area from further damage or personal injury. Contractor shall remove and properly dispose of broken glass immediately. Contractor shall install a temporary panel constructed of Plexiglas where suitable. Otherwise install B-B exterior grade plywood finish painted on both sides with enamel paint as direct by the Division of Aviation.

2.39.4 **SPARE PARTS**

The most common types of glass, mirrors and plastic will be inventoried on site. As inventory is used for replacements it shall be re-ordered to maintain complete inventory. Replacement glass and plastic will be paid for by the Division of Aviation. Bidder shall supply a list to the Division of Aviation of stocked glass.

2.39.5 **RECORDS/DOCUMENTATION**

2.39.5.1 All work will be initiated from the Airport's work control center through the issuance of a work order. The work control center will only phone in Priority 1, emergency requests (refer to response times indicated in para. 2.16.2).

2.39.5.2 All hours and parts used will be logged onto the work orders. Work that is not completed at the end of the day will have all of the hours and parts logged to it daily until completed.

2.39.5.3 Submit all proposed PM procedures and support information on approved work sheets, along with recommended frequencies for approval by the manager of maintenance. The PM information will be entered into the maintenance management system to be generated at the set frequencies.

2.39.5.4 Reports of all damages and the required repairs shall be prepared following request from the Division of Aviation. An accurate record of inventory shall be maintained at all times. At the start of the contract period, the Contractor shall identify long lead items and add these items to the on-site inventory to assure minimal replacement times.

2.40 SCHEDULE R - INTERIOR COSMETIC REPAIRS AND EXTERIOR FINISHES RESTORATION/MAINTENANCE

2.40.1 GENERAL DESCRIPTION

2.40.1.1 Work required includes furnishing all labor, supervision, materials, tools, equipment, scaffolding, transportation and all means of construction necessary and reasonably incidental for the repair and restoration of finishes, to interior floors, walls, soffits, ceilings, canopies and furniture, and any requirements described in these specifications and which may be necessary to complete the contract.

2.40.1.2 Work areas included are all buildings at the Philadelphia International Airport and the Philadelphia Northeast Airport.

2.40.2 TECHNICAL DESCRIPTION

2.40.2.1 Except as otherwise specified, all materials shall be new, and both workmanship and materials shall be of the best quality. Upon request, the Contractor shall furnish satisfactory evidence as to the kind and quality of any materials used throughout the facility.

2.40.2.2 Where manufacturer's name, brand and/or trade mark is specified, it refers to a standard for the materials and/or apparatus required. Materials of different manufacturers considered equal to the materials specified will be reviewed before use in the work.

2.40.2.3 Flooring in the Terminal Building at Philadelphia International Airport consists of carpeting and Terrazzo in public areas, tile and carpeting in non-public areas. Repair procedures and materials shall restore the damaged or worn area to match surrounding area.

2.40.2.4 Flooring material at Philadelphia Northeast Airport is mostly vinyl composition tile, 12"x12"x1/8 gauge as manufactured by Armstrong. Replacement tiles shall match existing surrounding tiles.

2.40.2.5 Interior wall finishes are mostly vinyl wall covering on studded drywall. All stud and drywall repairs shall be completed satisfactorily before

replacing/repairing vinyl wall covering. Vinyl wall covering shall match surrounding area wall covering.

2.40.2.6 Ceramic tile wall finishes will require tiles and grout to match surrounding tile and sealers to be applied where encountered.

2.40.2.7 The Philadelphia International Airport utilizes fiberglass composite soffits in much of the terminal building. These soffits require specialized methods of repair. Preparation of surfaces must be correct to insure proper bonding of repair materials.

2.40.2.8 Where lay-in ceilings need to be repaired, all ceiling tiles shall be of the same manufacturer and style as those being replaced unless the area is isolated from any surrounding lay-in ceilings. All ceiling "tee" systems and supports shall be replaced as required during the specific repair.

2.40.2.9 Furniture repairs shall consist of wood joints and member repairs, wood refinishing and fabric repair or replacement. Additionally, public area seating repairs will be performed by the Contractor.

2.40.2.10 Solid surfacing material is used for some toilet stalls, counter tops and other toilet room surfaces. Solid surfacing materials to be installed shall be homogenous solid sheets of filled plastic resin complying with the material and performance requirements of ANSI Z124.3, Type 5 of 6, without a precoated finish, Corian by DuPont Polymers.

2.40.3 **SPECIAL REQUIREMENTS**

2.40.3.1 This contract is based on a partnership between the Contractor and the Division of Aviation. The DOA will perform much of the services in this section of the contract. When DOA is not able to fulfill these services, they will request the assistance of the Contractor. Most large-scale repairs will be performed by the Contractor as turnkey proposals.

2.40.3.2 Exterior finishes restoration/maintenance will be performed as part of an annual PM program. This service will thoroughly clean to remove all contaminants, clean to a natural color, grain by hand to a uniform finish stainless steel, stain bronze, and anodized/duranodic aluminum, stone, wood, etc.; coat surfaces with protective coat as clear lacquer, polyvinyl coating, microcrystalline wax, etc. as necessary.

2.40.4 **SPARE PARTS**

2.40.4.1 An inventory of spare materials shall be maintained at all times. Submit a list of required inventory at the start of the contract. Inventory shall then be replaced as it is used.

2.40.5 **RECORDS/DOCUMENTATION**

2.40.5.1 All work will be initiated from the Airport's work control center through the issuance of a work order. The work control center will only phone in Priority 1, emergency requests.

2.40.5.2 All hours and parts used will be logged onto the work orders. Work that is not completed at the end of the day will have all of the hours and parts logged to it daily until completed.

2.40.5.3 Submit all proposed PM procedures and support information on approved work sheets, along with recommended frequencies for approval by the Airport's Maintenance Manager or his designee. The PM information will be entered into the maintenance management system to be generated at the set frequencies.

2.40.5.4 Weekly inspection reports shall be required to note damages to interior finishes. These reports shall note all damages and the required repairs.

2.41 SCHEDULE S - AIRPORT EXHIBITIONS & DECORATIONS

2.41.1 GENERAL DESCRIPTION

2.41.1.1 Work required includes furnishing all labor, superintendence, materials, tools, equipment, transportation and all means of construction necessary and reasonably incidental for the placement, removal and storage of airport exhibitions and decorations, and to conduct a professional exhibit program at the Philadelphia International Airport and the Philadelphia Northeast Airport.

2.41.2 TECHNICAL DESCRIPTION

2.41.2.1 Christmas Decorations (The following is a representative sample)

2.41.2.1.1 Artificial Evergreen Collapsible Wreaths must be constructed so as to be easily folded in half for storage; annual folding and storage must not detract from the aesthetic or structural integrity of the decoration. Wreath material must be flame proof, crush resistant, electrically non-conductive plastic with a five year guarantee against weather damage; wreath material to be securely affixed to a minimum 3/8" steel rod frame; frame to be reinforced all around; mounting plate, hardware, bows, balls, lights, suspension chains and electric wiring must be included:

2.41.2.1.1.1 Dimensions: 10' external diameter wreaths 14' external diameter wreaths

2.41.2.1.2 Artificial Christmas Tree

2.41.2.1.2.1 Artificial evergreen tree, fire resistant with stand. Lights, balls and electric wiring included.

2.41.2.1.3 Landscape Lighting

2.41.2.1.3.1 Contractor shall furnish and safely install exterior lighting/landscape lighting of planter beds and trees as directed by the Airport's Maintenance Manager or his designee.

2.41.2.1.4 Placement of Christmas Decorations

2.41.2.1.4.1 Placement of all decorations must be completed no sooner than one week preceding Thanksgiving Day and must be operable on Thanksgiving Day.

2.41.2.1.5 Removal of Christmas Decorations

2.41.2.1.5.1 All decorations and wiring shall be removed no later than January 15th. The Airport's Maintenance Manager or his designee shall inspect the decorations at the time of their removal and certify their condition in writing to the contractor.

2.41.2.1.6 Storage of Christmas Decorations

2.41.2.1.6.1 The contractor will be responsible for the storage of all Christmas decorations in accordance with the guidelines specified.

2.41.2.1.7 Electrical

2.41.2.1.7.1 All electrical wiring and connections to the decorations shall be furnished by the contractor and approved by the Airport's Maintenance Manager or designee before placement. All wiring shall be UL approved type SJ, SO, or equal. All connections shall be UL approved twist lock type. Power source shall be within 200 feet of the decoration. All lamps shall be new, white, 10 watt, intermediate base type or as specified by the Airport's Maintenance Manager or his designee.

2.41.2.1.7.2 Contractor shall activate lamps immediately after placement of decorations and thereafter shall inspect decorations no less than twice per week under the direction of the Airport's Maintenance Manager or his designee (Division of Aviation) and replace any non-working lamps immediately.

2.41.2.2 Other Airport Decorations: The previous example of Christmas Decorations is intended as a representative sample. During the year there will be occasions when the airports will install exhibitions and be decorated. Details of those exhibitions and decorations will be released at that time by the Division of Aviation. Other exhibits and decorations may include:

2.41.2.2.1 Art Exhibits/Exhibitions (Permanent and Seasonal)

2.41.2.2.2 Airport Banner Program (Interior and Exterior)

2.41.2.2.3 Neon Lighting (Maintenance and Repair) Other Exhibits or Decorations (Special Events and Holidays)

2.41.3 **SPECIAL REQUIREMENTS**

2.41.3.1 Personnel required for this contract shall be qualified to perform all electrical work and restorative maintenance of permanent Airport art displays.

2.41.3.2 All exhibition work will be planned, coordinated, and supervised by the Director of Exhibitions payable under item 5.1 Managers and Supervisors and not under Schedule S pay item.

2.41.3.3 Provide Director of Exhibitions, Assistant Director of Exhibitions, Exhibition Preparator Exhibition Installer, Exhibitions Assistant and Registrar as described in Section 2.2 and below.

2.41.3.3.1 Assistant Director of Exhibitions

The Assistant Director of Exhibitions, Philadelphia International Airport, is responsible to assist the Director of Exhibitions in the management and administration of the visual arts program that sites temporary art exhibitions throughout the airport facility. The Assistant Director is primarily responsible for the curatorial programming and all aspects of the coordination and timely implementation of each exhibition. Additional responsibilities include exhibition planning, informational text, label production, art program brochures, processing of invoices, research, and staff supervision. The Assistant Director reports to the Director of Exhibitions and works with a variety of airport staff including Deputies, Airport Managers, contractors, and consultants. Performs related work as required.

All work is performed in accordance with standard museum practices.

Knowledge of:
Local, regional, and national artists and arts institutions
Museum and curatorial standards
Presentation of art in airport facilities
Airport practices and standards
Exhibition planning and design
Interior renovations and space planning
Contemporary public art practices

Ability to:
Organize, curate, and present exhibitions that are appealing to an arts community and general public with a special emphasis on regional arts activities.

Develop and create new exhibition procedures and standards as this program is unique in its concept.

Coordinate exhibitions that relate to regional special events.

Establish and maintain working relationships with other airport departments, the public, and local, regional, and national artists and arts institutions.

Work with construction contractors and architects

Coordinates design and installation activities with the exhibitions program staff.

Supervises airport staff and outside contractors with the fabrication and installation of exhibits to insure that are completed as conceived and within time and budgetary limitations.

Conceive and design exhibitions with the greatest visual appeal, educational impact, and optimum traffic flow through the exhibition areas.

Determine the artistic importance, the relationships between works, their placement, and the educational benefits of works in the exhibition.

Develops and writes label information and didactic panels for general audience understanding and appeal.

Prepare and edit press releases and brochures that relate to the art program.

Minimum Acceptable Training and Experience:

Education:
Completion of bachelors degree program at an accredited college or university with major in art related field.

Specific Experience:
Five years experience as director, assistant director, or curator of a visual arts exhibitions program in a gallery, museum, or other public facility.

2.41.3.3.2 **Exhibitions Preparator**

The Exhibitions Preparator for the Airport's Exhibitions Program is responsible for the construction of pedestals and other exhibition furniture and to ensure the safe and secure installation of the artwork. The preparator is responsible to recommend and fabricate, if necessary, installation hardware. The preparator must oversee the quality control for each installation. Must have excellent fabrication and painting skills. Must also be experienced in framing and matting, packing and shipping, ordering of shop equipment and supplies, and daily shop maintenance. The preparator will work closely with the Exhibitions Installer and Assistant/registrar. The preparator must be an experienced art handler.

All work is performed in accordance with standard museum practices. Nature of work requires manual dexterity and skilled care in the handling of valuable, some times heavy, art objects.

Reports to the Director of Exhibitions.

Knowledge of:
Museum art handling standards and procedures. The ability to handle a variety of valuable and delicate works of art with extrme care.

Museum packing standards and procedures. The ability to safely unpack and repack art objects.

Standard tools, power tools, practices, and methods used in painting, rough and finish carpentry work, and the use of different materials such as various kinds of lumber, fabrics, plastics, mechanical fasterners, and adhesives.
Excellent fabrication skills required.

Picture framing standards including matting and label fabrication.

Ability to:

Construct and prepare props, backgrounds, and exhibit furniture.

Must be a good problem solver. Quick,creative thinking.

Supervise freelance art handlers and art shippers.

Prepare, hang, and install art objects for exhibit.

Move and handle art objects safely.

Physically handle often large-scale and valuable works of art with extreme care. Work from sketches and follow instructions as to construction and installation of museum exhibits.

Select and use a variety of materials, techniques, and equipment to safely present the artwork.

Requisitions lumber, paint, fabrics, lighting, tools, and materials as needed for specific installations and anticipates long-range material and equipment needs and advises accordingly.

Excellent oral communication skills.

Excellent organizational skills.

Assist with the daily manintenance of exhibition areas to ensre that the exhibitions are maintained as originally designed.

Provide for the proper security of art objects by arranging the appropriate security measures and devices when necessary.

Minimum Acceptable Training and Experience:

Education:
Completion of bachelors degree program at an accredited college or university with major in art related field.

Experience:
Two years of full time experience as a lead exhibition preparator in an art facility.

Prepare and edit press releases and brochures that relate to the art program.

2.41.3.3.3 **Exhibitions Installer**

The Exhibition Installer for the Airport's Exhibitions Program is responsible for the painting of walls and pedestal furniture, installation, art handling, framing and matting, and the daily cleaning and maintenance of the artwork and cases. Additional responsibilities include working closely with the Exhibitions Preparator and Assistant/Registrar to ensure timely and safe installations. Performs related work as required.

The Installer must have fabrication, art handling, and installation experience.

All work is performed in accordance with standard museum practices. Nature of work requires excellent verbal and organizational skills, manual dexterity, and skilled care in the handling of valuable art objects.

Reports to the Director of Exhibitions.

Knowledge of:
Museum art handling standards and procedures. The ability to handle valuable and delicate works of art with extreme care.

Museum packing standards and procedures. The ability to safely unpack and repack art objects.

Standard tools, practices, and methods used in painting, rough and finish carpentry work, and the use of different materials such as various kinds of lumber, fabrics, plastics, mechanical fasteners, and adhesives.

Standard power tools

Picture framing standards including matting and label fabrication

Ability to:
Prioritize and Work on several projects simultaneously

Work well with a team

Supervise freelance art handlers and art shippers

Assist with the construction of props, backgrounds, and exhibit furniture

Prepare, hang, and install art objects for exhibit

Move and handle art objects safely

Physically handle often large-scale and valuable works of art with extreme care. Work from sketches and follow instructions as to construction and installation of museum exhibits.

Select and use a variety of materials, techniques, and equipment to create and safely present the artwork.

Requisitions lumber, paint, fabrics, lighting, tools, and materials as needed for specific installations and anticipates long-range material and equipment needs and advises accordingly.

Excellent oral communication skills
Check and clean exhibition areas on a regular basis to ensure that the exhibitions are maintained as originally designed

Provide for the proper security of art objects by arranging the appropriate security measures and devices when necessary.

Minimum Acceptable Training and Experience:
Education:
Completion of bachelors degree program at an accredited college or university with major in art related field.

Experience:

Two years of progressively responsible experience in the preparation, construction, and installation of exhibit displays; or an equivalent combination of training and experience.

2.41.3.3.4 Exhibitions Assistant and Registrar

The Exhibitions Assistant is responsible to assist the Director and the Assistant Director of Exhibitions in the administration of the airports art program. Responsibilities include maintain exhibition archives, databases, schedule and coordinate the shipment of artwork, complete condition report forms, receipt forms, pack and unpack artwork, and maintain art storage area. The employee will work with the Exhibitions Preparator and Coordinator on installations and maintenance of exhibition sites. Will assist with the daily cleaning as needed. The employee must have registrarial, installation and art handling experience. Excellent communication and planning skills, attention to detail, and work well with a team. Performs related work as required.

Knowledge of:
Contemporary art

Museum art handling standards and procedures. The ability to handle valuable and delicate works of art with extreme care.

Standard tools, practices, and methods used in painting, and a familiarity with different materials such as various kinds of lumber, fabrics, plastics, mechanical fasteners, and adhesives.

Ability to:
Work well with a team of art handlers

Organize and plan multiple tasks

Supervise freelance art handlers and art shippers

Prepare, hang, and install art objects for exhibit

Move and handle art objects safely

Excellent communication skills both verbal and written

Minimum Acceptable Training and Experience:

Education:
Completion of bachelors degree program at an accredited college or university with major in art related field.

General Experience:
Two years of progressively responsible experience in assisting with administrative and registrarial duties at a gallery, museum, or exhibition facility; or an equivalent combination of training and experience.

Specific Experience:
One year full time experience as a registrar in an exhibition facility.

2.41.3.4 The Contractor shall disassemble and remove exhibits and decorations as directed by the DOA. The areas shall be cleaned, debris removed and restored to the original condition by the Contractor. The DOA will inspect the condition of the area for acceptance prior to approving statements to the Contractor.

2.41.3.5 Materials used for exhibits or decorations shall be discarded or stored by the Contractor as instructed by the DOA.

2.41.4 **SPARE PARTS**

2.41.4.1 A sufficient supply of lamps shall be maintained at all times.

2.41.5 **RECORDS/DOCUMENTATION**

2.41.5.1 Contractor shall keep records of all decorations inventory to be provided to the Division of Aviation upon request.

2.41.5.2 All work will be initiated from the airport's work control center through the issuance of a work order. The work control center will only phone in priority 1, emergency requests.

2.41.5.3 All hours and parts used will be logged onto the work orders. Work that is not completed at the end of the day will have all of the hours and parts logged to it daily until completed.

2.41.5.4 Submit all proposed PM procedures and support information on approved work sheets, along with recommended frequencies for approval by the manager of maintenance. The PM information will be entered into the computerized maintenance management system to be generated at the set frequencies.

2.42 **SCHEDULE T - SPECIALIZED EQUIPMENT SERVICES**

2.42.1 **GENERAL DESCRIPTION**

2.42.1.1 The work includes but is not limited to providing various highway construction equipment, personnel lifts, fueling equipment, operators and supervision as required on an as needed basis.

2.42.1.2 Delivery to and removal from the specified site, fuel, lubricants, insurance, maintenance, equipment operator, equipment accessories and supervision and crew necessary to complete the directed task shall be included in the per unit cost.

2.42.1.3 The period for which the city will incur costs will begin when the equipment and operator and crew are on-site and activities are authorized to begin. The period will end when the activities are authorized to cease. Delivery, removal and idle times are not eligible costs.

2.42.2 **SPECIAL REQUIREMENTS**

2.42.2.1 **PERMITS, LICENSES AND FEES**

2.42.2.1.1 The contractor shall obtain and pay for all permits, licenses, fees and other charges required by the state, county and City regulations, except as described in specifications for Items A-7 and A-8.

2.42.2.2 **REPAIRS**

2.42.2.2.1 Contractor shall be responsible for prompt repairs and full restoration of damage to any property or facilities caused by its operations at no additional cost to the City.

2.42.2.3 **RISK OF LOSS OR DAMAGE**

2.42.2.3.1 Contractor and its insurers (if any), as well as all subcontractors and their insurers (if any), relieve the City from all risks of loss or damage to highway construction equipment and other equipment provided under this contract, regardless of the cause of such loss or damage and irrespective of whether such loss or damage is caused in whole or part by the fault or negligence of the City, its officers, agents or employees.

2.42.2.4 **DOWNTIME**

2.42.2.4.1 Any period of time when equipment does not or cannot perform its assigned work shall be considered as "downtime." This downtime shall be recorded on the operator's work ticket on a per shift basis by the on-site City foreman.

2.42.2.4.2 As to any equipment that is inoperable, contractor shall repair and return it to service within 24 hours or shall supply a replacement within the 24-hour period.

2.42.2.5 **PERSONNEL REQUIREMENTS**

2.42.2.5.1 Contractor may have his own supervisory and maintenance personnel on-site as needed; however, the contractor shall not be additionally compensated for any wages paid to any such personnel, and the City shall pay only those rates as set forth in Section 5 attached. Thus, there shall be no direct compensation paid by the City for administrative, supervisory, or maintenance personnel furnished by contractor.

2.42.2.5.2 Equipment operators must be fully trained on the correct and safe operation of the equipment. Operators of heavy and highway mobile equipment must have a Commercial Driver’s License and participate in a drug and alcohol testing program.

2.42.2.6 **PORTABLE COMPRESSED NATURAL GAS**

2.42.2.6.1 Contractor shall provide portable CNG Station. Skid-mounted package type unit complete with electric motor drive, water-cooled type design; natural gas dryer; non-lubricated CNG compressor, all controls and safety devices, three-bank gas storage cascade rack mounted on skid inside compressor enclosure, one (1) dual hose fueling dispenser and single point electrical power and gas connections.

2.42.2.6.1.1 CNG Compressor shall have a capacity of 120 Scfm and be rated for continuous operation at 20–45 psig suction pressure and 4500 psig discharge pressure.

2.42.2.6.1.2 Gas storage cascade vessels shall designed for 5500 psig pressure to comply with ASME Section VIII, Division 1 and have a total capacity of 17010 SCF @ 5000 psig operating pressure.

2.42.2.6.1.3 Dispenser shall be equipped with a standard high flow Micromotion DH038 meter rated at 1200 Scf per hose, be equipped with sequence valves for use with three (3) bank storage cascade, and supplied with two high pressure flexible hose assemblies. Dispenser hoses shall be equipped with one (1) Sherex CT 5000 bus fueling nozzle and one (1) Sherex CT 1000 light duty vehicle fueling nozzle.

2.42.2.6.1.4 Electrical requirements shall be 60 BHP, 480VAC, 60 PH., 3 Hz.

2.42.2.6.2 Costs shall include delivery, set-up, connections, maintenance, disconnection and removal. Electrical and natural gas services will be available within 200 feet of the portable CNG Station location and contractor shall provide labor, materials and equipment for hook-up. Contractor shall provide operational and safety training to City personnel for operation of the station. Contractor shall provide adequate protection of the CNG station. Installation shall comply with authority having jurisdiction requirements.

2.42.2.7 **OFFICE TRAILER**

2.42.2.7.1 Office trailer shall include heat, lighting, electrical outlets and windows. Trailer shall be installed level, grounded, and secured with hold down straps. Provide electrical service cables and connections to power supply located within 200 feet of trailer. Service can be aerial or underground and provide all conduit, poles, and other items for a code compliant service. Remove service when trailer is removed.

2.42.3 **RECORD/DOCUMENTATION**

2.42.3.1 **RECORDS**

2.42.3.1.1 Contractor will be required to maintain a complete set of time records of personnel assigned to work under this contract, each record shall include the names and addresses of such personnel. Records shall be furnished to the City upon request of the City and shall be maintained for at least three years after completion of this contract. Contractor shall require his subcontractors, if any, to maintain similar records and to provide such records to the City upon request.

2.42.3.1.2 All work will be initiated from the airport's work control center through the issuance of a work order. The work control center will only phone and/or radio in priority 1, emergency requests.

2.42.3.1.3 All hours, equipment and personnel used will be logged onto work orders. Work that is not completed at the end of the day will have all of the hours, equipment and personnel logged to it daily until completed.

2.42.3.1.4 All work orders will be entered into the computerized maintenance management system on a daily basis.

2.43 **SCHEDULE U - ROOFING**

2.43.1 **GENERAL DESCRIPTION**

2.43.1.1 The work includes but is not limited to furnishing labor, transportation, equipment, materials, supplies and supervision necessary to provide maintenance service to identify location of and make repiars to damaged areas of roofing throughout the Philadelphia’s Airport System. The work shall be located at the Philadelphia International Airport (PHL) and the Philadelphia Northeast Airport (PNE), all the buildings that are the maintenance responsibility of the Division of Aviation Maintenance Department.

2.43.2 **TECHNICAL DESCRIPTION**

2.43.2.1 Periodic Inspection Of Roofing

2.43.2.1.1 Semi-annually (twice a year), the contractor will inspect all applicable roofing and gutters on Airport for condition. A written report will be furnished to the DOA within 7 calendar days after each inspection. There will be 2 such inspections every 12 months and will be performed on the second Tuesday of every sixth month (weather permitting). Gutters shall be clear of all dirt and debris at Terminal B/C Ticketing and Bag Claim B/C.

2.43.2.1.2 Upon presentation of the written condition report the contractor may submit a work request to the Maintenance Department. The request will be reviewed by the Maintenance Department and the contractor will begin work upon written authorization.

2.43.2.2 Emergency Repairs

2.43.2.2.1 A work request will be issued immediately for leak stoppage and permanent repair. Contractor will proceed with investigation to locate and identify source of leak, and corective action shall proceed within 4 hours of work authorization. Work shall continue until secured to satisfaction of the Maintenance Department.

2.43.2.3 Workmanship

2.43.2.3.1 All workmanship shall be in accordance with the best commercial practices, roofing system, maintenance standards and specifications contained herein. As each maintenance task is completed, all stains, fingerprints, debris, and other unsightly marks shall be removed. During the progress or work debris shall not be allowed to spread unnecessarily into the adjacent unaffected area. The job will not be considered completed until the site is completely cleaned up by vendor and approved by DOA.

2.43.2.4 Equipment

2.43.2.4.1 The contractor shall have on hand, at no additional cost to the Maintenance Department, sufficient equipment to perform the necessary work contemplated under this contract, and multiple locations as required simultaneously within the Airport.

2.43.2.4.2 The expenditure of blades, bits, abrasive wheels or any in-service wear and tear on tools and/or equipment shall be the contractor’s responsibility, and replacement will be at no cost to the Maintenance Department.

2.43.3.4.3 The bidder shall be aware that there will be times when additional equipment of the same type will be necessary to accomplish work under this contract. All such equipment shall be furnished by the contractor at no additional cost to the Maintenance Department.

2.43.2.5 **General Requirements**

2.43.2.5.1 The work shall include furnishing all materials and equipment and performing all labor necessary for the removal of existing roofing materials including insulation, wood decks, roof sheathing, fascia boards, trim rafters, cants, sheet metal work and all miscellaneous items which rest on, intersect with or penetrate through the existing work ordered by the DOA.

2.43.2.5.1.1 **Removals:**

Removals shall be performed without damage to adjacent retained work; however, where such work is damaged, the contractor shall patch, repair or otherwise restore same to its original or better condition. All existing materials, fixtures, and equipment which have been removed or disconnected, but are not indicated or specified for reuse in the new work shall become property of the contractor at his expense. Removals shall be as specified, or the minimum extent necessary or required for the proper installation of new work. Existing surfaces remaining after removals to which new work is to be applied shall be left kin a condition suitable for the application of new work.

2.43.2.5.1.2 Removals – Existing roof materials shall be removed in a manner to minimize damage to the existing decking.

2.43.2.5.1.3 Ethyl Propylene Diene Monometer (EPDM) – EPDM roofing shall be removed completely in section.

2.43.2.5.1.4 Asphalt Shingles – All deteriorated asphalt shingles, including nails, shall be removed without damaging or disturbing the existing shingles that remain.

2.43.2.5.1.5 Rolled Roofing – Deteriorate sections of rolled roofing shall be removed completely. All nails shall be removed completely. Excessive asphalt build-up on the roof deck shall be scraped and removed.

2.43.2.5.1.6 Build-up Roofing – Deteriorate build-up roofing shall be removed completely. Felt shall be cut in neat, straight lines. Gravel shall be removed 12 inches beyond the cut off line. Roofing over insulation shall be removed.

2.43.2.5.1.7 Gravel – Existing gravel shall be removed from the build-up roofing. All gravel shall be completely scraped off. Damage to existing felt shall be kept to a minimum.

2.43.2.5.1.8 Sheetmetal Work – Roof vents, vent bases, flashing and counter flashing gutters, gutter hangers and straps and all other items which intersect, rest on or penetrate the roof shall be removed, repaired and/or replaced and reinstalled by the contractor as necessary, or required to provide fully functioning and water tight conditions in conjunction with the roofing. Antenna, electric and telephone wiring and associated hardware plus wood cleats shall be removed and reinstalled by the contractor.

2.43.2.5.1.9 Carpentry Work – After removal of existing sheathing, blocking and nailers, rafters, fascia boards, trim and can't strips shall be inspected, and deteriorated materials shall be removed as directed by the Maintenance Department.

2.43.2.6 **Relocation**

2.43.2.6.1 Relocations shall be as specified and shall be performed by workmen skilled in the trade involved. The removal and reinstallation of relocated items shall be performed in a neat and workmanlike manner and items to be relocated which are damaged shall be repaired or replaced with new undamaged items as approved by the Maintenance Department.

2.43.2.7 **Damages Beyond Scope Of Work**

2.43.2.7.1 All roof areas beyond the scope of work request damaged by the contractor during the course of work under this contract shall be repaired or replaced by the contractor, with new material at no cost to the DOA.

2.43.2.8 **Burning And Welding Operations**

2.43.2.8.1 All general guidelines for hot work shall apply to cutting and welding operations and in addition.

2.43.2.8.2 No hot work is permitted on or adjacent to a wooden wharf or pier.

2.43.2.8.3 All combustible materials shall be cleared for a radius of 35 feet from the hot work job site. Materials which cannot be moved shall be covered with a fire retardant cloth or protected by a noncombustible shield.

2.43.2.8.4 All wall and floor openings within a 35-foot radius shall be protected or covered.

2.43.2.8.5 Combustible materials that are adjacent to the opposite side of metal partitions, walls, ceilings, or roofs and are likely to be ignited shall be moved or adequately protected. A fire watch shall be posted as required to ensure a fire safe operation.

2.43.2.8.6 All cylinders shall be handled safely and secured to prevent the cylinders from falling or tipping. Valve caps shall be provided for protection of valves and shall be in place except when cylinders are in service or connected ready for service. Fuel gas cylinders and oxygen cylinders, except where installed on standard welding rigs, shall be stored at detached, well ventilated locations, shielded from the sun by a noncombustible shelter.

2.43.2.8.7 Cylinder valves shall be closed when equipment is unattached or work stopped for more than 15 minutes.

2.43.2.8.8 Oxygen cylinders shall be kept free of grease and oil.

2.43.2.8.9 When welding or cutting is being performed in or on a building, the fuel gas oxygen cylinders shall be properly secured and kept outside the building, at ground level, unless specifically approved by the Fire Department.

2.43.2.8.10 Equipment in use, especially in confined spaces, shall be frequently inspected for evidence of leaks in the hose, coupling valve stems, or other points of the system to avoid lethal or explosive mixtures that may result from a leak.

2.43.2.8.11 At the end of the workday, valves shall be closed; remaining gas bled from hose line (not in a confined space) and regulators closed.

2.43.2.8.12 Where welding cable or hose is in the path of traffic, it shall be protected from chafing damage by a protective wrapped covering properly secured by lines to prevent undue strain on cable or hoses.

2.43.2.8.13 When an operator using electric welding equipment has occasion to leave his work or stop for any appreciable time, the power supply switch to the equipment shall be opened and the equipment completely disconnected from the source of power.

2.43.2.8.14 Cutting and welding equipment to be used shall be in satisfactory operating condition and in good repair.

2.43.2.9 **Tar Pots And Kettles – Application of Tar, Asphalt and Similar Materials**

All general guidelines for hot work shall apply to tar pots and kettles application of tar, asphalt and similar materials and in addition:

2.43.2.9.1 A minimum of two (2) 60 BC rated dry chemical extinguishers shall be provided in each of the following areas:

2.43.2.9.1.1 The tar pot And

2.43.2.9.1.2 The area of tar application

2.43.2.9.2 Tar pots shall not be operated inside. They must be attended by a competent operator.

2.43.2.9.3 Kettles for heating the materials shall be equipped with proper heating controls, temperature gauge and a means of agitation to assure controlled, uniform temperatures throughout the content to prevent spot heating.

2.43.2.9.4 The materials shall not be heated above the temperature necessary to produce workable fluidity and in no case above its flash point.

2.43.2.9.5 Surfaces on which the material is to flooded, mopped or otherwise applied, shall be clean and free of any foreign substances.

2.43.2.9.6 When the material is applies within buildings or other enclosed areas, the atmosphere shall be free of dust and adequate ventilation shall be provided to completely remove smoke and fumes.

2.43.2.9.7 All smoking, flame devices and/or other sources of ignition shall be prohibited in or near the application of the material.

2.43.2.9.8 Tar kettles, for use in roofing operations, shall be of an approved type meeting the requirements of the national fire code #56.

2.43.2.9.9 Mops, brushes and other applicators, when not in use, shall be stored in an area approved by the Fire Chief.

2.43.2.9.10 Continuous supervision shall be maintained while kettles are in operation.

2.43.2.9.11 Metal covers shall be provided for all kettles to smother out flames in case of fire.

2.43.2.10 **Liquid Fuel Powered Equipment**

Fueling and de-fueling operations shall only be conducted with written "fueling" permits in accordance with Federal, State, and Local regulations.

2.43.2.10.1 Liquid fuel powered equipment including but not limited to generators, air compressors, pumps, saws and hoisting devices shall not be permitted in buildings. However, whenever the use of liquid fuel powered equipment is required to repair or replace roofs, the following guidelines shall also apply.

2.43.2.10.1.1 Equipment is to be refueled on the ground.

2.43.2.10.1.2 Fuel shall be kept in approved safety cans. The maximum capacity of each shall be five (5) gallons.

2.43.2.10.1.3 Only one away from sources of ignition.

2.43.2.10.1.4 At least one (1) 4A 40BC rated ABC dry chemical fire extinguisher shall be kept at the fueling site. At least one (1) 4A 40BC rated dry chemical fire extinguisher shall be kept within thirty (30) feet of each liquid fuel powered machine.

2.43.2.10.1.5 Machines are to be refueled when the engines are cool, preferably at the beginning of the day.

2.43.2.10.1.6 No smoking, open flame, hot work or other potential sources of ignition shall be permitted while handling, refueling or operating liquid fuel powered equipment.

2.43.2.10.1.7 Fuel Capacity of individual machines shall not exceed three (3) gallons.

2.43.2.10.2 Additional fire prevention measures may be required as determined by the Fire Department.

2.43.2.11 **Guidelines for Ethyl Propylene Diene Monometer (EPDM) R Roof Installation**

2.43.2.11.1 Open flame devices, such as propane torches, are NOT permitted to be used to heat/soft material. Electrically powered hot air guns are acceptable.

2.43.2.11.2 All flammable or combustible liquids used for cleaning purposes shall be kept in approved safety cans. The maximum capacity of each can shall be five (5) gallons. The contractor shall provide Material Safety Data Sheets (MSDS) for all cleaning fluids to be used. Prior approval by the DOA shall be required.

2.43.2.11.3 Only one (1) day's supply of flammable or combustible liquids shall be kept on hand and shall be kept AWAY from sources of ignition.

2.43.2.11.4 Flammable or combustible liquids used for cleaning purposes shall be dispensed onto rags and brushes by the use of approved safety plunger cans or approved safety liquid, permitted on the roof, in three (3) gallons.

2.43.2.11.5 Safety plunger cans and safety bench cans shall be filled on the ground.

2.43.2.11.6 At least one (1) 4A 40BC rated dry chemical fire extinguisher shall be kept at the filling site. At least one (1) 4A 40BC rated ABC dry chemical fire extinguisher shall be kept within thirty (30) feet of each cleaning operation site.

2.43.2.11.7 All used rags shall be stored in a metal can, with a tight fitting lid at the cleaning site. Can shall be moved to the ground at the end of the workday.

2.43.2.11.8 No smoking, open flame, hot work or other potential sources of ignition shall be permitted while handling, filling or using flammable or combustible adhesives used for the installation.

2.43.2.11.9 Only one (1) day's supply of flammable or combustible adhesives shall be permitted on the roof.

2.43.2.11.10 All fuel cans and dispensing cans shall be removed from the roof to the ground at the end of the day.

2.43.2.11.11 A hot work permit, issued by the Fire Prevention Office is required before EPDM roofing installation begins.

2.43.2.12 **Hot Work Procedures**

Welding, burning, open flame, roofing and EPDM installation will be permitted, but subject to the following conditions.

2.43.2.12.1 The methods shall be approved by the Airport’s Maintenance Manager or his designee.

2.43.2.12.2 The contractor must inform the Airport’s Maintenance Manager when the process will be performed.

2.43.2.13 **No Permanent Markings**

No paints or other types of permanent marking materials shall be used on any surfaces of building structures, columns, poles, sidewalks, driveways, walkways, parking lots, roads, and other finished surfaces for marking survey points and utility systems during performance of this contract. Water washable materials such as crayons and chalk may be used, but must be removed by the contractor immediately upon completion of work in the area.

2.43.3 **SPECIAL REQUIREMENTS**

2.43.3.1 **Repairs**

2.43.3.1.1 Wherever the terms "repair or replace" are used in a Work Request (WR) City Form #72-290, they shall be understood to mean that all damaged or defective surfaces are to be repaired or replaced with new materials of the same type, style, grade, class and reliability from same or equivalent manufacturer. Fully repaired or finished surfaces shall duplicate the original surfaces in form, fit, function and reliability.

2.43.3.1.2 Each job to be performed under this contract will be described in a written report. The contractor shall describe the work to be performed, the time within which the work must be completed, and any

other relevant terms or conditions. Each WR must be numbered, dated and will refer to this contract.

2.43.3.1.3 All work will be based on an agreed fix cost. No payment will be made for unauthorized work. The type and amount of work to be performed shall be authorized only by the DOA by the issuance of a written order and an attached WR to fully describe the work.

2.43.3.1.4 Work order will be in writing after approved of WR.

2.43.3.1.5 The DOA may issue orders which provide for performance at multiple destinations.

2.43.3.1.6 All work orders issued hereunder are subject to the terms and conditions of this contract. This contract shall control in the event of conflict with any work orders.

2.43.3.2 **New Items**

2.43.3.2.1 All parts furnished must be current manufacturer, be newly manufactured or warranted as new. They shall be delivered by the Contractor to the locations specified by the Division of Aviation.

2.43.3.3 **Warranty**

2.43.3.3.1 All work must be performed in accordance with the terms of existing warranties attached. All repair services to be delivered under this contract must carry a MINIMUM one (1) year warranty that will commence upon completion of work by the contractor. During this period, the vendor shall provide maintenance and make all necessary repairs and adjustments and provide parts replacement to the Division of Aviation at no charge.

2.43.3.4 **Performance**

2.43.3.4.1 The contractor shall respond to work request after written work authorization. The contractor shall complete any work authorization with a value less than $5,000 within 5 days of the response date. The contractor shall complete any work with a value above $5,000.00 within the estimated completion date as submitted by the contractor and approved by DOA.

2.43.3.5 **Permits and Responsibilities of Work**

2.43.3.5.1 The contractor shall, without additional expense to the DOA, obtain all licenses and permits required for the execution of the work. He shall be responsible for damages to persons and/or property that occur as a result of this fault or negligence in connection with the execution of the work. He shall also be responsible for all materials delivered and work performed until completion and final acceptance except for any completed unit thereof which theretofore may have been finally accepted.

2.43.3.6 **Method and Schedule of Work**

2.43.3.6.1 Work will be scheduled during regular working hours 0730-1600, Monday thru Friday, City holidays excluded. The work shall be executed in a manner and at such times that will cause the least practical disturbance to station utilities. If the contractor desires to carry on work outside regular hours or on Saturdays, Sundays or holidays, with no extra compensation, he shall submit application to the DOA and shall allow 48 hours to enable satisfactory arrangements to be made for inspection.

2.43.3.7 **Subcontractors and Personnel**

2.43.3.7.1 Promptly after award of this contract, the contractor shall submit to the DOA a list of his subcontractors and the work each is to perform. The list shall include the names of key personnel of the contractor and subcontractor, together with their home addresses and telephone numbers, for use in the event of any emergency. From time to time, as changes occur and additional information becomes available, the contractor shall amplify, correct, and change the information contained in previous lists.

2.43.3.8 **Storm Protection**

2.43.3.8.1 Should warnings of winds of gale force or stronger be issued, the contractor shall take every precaution to minimize danger to persons, to the work, and to adjacent property. The precautions shall include, but not be limited to, closing all openings, removing all loose materials, tools, and equipment from exposed locations and removing or securing scaffolding and other temporary work.

2.43.3.9 **Debris**

2.43.3.9.1 Debris and useless materials shall be removed from the activity at directed times and the area of work shall be kept reasonably clean and free of useless materials at all times. At completion of the contract, the area of work and the activity shall be left without containers, contractor's equipment, and other undesirable materials, and in an acceptable clean condition. Debris and useless materials shall be removed in accordance with all applicable Federal, State and Municipal regulations.

2.43.3.10 **Protection**

2.43.3.10.1 The contractor shall take all necessary precautions to adequately protect personnel and public and private property in the areas of work. Approved barriers and warning signs shall be provided to reroute personnel around areas of dangerous work.

2.43.3.11 **Chutes**

2.43.3.11.1 At all locations where debris is to be transferred vertically for a distance of 10 feet or more, the contractor shall provide an enclosed chute for this purpose. The chute shall not exceed 20 feet in an unbroken line, but shall be provided substantial breaks at intervals not greater than 20 feet thereby preventing descending materials or debris from attaining speed. Debris shall not spill from the bottom of the chute onto the ground. The bottom of each chute shall be equipped with a gate or stop with suitable provisions for closing off or regulating the flow of debris. The final drop of debris shall be into either an approved collection hopper or truck. A hose with a nozzle connected to an adequate water supply shall be provided near bottom of each chute, and shall be used as necessary to wet down the debris to reduce and control dust.

2.43.3.12 **Patching**

2.43.3.12.1 All holes and depressions left as a result of removals in existing masonry walls shall be completely filled with an approved masonry patching material, applied in accordance with manufacturer's printed instructions at the contractor's expense.

2.43.3.13 **Fire Watchers**

2.43.3.13.1 The contractor shall provide adequate personnel and fire extinguishing equipment suitable to the potential fire hazards as determined by the Fire Department. Fire extinguishing equipment shall be properly charged, sealed and tagged. Where a 1-1/2" hose line is required, it shall be charged, equipped with a shut-off type nozzle and ready for use.

2.43.3.13.1.1 The contractor shall provide "designated" fire watch(es) as shall be required for a fire safe operation during the hot work, as determined by a representative of the Fire Department. Fire watch(es) shall have been properly instructed and qualified to perform all fire watch duties.

2.43.3.13.1.2 Operators of equipment required for work shall have been properly instructed and qualified to operate such equipment. Instructions shall include precautions against hazards related to the operations.

2.43.3.13.1.3 All hot work operations shall be under the supervision and control of a competent supervisor who shall see that all regulations pertaining to the work operations are compiled with.

2.43.3.13.1.4 Equipment operators and fire-watchers shall be familiar with the location of the nearest Fire Alarm Box and the telephone number for reporting a fire is extension 3111.

2.43.3.14 **Availability of Utilities**

2.43.3.14.1 The Division of Aviation (DOA) will furnish reasonable amounts of the following utilities for the work to be performed under this contract at no cost to the contractor. Information concerning the location of existing outlets may be secured from the DOA. The contractor shall provide and maintain, at his expense, the necessary service lines from existing DOA outlets to the site of work.

2.43.3.14.1.1 **ELECTRIC - WATER - COMPRESSED AIR (where available)**

2.43.3.15 **Contractor Furnished Utilities**

2.43.3.15.1 In the event that the DOA is unable to provide the required types of utilities, the contractor shall, at his expense, arrange for the required utilities.

2.43.3.16 **Contractor Energy Conservation**

The contractor shall be directly responsible for instructing employees in utilities conservation practices. The contractor shall be responsible for operating under conditions which preclude the waste of utilities, which shall include:

2.43.3.16.1 Lights shall be used only in areas where, and at times, when work is actually being performed.

2.43.3.16.2 Mechanical equipment controls for heating, ventilation, and air conditioning systems will not be adjusted by workers.

2.43.3.16.3 Water faucets or valves shall be turned off after the required usage has been accomplished.

2.43.3.17 **Contractor Availability**

2.43.3.17.1 The contractor shall maintain a telephone at which he or his representative may be reached 24 hours daily. The telephone shall be listed in the contractor's name. If the contractor does not have a local telephone, he shall maintain a toll free emergency telephone number or accept collect calls from authorized personnel, at which he or his representative may be reached at night, weekends or holidays. It is mandatory the contractor or his representative be available to the toll free telephone number 24 hours daily, seven days a week, including holidays. He shall notify the DOA in writing of the individual name, mailing address and telephone number within three days after award of this contract and immediately thereafter in the event of change.

2.43.3.18 **Work Request Limitations**

2.43.3.18.1 All work requests issued hereunder are subject to the terms and conditions of this contract. This contract shall control in the event of conflict with any work requests.

2.43.4 **RECORDS/DOCUMENTATION**

2.43.4.1 The contractor will forward to the City copies of all maintenance services performed and any trouble call reports.

2.43.4.2 All work will be initiated from the Airport's work control center through the issuance of a work order. The work control center will only phone in priority 1, emergency requests.

2.43.4.3 All hours and parts used will be logged onto the work orders. Work that is not completed at the end of the day will have all of the hours and parts logged to it daily until completed.

2.43.4.4 Submit all proposed PM procedures and support information on approved worksheets along with recommended frequencies for approval by the manager of maintenance. Worksheets will be provided by the Division of Aviation. The PM information will be entered into the maintenance management system to be generated at the set frequencies.

2.44 SCHEDULE V - LANDSCAPE SERVICES

2.44.1 GENERAL DESCRIPTION

2.44.1.1 The contractor shall furnish labor, equipment, tools and materials as required to maintain trees, shrubs, ground covers, mulched beds, gravel beds and exterior planters along roadways and train platforms at Philadelphia International and Northeast Airports as directed by the Division of Aviation.

2.44.1.2 The contractor shall furnish labor, equipment, tools and materials as required to maintain all interior plants in terminals, terminal bridges, baggage claims, and concourses at the Philadelphia International Airport, and Philadelphia Northeast Airport.

2.44.2 TECHNICAL DESCRIPTION

2.44.2.1 The maintenance shall include pruning, weeding, re-mulching, reseeding, transplanting, removal and replacement of dead growth, fertilizing, watering, insect and disease control of turf, trees and shrubs, placement of red tipple stone and other decorative materials such as washed gravel, river rocks, pebbles, etc. and removal of all trash and debris.

2.44.2.2 All evergreen shrubs are to be pruned at least twice per year or more often as required by the Division of Aviation. All mulched beds are to be re-mulched in the spring and weeded as necessary to maintain a clean, neat appearance. Fertilizing, weed control of turf, watering, disease and insect removal are to be performed as needed. All guiderails are to be re-stoned as directed and maintained throughout the year to be completely free of grass and weeds. All stoned areas are to be kept free of weeds and grass. All landside ground areas will be cleaned weekly for trash and debris.

2.44.2.3 The interior plant and tree maintenance shall include watering, pruning, spraying, feeding, cleaning, re-potting plants, applying insecticides, pesticides, and fungicides, adding moss, and removing trash from plant areas.

2.44.2.4 **EQUIPMENT (EXTERIOR)**

2.44.2.4.1 Equipment must be of current manufacturer and in like new condition as certified by the equipment's manufacturer. No unsightly equipment shall be used on Airport property. It may also be remanufactured to meet industry and PADOT standards. The contractor will be required to provide documentation of all lease and purchase agreements. The rates charged for necessary equipment shall be consistent with standard published valves. The contractor shall have the ability to supply as required the following equipment:

2.44.2.4.2 One dump truck along with the required collection service for disposal of all trash and debris.

2.44.2.4.3 One 4-wheel drive truck

2.44.2.4.4 One tank truck (800 gal. capacity) with appropriate pumping apparatus for fertilizing, watering and spraying chemicals.

2.44.2.4.5 One service truck to carry all tools and supplies, etc.

2.44.2.4.6 Two self-propelled mowers with 36" cut.

2.44.2.4.7 One tractor with towable spreader, disk harrow, tiller, york rake and grader box.

2.44.2.4.8 One front end loader/backhoe - Case 480 or equivalent

2.44.2.4.9 Power push blowers, back pack blowers, with string trimmers, generators, gas/electric hedge trimmers, push mowers, chain saws, stump grinders, self powered diaphram pump (trash pump), brush chippers, gas rototillers, wheel barrows, spreaders, rakes, shovels, hoses, sprinklers, pruning poles, pole saws, hand saws, and any other equipment, vehicles, large and/or small tools and personnel necessary for the proper completion of the work.

2.44.2.4.10 One crane or high reach with 5000 lbs. capacity and 60" reach.

2.44.2.4.11 One transplanting tree spade, minimum 60" capacity.

2.44.2.5 **EQUIPMENT (INTERIOR)**

The contractor shall supply as required the following equipment:

2.44.2.5.1 8-10 gallon watering caddy.

2.44.2.5.2 Spray equipment necessary to apply insecticides and pesticides.

2.44.2.5.3 **Water Cans**

2.44.2.5.4 Pruning shears, scissors, and all tools necessary for the proper completion of the work.

2.44.2.6 **MATERIALS (EXTERIOR)**

2.44.2.6.1 2.Insecticides: Dormat oil spray; Diazinon, Sevin, Isotox. Insecticide to be applied with a spreader-sticker as directed by the manufacturer or equal with EPA approval.

2.44.2.6.2 Fertilizer: 10-6-4 50% natural organic by weight. Weed and feed, 10-6-4 commercial fertilizer shall conform to the requirements of the PA Act of 1956, EPA and U.S. Department of Agriculture requirements.

2.44.2.6.3 Herbicides: Round-up, Dyclomec, Treflaw 5G or equal as approved in accordance with EPA and U.S. Department of Agriculture requirements.

2.44.2.6.4 Mulch: Double ground hardwood mulch moisture content not to exceed 17% by weight.

2.44.2.6.5 Red Tipple Gravel: 3/8 crushed stone to match existing. River rock 1"-3"d 3"-5"d. Wash gravel, stone, pebbles.

2.44.2.6.6 Backfill/Planting Mixture: Shall be a mixture by volume of the following: 1/3 peatmoss, 2/3 screened topsoil, add 3 oz. of 5-10-10 fertilizer per cubic foot of mixture.

2.44.2.6.7 Trees, Shrubs, Flowers and Seeds: Provide trees, shrubs, plants and seeds of quantity, size, genus, specifics and variety as directed by the Airport Maintenance Manager or designee and complying with recommendations and requirements of ANSI 260.1, "American Standard for Nursery Stock". Provide healthy, vigorous stock grown in recognized nursery in accordance with best horticultural practice and free of disease, insects, eggs, larvae, and defects such as knots, sun-scald, injuries, abrasions or disfigurement.

2.44.2.6.8 Water: Water will be provided at no cost and is available in at several locations throughout the site. Contractor is responsible to transport water to locations needed.

2.44.2.7 **MATERIALS (INTERIOR)**

2.44.2.7.1 Fertilizers - Water soluble, Peters

2.44.2.7.2 Insecticides - Systemic Malathion, Diazinon

2.44.2.7.3 Moss

2.44.2.7.4 Potting Soil

2.44.2.7.5 Leaf Shine

2.44.2.7.6 Fungicides

2.44.2.7.7 Plants/Materials: The contractor shall provide plants using the best industry standards for healthy material including Aglaonema, Ficus Benjamina, Dieffenbachia, Aspidistra, Dracaena, Yucca, Philodendron, etc.

2.44.2.7.8 Water: Water will be provided at no cost and is available in janitor's closets throughout the building.

2.44.3 **SPECIAL REQUIREMENTS**

2.44.3.1 **WORK HOURS (EXTERIOR)**

2.44.3.1.1 Work to begin at job site no earlier than 7:30 A.M. and to conclude no later than 4:30 P.M.; unless approved by the Division of Aviation, no work permitted on Saturdays, Sundays, or holidays.

2.44.3.2 **WORK HOURS (INTERIOR)**

2.44.3.2.1 Work to begin no earlier than 7:00 A.M. and to conclude no later than 6:00 P.M. unless approved by the Division of Aviation. No work permitted on Saturdays, Sundays or holidays.

2.44.3.3 **PERSONNEL QUALIFICATIONS (EXTERIOR)**

2.44.3.3.1 Education: Formal education in Forestry, Horticulture, Landscape Design or related field is acceptable in lieu up to 2 years of actual work experience.

2.44.3.3.2 Foreman: Shall have a minimum of five years landscaping experience and be licensed to apply all insecticides and pesticides in compliance with Federal and State pesticide acts and registration requirements. Evidence of license must be submitted with bid.

2.44.3.3.3 Gardeners: Shall have a minimum of three years experience in the planting, care and maintenance of trees, hedges, shrubs, ornamental plants, flowers, turf, mulch and gravel areas used in landscaping industry.

2.44.3.3.4 Work Crew: Work crew shall consist of one Foreman and two Gardeners for top quality care and maintenance of exterior landscaping.

2.44.3.3.5 Forty-Eight hours notice will be given to the contractor if additional crews are required by the DOA.

2.44.3.3.6 All personnel assigned to this contract will be required to display in full view and at all times the proper airport identification.

2.44.3.3.7 The Director of Aviation or his/her designated representative reserves the right to stop the work of the contractor and his/her work crew if it is determined that the crew members are not qualified to perform the duties, as described, or the public health and welfare is comprised.

2.44.3.4 **PERSONNEL QUALIFICATIONS (INTERIOR)**

2.44.3.4.1 Education: Formal education in Horticulture or related fields is desirable and acceptable in lieu of work experience.

2.44.3.4.2 Foreman: Shall have a minimum of three years experience and licensed to apply all insecticide and pesticides in compliance with the Federal and State Pesticide Acts. Evidence of license must be submitted with bid.

2.44.3.4.3 Plant Technician: Shall have a minimum of two years experience in the care and maintenance of interior plants.

2.44.3.4.4 All employees must wear identification clothing (apron, smock with company name) at all times while on job site.

2.44.3.4.5 Successful bidder must provide proof that a 5-year background check has been performed on supervisory personnel that may be required to enter restricted areas, in accordance with Federal Aviation Regulation (FAR) Part 107.11.

2.44.3.4.6 Work Crew: The successful bidder shall provide an adequate number and mix of personnel for top quality care and maintenance of interior plants.

2.44.3.5 **JOB CONDITIONS**

2.44.3.5.1 Determine location of underground utilities when required and perform work in a manner which will avoid possible damage. Hand excavate, as required.

2.44.3.5.2 When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage or obstructions, notify DOA before planting.

2.44.3.5.3 The work crew is to include all tools and equipment, except for the front end loader, as previously described which will be paid for at the contract unit-price per hour as authorized by the Division of Aviation.

2.44.3.5.6 **MATERIAL SAFETY DATA INFORMATION**

2.44.3.5.6.1 Material Safety Data Sheets (MSDS) shall be submitted to the Division of Aviation for all materials to be used. Materials shall conform to Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended.

2.44.3.5.7 **TEMPORARY STORAGE AREA**

2.44.3.5.7.1 The contractor will be provided with a temporary storage area on Airport property. The DOA will not assume any responsibility for the security of any stored material or equipment or provide utilities therein.

2.44.3.5.8 **EXECUTION**

2.44.3.5.8.1 Preparation of Planting Beds - Loosen surgrade of bed areas to a depth of 6" using rototiller or similar equipment. Remove all deleterious material, spread 6" depth of planting mixture on bed area and work mix into loosed subgrade.

2.44.3.5.8.2 Planting trees and shrubs - Excavate holes with vertical sides at 1 1/2 times as wide as the root mass and to a depth equal to the root mass depth plus 3". Set plant on layer of compacted planting mixture, plumb and in center of hole. Backfill excavation with planting mixture to approximately 2/3, full water thoroughly, place remainder of backfill mix, dish top of backfill provide 4" mulch and repeat watering. Prune to remove dead and damaged branches. Install guy wires and trunk wrap as required.

2.44.3.8.3 Pruning - Prune, thin out, and shape trees, shrubs, plants and flowers at least weekly in accordance with standard horticultural practice. Prune trees to retain required height and spread. Unless otherwise directed by the DOA do not cut tree leaders, and remove only injured or dead branches from flowering trees. Prune shrubs to retain natural character unless otherwise directed.

2.44.3.8.4 Clean-Up - During landscape work keep all areas clean, swept and in an orderly condition.

2.44.3.8.5 Inspection - The DOA shall inspect trees, shrubs, plants and flowers either at place of growth or at site before planting for compliance with requirements of genus, species, variety, size and quality. Work will be monitored for accuracy and adequacy.

2.44.3.8.6 If new plants do not take root within 90 days of planting, such plants shall be removed and replaced at no cost to the city.

2.44.3.9 **ADDITIONAL REQUIREMENTS**

2.44.3.9.1 Pennsylvania and Philadelphia Sales and Use Tax

2.44.3.9.1.1 Unless an exemption is available under applicable law, materials, equipment and supplies to be furnished under this contract may be subject to the Pennsylvania and Philadelphia sales and use tax. THE BIDDER/ CONTRACTOR IS SOLELY RESPONSIBLE FOR (i) CONDUCTING AN INVESTIGATION TO DETERMINE BIDDER'S/CONTRACTOR'S TAX LIABILITY AND FOR (ii) THE PAYMENT OF ALL TAXES REQUIRED BY LAW.

2.44.3.9.2 **Planting Guarantee**

2.44.39.2.1 Warranty trees and shrubs for a period of one year after date of installation completion, against defects including death and unsatisfactory growth, except for defects resulting from neglect by owner, abuse or damage by others, or unusual phenomena or incidents which are beyond landscape installer's control.

2.44.3.9.2.2 Remove and replace trees and shrubs found to be dead or in unhealthy condition during warranty period.

2.44.3.9.3 **Maintenance and Protection of Traffic**

2.44.3.9.3.1 Furnish material and traffic control devices when necessary in accordance with PENNDOT publication 408, Section 900 - Traffic Accommodation and Control.

2.44.3.9.3.2 The contractor's vehicles and equipment assigned to this contract will be required to display in full view and at all times the company's name and/or logo marked in lettering no less than 3" in height. All markings are to be legible.

2.44.3.9.4 **Method of Payment**

2.44.3.9.4.1 For exterior landscaping work, the quantity of materials used will be verified each day and supply invoices will be collected at the time of delivery and/or use by the Division of Aviation. The contractor will be paid for only the labor and materials actually used on the job site as approved by the DOA.

2.44.3.9.4.2 Soluble chemical products will be paid for at the bid price in concentrate form.

2.44.3.9.5 **Interior Plant Care Performance Guarantee**

2.44.3.9.5.1 The successful bidder provides high quality care and maintenance and care of interior plants. Plants shall have a healthy appearance and be regularly cleaned and pruned. Adequate supply of water, fertilizers, pesticides, fungicides and other care products shall be applied as necessary. The successful bidder shall replace any plant that is deemed unhealthy or unsightly by the Airport's Maintenance Manager or his designee at no cost to the City, with similar type plant.

2.44.3.9.5.2 Interior plant care and maintenance meeting the performance requirements of this specification, will be paid at the bid monthly service price. This includes labor, supervision, tools, materials, equipment, and performance of work.

2.44.4 **SPARE PARTS**

2.44.4.1 No chemicals will be permitted to be stored on the premises.

2.44.5 **RECORDS/DOCUMENTATION**

2.44.5.1 The contractor shall submit written monthly inspection reports to the Division of Aviation.

2.44.5.2 All work will be initiated from the airport's work control center through the issuance of a work order. The work control center will only phone in priority 1, emergency requests.

2.44.5.3 All hours and parts used will be logged onto the work orders. Work that is not completed at the end of the day will have all of the hours and parts logged to it daily until completed.

2.44.5.4 Submit all proposed PM procedures and support information on approved work sheets, along with recommended frequencies for approval by the Airport's Maintenance Manager or his designee. The PM information will be entered into the computerized maintenance management system to be generated at the set frequencies.

2.44.5.5.1.1 Contractor shall deliver a daily report of exterior work performed including manpower, material and equipment used. Contractor shall deliver a schedule by 3:00 p.m. on Friday of intended work for the following week including crew size(s). Formal meetings will be held, as required, with 72 hours notice by either contractor or Division of Aviation or otherwise as agreed.

SECTION 3: BID EVALUATION AND AWARD

3.1 **Evaluation**

3.1.1 The Procurement Department will, in conjunction with the Department Of Commerce, Division of Aviation evaluate the Bid of the Pre-qualified bidders.

3.1.2 The Invitation and Bid will be evaluated for responsiveness of the bidders.

3.1.3 Bids, which are determined to be non responsive for reasons of:

(i) improper bid execution
(ii) incompleteness
(iii) offering counter terms and conditions

may be disqualified by the City without notice to the bidder. The decision of the City is final.

3.2 Award:

3.2.1 The award will be made as a whole to that pre-qualified and responsive and responsible bidder whose bid total to the City is lowest.

3.2.2 Upon award of the contract, the Contractor shall list his/her resources available to facilitate a disaster recovery plan as defined by the Division of Aviation.

3.2.3 The Contractor may audit the City-owned inventory at this time.

3.2.4 **Performance Bond:**

3.2.4.1 The City of Philadelphia shall require an Individual Performance Bond for $600,000.00 if awarded the contract. With the award notification letter or promptly thereafter, the City will provide to the successful bidder a performance bond form to be executed by a bonding company approved by the City. The bond form and applicable document preparation fee must be returned within 10 days after receipt of the bond form or the vendor may lose the award.

This bond shall be subject to renewal for each subsequent period of the contract. For any subsequent renewal periods, Paragraphs 1.3.1 and 1.3.2 shall apply. Failure to secure bonding for the subsequent renewal period(s) will be considered a breach of the contract entitling the City to all rights and remedies.

3.2.4.2 This Performance Bond shall cover work done by the Contractor on this contract and any subcontractors in his/her employ at any tier. Any work bid out separately by the City will be bonded separately. The Contractor's original bond will not be reduced if the City decides to bid out work.

3.2.5 The successful Contractor is also required to pay a Bond Preparation Fee to the City's Law Department in an amount prescribed by Chapter 17-700 of the Philadelphia Code; a schedule of such fees may be viewed in Exhibit C entitled "Bond Preparation Fee Schedule" of the PIR.

3.2.6 **Payment Bond:**

The successful bidder will be required to provide a Payment Bond in the amount of $600,000.00 for the initial contract period with an approved surety company as surety thereon conditioned upon the full payment of subcontractors and others furnishing labor and materials in the performance of this contract. This bond shall continue in force throughout the duration of the contract and may be adjusted on future estimates of contract activity.

3.2.7 **Insurance:**

Insurance is a requirement for this bid in accordance with Paragraph 14 of the "Terms and Conditions of Bidding and Contract." Except that:

GENERAL LIABILITY INSURANCE is $10,000,000
AUTOMOBILE INSURANCE is $10,000,000

3.2.8 **INDEMNIFICATION**

The City will not accept any other form of Indemnification language (see para. 21 of the "Terms and Conditions of Bidding and Contract"). Bidders should consult their own attorneys with respect to any meaning and application of this and other contract terms set forth in this PIR and Invitation and Bid package.

3.2.9 The successful bidder shall provide to the Director of Aviation or designee, the name(s) of the Manager, Shift Supervisors, and all regular service technicians, backup technicians, technical support personnel and service supervisors for approval. The City reserves the right to reject any proposed personnel. The list shall include training and experience credentials of each. Any changes, which may occur in personnel during the term of the contract, will be made known to the City in writing by the successful bidder.

SECTION 4: CONTRACT MANAGEMENT

4.1 City of Philadelphia Responsibility:

4.1.1 The DOA will be notified by Procurement of an award and will be provided with vendor name, vendor contact and applicable pricing. The DOA will prepare and initiate, through the appropriate review channels, a purchase order through ADPICS against the contract and Procurement will issue the purchase order, subsequent to contract conformance. The purchase orders will show if performance is to be made upon receipt of order, or only after notification by the Division of Aviation.

4.1.1.1 The DOA shall prepare and submit to the Procurement Department, a change to the purchase order in ADVANCE of any need to increase funding; such change must be submitted to Procurement in advance to ensure adequate financing for contract obligation.

4.1.2 The contractor’s service personnel permanently assigned to the Airport must pass a five year background check as required by FAA in order to receive a security badge. This background check shall be performed by the Airport. Procedures regarding security badges shall be as required by the Airport.

4.1.3 The DOA is responsible for monitoring the services provided as described in the contract. If any problems arise, a letter should be sent to the vendor requesting resolution by a specified date. A copy should be sent to the buyer. If vendor does not resolve the breach of contract by the requested date the matter should be turned over to the Buyer.

4.1.3.1 Contractor shall conduct at minimum annual progress review meetings for DOA, summarizing work completed, work underway, and planned work for the next six (6) months. Minutes of the meeting shall be prepared by Contractor and delivered within ten (10) days after the meeting.

4.1.4 The City will periodically comment on adequacy of record keeping. The contractor shall respond to City's comments, and take any action requested by City, in a timely manner.

4.1.5 The City, through its duly authorized representatives, shall have the right to inspect and audit Contractor's books of account and other records (related to this contract) at all reasonable times during normal business hours.

Contractor shall retain such records for a period of three (3) years following the expiration or earlier termination of this contract (including any extension or renewal thereof) and shall make such

records available to the City at a location in the City of Philadelphia.
Should adequate records not be available within the City of Philadelphia, then the additional cost of such audit, including all reasonable travel, food, and lodging expenses incurred, shall, at the City's discretion, be borne by the Contractor.

4.1.6 During the course of the contract, the City reserves the right to make changes in subcontractors. If the contractor wants to change subcontractors, the City must first approve such change.

4.1.7 **ADD ONS**

The City reserves the right to add, delete or change locations; or to add, delete, or change services or maintenance, including maintenance and service that the vendor can perform that are similar to, but not specifically called for, in this bid. The procedure for such acquisitions shall be as follows:

Procurement or the Division of Aviation will obtain from the vendor a letter of verification (on his/her letterhead) detailing the services and pricing to be added. The letter shall include the bid number, bid schedule number, and contract period and upon receipt and approval by the Procurement Department shall be made a part of the basic contract.

4.1.8 **INVOICES**

The City attempts to process invoices in a timely manner. Delays can occur because of incomplete or inaccurate invoicing information. Please make sure that invoices contain the information as required by Para. 4.2.18 below, to help the City process payments to the Contractor as quickly as possible.

4.1.8.1 Invoices submitted shall be processed for payment once per month upon the City's acceptance and approval of the service performed. The City's standard payment cycle is 45-60 days after receipt, approval and processing of invoices by the DOA.

4.1.8.2 Any credit due hereunder may be applied against Contractor invoices with appropriate information attached.

4.1.9 **PAYMENTS**

4.1.9.1 Paying the contractor is the responsibility of the DOA, not the Procurement Department. The successful vendor should bring any problems concerning payments to the attention of the appropriate DOA designee. The name and number of the contact person can generally be found on the purchase order.

4.1.9.2 Checks will only be made payable to the company name as shown on the purchase order; the invoice must reflect this same company name as the "pay to."

4.2 **Vendor Responsibility:**

4.2.1 Contractor may provide ONLY services and related materials as authorized in the contract and only after receipt of a purchase order or other authorized document from the Procurement Department. All orders MUST be in writing. Contractor shall not accept verbal requests until after receipt of purchase order authorizing document from Procurement.

4.2.2 Contractor may provide only services and related materials at the prices quoted in the contract and that are reflected on a purchase order or a change to a purchase order (a change to a purchase order is issued whenever the items, unit prices, total amount, or terms and conditions change from the original purchase order).

4.2.3 Contractor may perform up to the limit of the purchase order and for the period shown on the purchase order. Contractors are required to carefully monitor obligations against purchase orders and inform the DOA of anticipated funding shortfalls.

4.2.4 In the event that the Contractor receives an order for services and related materials not specifically priced and incorporated into the contract, they MUST:

(i) Bring this to the immediate attention of the Procurement Department, and

(ii) Notify the DOA or designee in writing and refuse to perform.

4.2.5 Should services be provided that are not specifically incorporated and priced in the contract; and/or be provided without a purchase order, the City shall have no obligation for payment.

4.2.6 For performance of services, the Contractor shall honor and be paid for orders placed until the close of business of the date of purchase order expiration.

4.2.7 Certain Systems not included in this Pre-qualification and Invitation and Bid and subsequent contract are currently being maintained under separate contracts and may be added to the resulting contract in the future. If the City chooses to add those services, the provisions detailed in paragraph 4.1.7 shall apply to such FACILITY MAINTENANCE services.

4.2.7.1 For any specific work ordered under the existing contract(s), the current vendor will be responsible for completion of that work. For new work to be ordered under the contract (FMC), the Contractor will be paid based on the prices in Section 5 or "add-on" letter submitted for the service.

4.2.8 **PERSONNEL DEEMED TO BE AGENTS OF THE CONTRACTOR**

4.2.8.1 Any service technicians or support personnel assigned by the contractor shall be deemed to be agents of the successful bidder. The City shall make payments only to the contractor for work performed. Any and all payments due to employees, subcontractors, suppliers and agents of the contractor are the responsibility of the Prime Contractor.

4.2.9 The Contractor is responsible for the cost of all permits required. Permit costs shall be incorporated in bid pricing in Section 5.

4.2.10 **VIOLATION OF CONTRACT**

Any occurrences, incidents, deficiencies, violations or omissions of the work delineated in this Invitation and Bid shall be defined by the City as a Violation of Contract. These deficiencies shall not be limited to those listed in the below paragraph:

(a) Abandonment of the work assigned or if the time schedule as defined between the Division of Aviation and the Contractor prior to the initiation of work is exceeded or negligence or failure to prosecute the work with promptness and diligence.

(b) Refusal and negligence to furnish and supply sufficient/properly skilled workmen, trainers, equipment and materials.

(c) Improper, careless execution of any of the work or to conduct their services in bad faith, shall constitute default in the performance of the contract the DOA may notify the Contractor in writing to remedy these deficiencies and require the Contractor to comply with the terms, conditions and provisions of the contract.

The above general defined deficiencies or incidents are defined as any deficiency in work performance or failure to comply with the specifications of the contract on a per occurrence basis.

4.2.10.1 If the said notification be without effect three working days after delivery thereof, or twenty-four (24) hours when, in the opinion of the DOA, immediate action is necessary to safeguard life or property, then and in that event the DOA shall notify the Procurement Commissioner who shall have the right to declare the Contractor in default; and to notify the Contractor to discontinue the work or any part thereof under the contract, and to call upon the surety to complete the same through agencies which meet the approval of the Procurement Commissioner and, in the opinion of said Procurement Commissioner have qualifications equal to those required of the original Contractor.

4.2.10.2 If the Contractor fail to take up and prosecute the work by means of such approved agencies within ten (10) working days (or within twenty-four (24) hours when in the opinion of the Procurement Commission shall have the right to declare the Contractor in default and, at his option:

(a) To terminate the work under the contract, to maintain conditions, to obtain bids (if circumstances will allow) for all or any portion of the work, and to enter into a new contract the work of the original contract, or

(b) In case of an emergency, including but not limited to, danger to life or property, or serious interference with traffic, to terminate the work under the contract, and to then and there secure in open market, from any person or party, at the then current market prices the materials of the quality required, the necessary workmen and mechanics, and the required equipment to carry forward the said work and complete the contract.

4.2.10.3 Upon default by the Contractor as herein above set forth, all moneys due the Contractor upon estimates, retained percentage or otherwise, equipment delivered, materials built into the work, and the Contractor's plant (including tools, appliances, and equipment on the premises intended for use in the performance of contract), shall upon such default become the property of the City for use in the completion of the work, and resort shall be had thereto by the City to the extent necessary to maintain and complete the work and reimburse the City for its outlays and expenditures in the premises.

4.2.10.4 In case of such default by the Contractor, the remedies herein provided shall be in addition to and not in substitution of the rights and remedies which would otherwise be vested in the City, all of which rights and remedies are specifically reserved to the City. The failure of the City to exercise any of the remedies herein

provided shall not preclude the resort to any other appropriate remedy.

4.2.10.5 The use of specific remedies herein provided shall not prevent subsequent or concurrent resort to any other remedy which by law or equity would be vested in the City for the recovery of damages or otherwise, in the event of default by the Contractor.

4.2.10.6 Contractor and his surety shall pay to the City on demand, all loss, expense, cost or damage suffered or incurred by it by reason of any default.

4.2.11 **Liquidated Damages:**

Failure to complete scheduled work or work performed in an unsatisfactory manner, and/or having less than the minimum staffing level, will be subject to a credit assessment and/or non-payment for work not performed as specified. Credit assessments shall be in the amount of two thousand dollars ($2000.00) per each occurrence and/or for each employee below the minimum staffing. The credit assessments shall be deducted from the successful bidder's monthly bill.

The Contractor will receive written notification of non-performance and/or failure to provide staff by the City and shall clearly note deductions on invoice submittals. Repeated acts or omissions which result in non-payment or credit assessments under this paragraph or any other provision of this contract shall be sufficient cause for the City, at its option, to declare Contractor in default and exercise all available rights and remedies.

4.2.11.1 In the event of any of the occurrences below, events or omissions, the City shall impose an additional charge upon the contractor, liquidated damages of $2,000.00 for each event, incident or omission per day until such actions are remedied by the vendor:

(i) Failure to provide all equipment, materials, service and training necessary for the performance of the equipment.

(ii) Blockage and/or untidiness of the Work Area while performing service.

(iii) Any other violations or omissions of the terms of the contract as determined by the City.

(iv) Equipment that has been out of service for more than twenty-four (24) hours.

(v) Failure to respond with qualified service personnel within the indicated or requested time frame.

(vi) Failure to commence work within specified time.

(vii) Poor performance.

4.2.11.2 Nothing in the above section shall be deemed to limit the City's rights or remedies in the event the City's actual damage exceeds the amount withheld from the billing. Repeated events or omissions as described above shall be sufficient cause for the City, at its option, to declare vendor in default and exercise all available rights and remedies available under the law.

The City's failure at any time to enforce the provisions of this section shall in no way affect the City's right to enforce this provision for subsequent events. The City/DOA shall notify the Contractor in writing on a monthly basis of said liquidated damages imposed on the Contractor; all assessments of liquidated damages must also be reported, in writing, to the Procurement Dept. Buyer as the occur.

4.2.12 In the event of assessment of liquidated damages, if the Contractor feels that extenuating circumstances contributed to the occurrence, a request for a waiver on the liquidated damages may be appealed in writing, within 30 days to the DOA and the Procurement Department who shall be the final arbiter in such matters.

4.2.13 The City, may, by written notice, terminate the contract, in whole or in part, when it is in the City's interest. If the City shall be liable only for payment under the payment provisions of the contract for services rendered before the effective date of termination. The City shall not be liable for damages or loss of profits because of any termination issued under the contract.

4.2.14 Upon written consent of the Contractor, the DOA may reinstate the terminated portion of the contract, in whole or in part, by amending the notice of termination if it has been determined that circumstances indicate a requirement for the terminated services and reinstatement is advantageous to the City.

4.2.15 **CONTRACT NOT EXCLUSIVE**

Nothing in this contract shall preclude the City from entering into contracts with vendors other than the Contractor for the same or similar type items and/or services identified in this contract, at prices that are different from those offered by the Contractor in this contract shall preclude the City from purchasing the same or similar type items and/or services offered by the Contractor through contracts of the Commonwealth of Pennsylvania, or contracts of other local, state or federal government entities (including, without limitation, contracts of cooperative buying groups of government entities).

4.2.16 **APPROVAL OF WORK**

The Division of Aviation shall approve all completed work prior to approval for payment. Work must be completed in a first class workmanlike manner to the absolute satisfaction of the DOA. The cost of any faulty or inadequate workmanship or parts will not be paid for by the DOA and must be assumed by the Contractor.

4.2.17 **PROVISION FOR LABOR AND MAINTENANCE COST ESCALATION**

Prices quoted in Section 5 MUST remain firm for the first year of the contract; thereafter, the contract maybe renewed under the terms and conditions of the contract at the sole option of the City on an annual basis for up to three additional one (1) year period(s). Contractor may increase for future renewal periods provided that:

Notice of price increases must be received, in writing, by the City at least sixty (60) days prior to the expiration of each contract period in order for price increase to be effective as of the first day of the renewal period (July 1st). Price increase letter shall be sent to the Buyer in Room 120 Municipal Services Building, 1401 JFK Blvd., Philadelphia, PA 19102, referencing bid number, contract number, period and showing item(s) description and applicable pricing. Failure to notify the City within this sixty (60) day time frame shall result in the following:

the effective date of the price increase shall be sixty (60) days from the receipt of the price increase letter by the City;

or

if the letter is not received before the last day of the contract period, the prices for the renewal period shall be the same as the prices for the previous contract period.

For each renewal period, the price increase/decrease shall be based on the "Consumer Price Index for All Urban Consumers - Philadelphia" as published by the US Department of Labor, Bureau of Labor Statistics for the 12 month period (Feb. of the preceding year to Feb. of the current year) preceding the July 1st price adjustment.

In no event shall the price increase exceed 5% in any annual renewal period. The increase shall reflect the change to the CPI or the 5% cap; whichever is less.

4.2.17.1 Bidders MUST anticipate price changes in their bid figures.

4.2.17.2 Elevators – Price Escalation

4.2.17.2.1 If the City elects to extend the contract for the succeeding yar, the prices bid by Contractor shall be adjusted for the term of the annual extension, subject to appropriation of funds or the succeeding fiscal year by the City. The annual adjustment shall be based on the formula set out below with an adjustment date of January 1st of each year. The adjustment formula shall be as follows:

4.2.17.2.1.1 Fifty percent of the monthly fee shall be increased or decreased by the annual change in the standard labor rate for the elevator trade.

4.2.17.2.1.2 Forty percent of the fee shall be increased or decreased by the annual change in the metals index published by the U.S. Commerce Department.

4.2.17.2.1.3 Ten percent of the monthly fee shall remain fixed for the term of the contract.

4.2.18 **PREVAILING WAGE PROVISION**

The contract awarded under these specifications is subject to all provisions of Section 17-107 of the Philadelphia code entitled Contractors: Labor-Management Relationships. It is also subject to all regulations and procedures adopted there under.

a. All employees performing work under the contract shall be paid the applicable prevailing wages for the respective occupational classification(s) designated, as set forth in the wage schedule attached; and in addition, be given the applicable current prevailing working conditions during the entire period of work under the contract. Such working conditions are those which are given to employees pursuant to a bona fide collective bargaining agreement for the applicable craft, trade, or industry in the Philadelphia area on the date these specifications are issued.

b. City may withhold from any sums due to the contractor under each contract so much as may be necessary to pay the employees the difference between wages required to be paid thereby and the wages actually paid to such employees, and the City may make such payments directly to the appropriate employees.

c. Each contractor shall require all subcontractors to comply with and be bound by all of the provisions of this section of the contract and Section 17-107 of the Philadelphia Code.

d. Every contractor and subcontractor shall keep an accurate record showing the name, address, occupational classification, wages and other benefits paid or provided and number of hours worked for each employee assigned to city-work, and such record shall be preserved for two (2) years from the date of payment. The contractor shall make his employment and accounting records available for inspection by authorized representative of the Labor Standards Unit of the MDO, at all reasonable hours, and shall permit such representatives to interview employees during working hours on the job.

e. All contractors and subcontractors performing city-work shall automatically file with the, Labor Standards Unit of the MDO, a certified statement setting forth the name, address, occupational classification, wages and other benefits paid or provided and number of hours worked with respect to each employee performing city-work. Such statement shall be made weekly for each preceding weekly period. The certification shall affirm that the statement is correct and complete, that the wages set forth therein are not less than those required by the contract for city-work and that the occupational classification set forth for each employee conforms with the work he performed.

Nothing herein shall preclude the payment by the contractor of wages at rates higher than those specified as the prevailing wages in the applicable attached schedule. However, no increases in any contract price shall be allowed or authorized on account of the payment of wages in excess of those so specified or on account of wage increased granted hereafter. No increases above the amounts specified in the applicable attached schedule will be required by any contract during the term thereof except in the case of an error or omission in such schedule. Such an error or omission shall be called to the attention of the Labor Standards Unit of the MDO, as promptly as possible, but the remedying thereof by the Department shall constitute grounds for withdrawal of a bid or cancellation of a contract, nor for an increase in the contract price or other claim or recovery against the City nor a ground for failure or refusal to pay the applicable proper prevailing wage to all employees.

The prevailing wages required hereby shall be paid unconditionally without any subsequent deduction or rebate of any kind except in accordance with prevailing payroll deduction practices. Any assignment of wages by an employee for the direct or indirect benefit of the contractor shall constitute a violation of this section; and any purported release of rights hereunder by an employee shall be void and of no effect.
It is the responsibility of all bidders and contractors to inform themselves of all prevailing working conditions, including, without limitation, proper classifications, length of workday and work week, overtime compensation, and holiday and vacation rights. All questions shall be referred to the Procurement Department 215-686-4720/21.

SEE APPLICABLE WAGE SCHEDULE – ATTACHMENT B

NOTE: ***Only those job classes that are listed in the attached Wage Schedule are covered under this provision. Manager, Supervisors, Data Entry Clerks, and Secretaries are excluded.***

4.2.18.1 These Prevailing Wage rates are minimum required labor rates and bidders are not obligated to consider these rates as standard.

4.2.18.2 If a person in a higher job classification performs the work of a lower classification, the City of Philadelphia will pay the lower classification at that designated Base Rate but the Contractor is responsible for paying the person at the higher rate.

4.2.18.3 On all overtime hours, fringe benefits will be paid at the straight (base) rate only.

4.2.18.4 Each bidder is responsible for paying prevailing wages to its employees and to employees of subcontractors at any tier as required

under the bid specifications. Bidders are expected to be familiar with the Collective Bargaining Agreement outlining wage hours and working conditions within the City of Philadelphia.

4.2.18.5 The City does not require bidders to utilize union labor; the City does require the successful bidder to pay prevailing wages as defined in this section and shown in Attachment B.

4.2.18.6 All Contractor employees who either reside or are employed in the City of Philadelphia are required to pay Philadelphia City Wage Tax.

4.2.19 **INVOICES/RECEIPTS**

4.2.19.1 Successful bidder(s) agrees not to invoice more than once per month.

4.2.19.2 After performance of service, the Contractor must submit three (3) copies of the invoice for payment to the DOA.

4.2.19.2.1 Invoices should be sent in triplicate to the DOA.

4.2.19.2.2 One (1) original and two (2) copies of fully itemized invoices.

4.2.19.3 The invoice must correctly reference the purchase order number, the vendor name, address, and Federal Employer Identification number.

4.2.19.4 The invoice must show the quantity and type of service and the price.

4.2.19.5 The unit of purchase on the invoice must agree with the unit cited in Invitation to Bid and the purchase order. Reference to the specific line item is helpful.

4.2.19.6 All invoices/receipts for services shall have the signature and payroll ID number of the authorized/designated DOA personnel, plus the original cost estimate with the appropriate City signatures for actual overtime worked.

4.2.19.7 The invoice must show the applicable labor rate.

4.2.19.8 Contract Extras' Invoicing.

Invoices should be sent in triplicate to the DOA: One (1) original and two (2) copies of fully itemized invoices (no Photostat copies). Failure to submit invoices in the form noted will cause a delay in payment.

The Contractor must submit two (2) separate invoices for Time and Materials - one (1) for the labor rate and one (1) for parts. If two (2) separate invoices are required, then there will be two (2) different purchase orders also. The City recommends that such Time and Material invoices have the same invoice number but different suffixes (e.g. 1234L (labor) and 1234P (parts). Supporting Work

Orders with the signature and payroll ID number of the authorized/designated City personnel must be included.

4.2.19.9 Checks will only be made to the company name as shown on the purchase order; the invoice must reflect this same company name as the "pay to".

4.2.20 No payment shall be made or become due hereunder except upon submission of invoices and vouchers identifying the services for which payment is sought. All invoices and vouchers must be submitted within thirty (30) days after performance of the services for which payment is sought, and shall be in such number and form, and of such content, and accompanied by such supporting data as the Director of Aviation may require.

4.2.21 Legitimate amounts due to the Division of Aviation for penalties or non-performance of services may be offset as credits against other amounts due the successful bidder.

4.2.22 If the Contractor believes the City is late in payment, before any action is taken; the Contractor **MUST** give the City ten (10) days written notice. The City cannot make an absolute guarantee of prompt payment. Regardless of payment issues, the Contractor is responsible for performing the work.

4.3 In accordance with Executive Order 02-05, and the ranges of M-DBE, W-DBE and/or DS-DBE participation established as goals for this contract, the bidder agrees to comply with the requirements of Executive Order 2-05. This compliance includes, but is not limited to, the submission of documentation responsive to each of the participation ranges established for the contract.

4.3.1 Further, the bidder agrees to and will comply with the following: The successful bidder will submit, within the time frames prescribed by the Airport and the City, any and all documentation the Airport may request, including, but not limited to, copies of Subcontract(s) with DBE(s), participation summary reports, DBE Subcontractor invoices, telephone logs and correspondence with DBE Subcontractors, cancelled checks and certification of payments.

4.4 At the conclusion of the contract, Contractor agrees to cooperate with any incoming vendor on a transition plan to ensure an orderly changeover of responsibilities.

4.5 **Bidder Acceptance - In submitting an executed bid, the bidder agrees to the Contract Management procedures outlined in this section.**

SECTION 5 - COST BREAKDOWN AND PRICING PER SYSTEM

The costs quoted below shall be inclusive of all costs including but not limited to direct labor, materials, general and administrative overhead, taxes, insurance,

supplies, equipment normal and customary to the trade, tools, profit, training, certifications, permits, subcontractors, and all other items necessary to complete to maintenance of specified systems in a first class, high quality manner.

5.1 Manager and Supervisors: (Time indicated is the minimum required on site. At least one manager and one supervisor shall be on site during the time indicated, seven days a week)

5.1.1	Facility Maintenance Manager (7 am-4 pm)	$_____/Year
5.1.2	Assistant Facility Maintenance Manager (7 am-4 pm)	$_____/Year
5.1.3	First Shift Supervisor (7 am-3:30 pm)	$_____/Year
5.1.4	Second Shift Supervisor (3 pm-11:30 pm)	$_____/Year
5.1.5	Third Shift Supervisor (11 pm-7:30 pm)	$_____/Year
5.1.6	Director of Exhibitions (8 am-4:30 pm)	$_____/Year
5.1.7	Horticulturist (7 am-3:30 pm)	$_____/Year
5.1.8	**MANAGER AND SUPERVISORS - TOTAL COST**	**$_____/Year**

5.2 SCHEDULE A - ELEVATORS/ESCALATORS/MOVING WALKWAYS

5.2.1 **TERMINAL A EAST ELEVATORS**

	Manufacturer	Number	Price per Month	Price per Year
5.2.1.1	MECO	AE-1PK	$_____ X 12	$_____
5.2.1.2	MECO	AE-2PK	$_____ X 12	$_____
5.2.1.3	MECO	AE-3PK	$_____ X 12	$_____
5.2.1.4	MECO	AE-4P	$_____ X 12	$_____
5.2.1.5	MECO	AE-5P	$_____ X 12	$_____
5.2.1.6	MECO	AE-6P	$_____ X 12	$_____
5.2.1.7	MECO	AE-7F	$_____ X 12	$_____
5.2.1.8	MECO	AE-8P	$_____ X 12	$_____
5.2.1.9	MECO	AE-9P	$_____ X 12	$_____
5.2.1.10	MECO	AE-10P	$_____ X 12	$_____
5.2.1.11	MECO	AE-11P	$_____ X 12	$_____
5.2.1.12	MECO	AE-12P	$_____ X 12	$_____
5.2.1.13	MECO	AE-13S	$_____ X 12	$_____
5.2.1.14	MECO	AE-14P	$_____ X 12	$_____
5.2.1.15	MECO	AE-15F	$_____ X 12	$_____
5.2.1.16	MECO	AE25P	$_____ X 12	$_____
5.2.1.17	MECO	AE26P	$_____ X 12	$_____
5.2.1.18		AE-31P	$_____ X 12	$_____

5.2.2 **TERMINAL A EAST ESCALATORS**

	Manufacturer	Number	Price per Month	Price per Year
5.2.2.1	MECO	AE-17E	$_____ X 12	$_____
5.2.2.2	MECO	AE-18E	$_____ X 12	$_____
5.2.2.3	MECO	AE-19E	$_____ X 12	$_____
5.2.2.4	MECO	AE-20E	$_____ X 12	$_____
5.2.2.5	MECO	AE-21E	$_____ X 12	$_____
5.2.2.6	MECO	AE-22E	$_____ X 12	$_____
5.2.2.7	MECO	AE-29E	$_____ X 12	$_____
5.2.2.8	MECO	AE-30E	$_____ X 12	$_____

5.2.3 TERMINAL A EAST MOVING WALKWAYS

	Manufacturer	Number	Price per Month	Price per Year
5.2.3.1	MECO	AE-24	$_____ X 12	$_____

5.2.4 **TERMINAL B ELEVATORS**

	Manufacturer	Number	Price per Month	Price per Year
5.2.4.1	MECO	B1PK	$_____ X 12	$_____
5.2.4.2	MECO	B2PK	$_____ X 12	$_____
5.2.4.3	MECO	B3PK	$_____ X 12	$_____
5.2.4.4	MECO	B4PK	$_____ X 12	$_____
5.2.4.5	MECO	B7P	$_____ X 12	$_____
5.2.4.6	MECO	B9P	$_____ X 12	$_____
5.2.4.7	MECO	B11F	$_____ X 12	$_____
5.2.4.8	Security	B12P	$_____ X 12	$_____
5.2.4.9	MECO	B15P	$_____ X 12	$_____
5.2.4.10	MECO	B20S	$_____ X 12	$_____
5.2.4.11	MECO	B22P	$_____ X 12	$_____
5.2.4.12	MECO	B25HP	$_____ X 12	$_____
5.2.4.13	MECO	B26HP	$_____ X 12	$_____
5.2.4.14	Security	B-27P	$_____ X 12	$_____

5.2.5 **TERMINAL B ESCALATORS**

	Manufacturer	Number	Price per Month	Price per Year
5.2.5.1	MECO	B1E	$_____ X 12	$_____
5.2.5.2	MECO	B2E	$_____ X 12	$_____
5.2.5.3	MECO	B4E	$_____ X 12	$_____
5.2.5.4	MECO	B23E	$_____ X 12	$_____
5.2.5.5	MECO	B24E	$_____ X 12	$_____

5.2.6 **TERMINAL B MOVING WALKWAYS**

	Manufacturer	Number	Price per Month	Price per Year
5.2.6.1	MECO	B16W	$_____ X 12	$_____
5.2.6.2	MECO	B17W	$_____ X 12	$_____
5.2.6.3	MECO	B18W	$_____ X 12	$_____

5.2.6.4	MECO	B19W	$_____	X 12	$_____

5.2.7 **TERMINAL C ELEVATORS**

	Manufacturer	Number	Price per Month		Price per Year
5.2.7.1	MECO	C5PK	$_____	X 12	$_____
5.2.7.2	MECO	C6PK	$_____	X 12	$_____
5.2.7.3	MECO	C7PK	$_____	X 12	$_____
5.2.7.4	MECO	C7P	$_____	X 12	$_____
5.2.7.5	MECO	C9P	$_____	X 12	$_____
5.2.7.6	MECO	C21F	$_____	X 12	$_____
5.2.7.7	MECO	C20P	$_____	X 12	$_____
5.2.7.8	Otis	C23P	$_____	X 12	$_____
5.2.7.9	MECO	C25P	$_____	X 12	$_____
5.2.7.10		C11P	$_____	X 12	$_____

5.2.8 **TERMINAL C ESCALATORS**

	Manufacturer	Number	Price per Month		Price per Year
5.2.8.1	MECO	C1E	$_____	X 12	$_____
5.2.8.2	MECO	C2E	$_____	X 12	$_____
5.2.8.3	West	C4E	$_____	X 12	$_____
5.2.8.4	MECO	C21E	$_____	X 12	$_____
5.2.8.5	MECO	C22E	$_____	X 12	$_____
5.2.8.6	MECO	C23E	$_____	X 12	$_____
5.2.8.7	MECO	C24E	$_____	X 12	$_____
5.2.8.8	MECO	C26E	$_____	X 12	$_____
5.2.8.9	MECO	C27E	$_____	X 12	$_____

5.2.9 **TERMINAL C MOVING WALKWAYS**

	Manufacturer	Number	Price per Month		Price per Year
5.2.9.1	MECO	C16W	$_____	X 12	$_____
5.2.9.2	MECO	C17W	$_____	X 12	$_____
5.2.9.3	MECO	C18W	$_____	X 12	$_____
5.2.9.4	MECO	C19W	$_____	X 12	$_____
5.2.9.5	MECO	C28W	$_____	X 12	$_____
5.2.9.6	MECO	C29W	$_____	X 12	$_____

5.2.10 **TERMINAL D ELEVATORS**

	Manufacturer	Number	Price per Month		Price per Year
5.2.10.1	MECO	D8PK	$_____	X 12	$_____
5.2.10.2	MECO	D9PK	$_____	X 12	$_____
5.2.10.3	MECO	D10PK	$_____	X 12	$_____
5.2.10.4	West.	D7P	$_____	X 12	$_____
5.2.10.5	Dover	D8P	$_____	X 12	$_____
5.2.10.6	Security	D9P	$_____	X 12	$_____
5.2.10.7	West.	D10P	$_____	X 12	$_____
5.2.10.8	MECO	D12F	$_____	X 12	$_____
5.2.10.9	Dover	D15S	$_____	X 12	$_____

5.2.11 **TERMINAL D ESCALATORS**

	Manufacturer	Number	Price per Month		Price per Year
5.2.11.1	MECO	D1E	$_____	X 12	$_____
5.2.11.2	MECO	D2E	$_____	X 12	$_____
5.2.11.3	MECO	D3E	$_____	X 12	$_____
5.2.11.4	MECO	D4E	$_____	X 12	$_____
5.2.11.5	MECO	D5E	$_____	X 12	$_____
5.2.11.6	MECO	D6E	$_____	X 12	$_____
5.2.11.7	MECO/Otis	D11E	$_____	X 12	$_____

5.2.12 **TERMINAL D MOVING WALKWAYS**

	Manufacturer	Number	Price per Month		Price per Year
5.2.12.1	MECO	D-13W	$_____	X 12	$_____
5.2.12.2	MECO	D-14W	$_____	X 12	$_____

5.2.13 **TERMINAL E ELEVATORS**

	Manufacturer	Number	Price per Month		Price per Year
5.2.13.1	Fujitech	E1-PK	$_____	X 12	$_____
5.2.13.2	Fujitech	E2-PK	$_____	X 12	$_____
5.2.13.3	Fujitech	E3-PK	$_____	X 12	$_____
5.2.13.4	Fujitech	E4-PK	$_____	X 12	$_____
5.2.13.5	West/Thyssen -Krup	E1-P	$_____	X 12	$_____
5.2.13.6	MECO	E6-P	$_____	X 12	$_____
5.2.13.7	MECO	E7-P	$_____	X 12	$_____
5.2.13.8	MECO	E8-P	$_____	X 12	$_____
5.2.13.9	MECO	E9-P	$_____	X 12	$_____
5.2.13.10	MECO	E10-P	$_____	X 12	$_____
5.2.13.11	MECO	E11-P	$_____	X 12	$_____
5.2.13.12	MECO	E12-P	$_____	X 12	$_____
5.2.13.13	MECO	E13-P	$_____	X 12	$_____
5.2.13.14	West	E30-S	$_____	X 12	$_____

5.2.14 **TERMINAL E ESCALATORS**

	Manufacturer	Number	Price per Month	Price per Year
5.2.14.1	MECO	E-1E	$_____ X 12	$_____
5.2.14.2	MECO	E-2E	$_____ X 12	$_____
5.2.14.3	MECO	E-3E	$_____ X 12	$_____
5.2.14.4	MECO	E-4E	$_____ X 12	$_____
5.2.14.5	MECO	E-5E	$_____ X 12	$_____
5.2.14.6	MECO	E-6E	$_____ X 12	$_____

5.2.15 **TERMINAL E MOVING WALKWAYS**

	Manufacturer	Number	Price per Month	Price per Year
5.2.15.1	MECO	E-15W	$_____ X 12	$_____
5.2.15.2	MECO	E-16W	$_____ X 12	$_____

5.2.16 **TERMINAL F ELEVATORS**

	Manufacturer	Number	Price per Month	Price per Year
5.2.16.1	Kone	F-1P	$_____ X 12	$_____
5.2.16.2	Kone	F-2P	$_____ X 12	$_____
5.2.16.3	Kone	F-3P	$_____ X 12	$_____
5.2.16.4	Kone	F-4S	$_____ X 12	$_____
5.2.16.5	Kone	F-5P	$_____ X 12	$_____
5.2.16.6	Fujitech	E-5PK	$_____ X 12	$_____
5.2.16.7	Fujitech	E-6PK	$_____ X 12	$_____

5.2.17 **TERMINAL F ESCALATORS**

	Manufacturer	Number	Price per Month	Price per Year
5.2.17.1	Kone	F-6E	$_____ X 12	$_____
5.2.17.2	Kone	F-7E	$_____ X 12	$_____

5.2.18 **A-B LINK MOVING ELEVATORS**

	Manufacturer	Number	Price per Month	Price per Year
5.2.18.1	MECO	AE-33P	$_____ X 12	$_____

5.2.19 **A-B LINK MOVING ESCALATORS**

	Manufacturer	Number	Price per Month	Price per Year
5.2.19.1	MECO	AE-36E	$_____ X 12	$_____
5.2.19.2	MECO	AE-37E	$_____ X 12	$_____

5.2.20 **A-B LINK MOVING WALKWAYS**

	Manufacturer	Number	Price per Month	Price per Year
5.2.20.1	MECO	A/B-25W	$_____ X 12	$_____
5.2.20.2	MECO	A/B-26W	$_____ X 12	$_____
5.2.20.3	Kone	AB-38W	$_____ X 12	$_____
5.2.20.4	Kone	AB-39W	$_____ X 12	$_____

5.2.21 **TERMINAL A WEST ELEVATORS**

	Manufacturer	Number	Price per Month	Price per Year
5.2.21.1	Kone	AW-1P	$_____ X 12	$_____
5.2.21.2	Kone	AW-2P	$_____ X 12	$_____
5.2.21.3	Kone	AW-3P	$_____ X 12	$_____
5.2.21.4	Kone	AW-4P	$_____ X 12	$_____
5.2.21.5	Kone	AW-5F	$_____ X 12	$_____
5.2.21.6	Kone	AW-6P	$_____ X 12	$_____
5.2.21.7	Kone	AW-7F	$_____ X 12	$_____
5.2.21.8	Kone	AW-9P	$_____ X 12	$_____
5.2.21.9	Kone	AW-10P	$_____ X 12	$_____
5.2.21.10	Kone	AW-11P	$_____ X 12	$_____
5.2.21.11	Kone	AW-12P	$_____ X 12	$_____
5.2.21.12	Kone	AW-13P	$_____ X 12	$_____
5.2.21.13	Kone	AW-14F	$_____ X 12	$_____
5.2.21.14	Kone	AW-15F	$_____ X 12	$_____
5.2.21.15	Kone	AW-18P	$_____ X 12	$_____
5.2.21.16	Kone	AW-19PK	$_____ X 12	$_____
5.2.21.17	Kone	AW-20PK	$_____ X 12	$_____
5.2.21.18	Kone	AW-21PK	$_____ X 12	$_____
5.2.21.19	Kone	AW-22PK	$_____ X 12	$_____
5.2.21.20	Kone	AE-32P	$_____ X 12	$_____
5.2.21.21	Kone	AE-40P	$_____ X 12	$_____

5.2.22 **TERMINAL A WEST ESCALATORS**

	Manufacturer	Number	Price per Month	Price per Year
5.2.22.1	Kone	AW-23E	$_____ X 12	$_____
5.2.22.2	Kone	AW-24E	$_____ X 12	$_____
5.2.22.3	Kone	AW-25E	$_____ X 12	$_____
5.2.22.4	Kone	AW-26E	$_____ X 12	$_____
5.2.22.5	Kone	AW-27E	$_____ X 12	$_____
5.2.22.6	Kone	AW-28E	$_____ X 12	$_____
5.2.22.7	Kone	AW-29E	$_____ X 12	$_____
5.2.22.8	Kone	AW-30E	$_____ X 12	$_____
5.2.22.9	Kone	AW-31E	$_____ X 12	$_____
5.2.22.10	Kone	AW-32E	$_____ X 12	$_____
5.2.22.11	Kone	AW-33E	$_____ X 12	$_____
5.2.22.12	Kone	AW-34E	$_____ X 12	$_____
5.2.22.13	Kone	AW-35E	$_____ X 12	$_____

5.2.22.14	Kone	AW-36E	$_____ X 12	$_____
5.2.22.15	Kone	AW-37E	$_____ X 12	$_____
5.2.22.16	Kone	AW-38E	$_____ X 12	$_____
5.2.22.17	Kone	AW-39E	$_____ X 12	$_____
5.2.22.18	Kone	AE-34E	$_____ X 12	$_____
5.2.22.19	Kone	AE-35E	$_____ X 12	$_____

5.2.23 **TERMINAL A WEST MOVING WALKWAYS**

	Manufacturer	**Number**	**Price per Month**	**Price per Year**
5.2.23.1	Kone	AW-40W	$_____ X 12	$_____
5.2.23.2	Kone	AW-41W	$_____ X 12	$_____
5.2.23.3	Kone	AW-42W	$_____ X 12	$_____
5.2.23.4	Kone	AW-43W	$_____ X 12	$_____
5.2.23.5	Kone	AW-44W	$_____ X 12	$_____
5.2.23.6	Kone	AW-45W	$_____ X 12	$_____
5.2.23.7	Kone	AW-46W	$_____ X 12	$_____

5.2.24 **FORMER OVERSEAS TERMINAL ELEVATORS**

	Manufacturer	**Number**	**Price per Month**	**Price per Year**
5.2.24.1	Energy	OP1	$_____ X 12	$_____

5.2.25 **RAMP CONTROL TOWER ELEVATORS**

	Manufacturer	**Number**	**Price per Month**	**Price per Year**
5.2.25.1	Thyssen/ Security	A-B Tower	$_____ X 12	$_____

5.2.26 **SCHEDULE A – TOTAL COST**

		Price per Month	**Price per Year**
5.2.26.1	**SCHEDULE A - TOTAL COSTS**	$_____ x 12	$_____

5.3 SCHEDULE B - BAGGAGE CONVEYOR SYSTEM

5.3.1 **TERMINAL A EAST:**

	Subsystem Number	**Description**	**Price per Month**	**Price per Year**
5.3.1.1	B-1	Claim Unit 1	$_____ x 12	$_____
5.3.1.2	B-2	Claim Unit 2	$_____ x 12	$_____
5.3.1.3	B-3	Claim Unit 3	$_____ x 12	$_____
5.3.1.4	B-4	Claim Unit 4	$_____ x 12	$_____
5.3.1.5	B-7	Claim Unit 7	$_____ x 12	$_____
5.3.1.6	B-8	Claim Unit 8	$_____ x 12	$_____
5.3.1.7	T-1	Ticket Counter 1	$_____ x 12	$_____
5.3.1.8	T-2	Ticket Counter 2	$_____ x 12	$_____
5.3.1.9	T-3	Ticket Counter 3	$_____ x 12	$_____
5.3.1.10	T-4	Ticket Counter 4	$_____ x 12	$_____

5.3.2 **TERMINAL A WEST**

	Subsystem Number	Description	Price per Month		Price per Year
5.3.2.1	IB1	Claim Device 1	$_____	x 12	$_____
5.3.2.2	IB2	Claim Device 2	$_____	x 12	$_____
5.3.2.3	IB3	Claim Device 3	$_____	x 12	$_____
5.3.2.4	IB4	Claim Device 4	$_____	x 12	$_____
5.3.2.5	IB5	Claim Device 5	$_____	x 12	$_____
5.3.2.6	IB6	Claim Device 6	$_____	x 12	$_____
5.3.2.7	IB7	Claim Device 7	$_____	x 12	$_____
5.3.2.8	IB8	Claim Device 8	$_____	x 12	$_____
5.3.2.9	MU1	Make-Up Unit 1	$_____	x 12	$_____
5.3.2.10	MU2	Make-Up Unit 2	$_____	x 12	$_____
5.3.2.11	MU3	Make-Up Unit 3	$_____	x 12	$_____
5.3.2.12	MU4	Make-Up Unit 4	$_____	x 12	$_____
5.3.2.13	MU5	Make-Up Unit 5	$_____	x 12	$_____
5.3.2.14	MU6	Make-Up Unit 6	$_____	x 12	$_____
5.3.2.15	MU7	Make-Up Unit 7	$_____	x 12	$_____
5.3.2.16	MU8	Make-Up Unit 8	$_____	x 12	$_____
5.3.2.17	RA1	Re-Check Baggage	$_____	x 12	$_____
5.3.2.18	RA2	Re-Check Baggage	$_____	x 12	$_____
5.3.2.19	RC1	Re-Check Baggage	$_____	x 12	$_____
5.3.2.20	RC2	Re-Check Baggage	$_____	x 12	$_____
5.3.2.21	TC1	Ticket Counter 1	$_____	x 12	$_____
5.3.2.22	TC2	Ticket Counter 2	$_____	x 12	$_____
5.3.2.23	TC3	Ticket Counter 3	$_____	x 12	$_____
5.3.2.24	TC4	Ticket Counter 4	$_____	x 12	$_____
5.3.2.25	TC5	Ticket Counter 5	$_____	x 12	$_____
5.3.2.26	TC6	Ticket Counter 6	$_____	x 12	$_____
5.3.2.27	TX1	Transfer Conveyor 1	$_____	x 12	$_____
5.3.2.28	TX2	Transfer Conveyor 2	$_____	x 12	$_____
5.3.2.29	TX3	Transfer Conveyor 3	$_____	x 12	$_____
5.3.2.30	TX4	Transfer Conveyor 4	$_____	x 12	$_____
5.3.2.31	ME1	Manual Encoding 1	$_____	x 12	$_____
5.3.2.32	ME2	Manual Encoding 2	$_____	x 12	$_____
5.3.2.33	ME3	Manual Encoding 3	$_____	x 12	$_____
5.3.2.34	OS1	Oversized Baggage	$_____	x 12	$_____

5.3.3 **FUTURE TERMINAL B/C**

	Subsystem Number	Description	Price per Month		Price per Year
5.3.3.1	CU-1	Claim Device 1	$_____	x 12	$_____
5.3.3.2	CU-2	Claim Device 2	$_____	x 12	$_____
5.3.3.3	CU-3	Claim Device 3	$_____	x 12	$_____
5.3.3.4	CU-4	Claim Device 4	$_____	x 12	$_____
5.3.3.5	CU-5	Claim Device 5	$_____	x 12	$_____
5.3.3.6	CU-6	Claim Device 6	$_____	x 12	$_____
5.3.3.7	CU-7	Claim Device 7	$_____	x 12	$_____

5.3.3.8	MU1	Make-Up Unit 1	$_____	x 12	$_____
5.3.3.9	MU2	Make-Up Unit 2	$_____	x 12	$_____
5.3.3.10	MU3	Make-Up Unit 3	$_____	x 12	$_____
5.3.3.11	MU4	Make-Up Unit 4	$_____	x 12	$_____
5.3.3.12	MU5	Make-Up Unit 5	$_____	x 12	$_____
5.3.3.13	RC1	Re-Check Baggage	$_____	x 12	$_____
5.3.3.14	RC2	Re-Check Baggage	$_____	x 12	$_____
5.3.3.15	TC1	Ticket Counter 1	$_____	x 12	$_____
5.3.3.16	TC2	Ticket Counter 2	$_____	x 12	$_____
5.3.3.17	TC3	Ticket Counter 3	$_____	x 12	$_____
5.3.3.18	TC4	Ticket Counter 4	$_____	x 12	$_____
5.3.3.19	TC5	Ticket Counter 5	$_____	x 12	$_____
5.3.2.20	TX1	Transfer Conveyor 1	$_____	x 12	$_____
5.3.2.21	TX2	Transfer Conveyor 2	$_____	x 12	$_____
5.3.2.22	ME1	Manual Encoding 1	$_____	x 12	$_____
5.3.2.23	ME2	Manual Encoding 2	$_____	x 12	$_____
5.3.2.24	ME3	Manual Encoding 3	$_____	x 12	$_____
5.3.2.25	OS1	Oversized Baggage	$_____	x 12	$_____
5.3.2.26	OS2	Oversized Baggage	$_____	x 12	$_____

5.3.4 **TERMINAL D**

	Subsystem Number	**Description**	**Price per Month**		**Price per Year**
5.3.4.1	CL-1	Claim Device 1	$_____	x 12	$_____
5.3.4.2	TC	Ticket Counter	$_____	x 12	$_____
5.3.4.3	MU	Ticketing/Make Up Unit	$_____	x 12	$_____

5.3.5 **TERMINAL F**

	Subsystem Number	**Description**	**Price per Month**		**Price per Year**
5.3.5.1	IB-1	Claim Device 1	$_____	x 12	$_____
5.3.5.2	IB-2	Claim Device 2	$_____	x 12	$_____
5.3.5.3	OB-1	Oversized Baggage 1	$_____	x 12	$_____
5.3.5.4	MU-1	Make-Up Unit 1	$_____	x 12	$_____

5.3.6 **SCHEDULE B – TOTAL COST**

	Gate No.	**Price per Month**		**Price per Year**
5.3.6.1	TERMINAL A EAST TOTAL COST	$_____	x 12	$_____
5.3.6.2	TERMINAL A WEST TOTAL COST	$_____	x 12	$_____
5.3.6.3	FUTURE TERMINAL B/C TOTAL COST	$_____	x 12	$_____
5.3.6.4	TERMINAL D TOTAL COST	$_____	x 12	$_____
5.3.6.5	TERMINAL F TOTAL COST	$_____	x 12	$_____

5.3.6.6 **SCHEDULE B TOTAL COST $_____ x 12 $_____**

5.4 SCHEDULE C - PASSENGER LOADING BRIDGES AND GATE SYSTEMS

5.4.1 PASSENGER LOADING BRIDGES

	Gate No.	Price per Month	Price per Year
5.4.1.1	A2	$_____ x 12	$_____
5.4.1.2	A3	$_____ x 12	$_____
5.4.1.3	A4	$_____ x 12	$_____
5.4.1.4	A6	$_____ x 12	$_____
5.4.1.5	A7	$_____ x 12	$_____
5.4.1.6	A8	$_____ x 12	$_____
5.4.1.7	A9	$_____ x 12	$_____
5.4.1.8	A10	$_____ x 12	$_____
5.4.1.9	A11	$_____ x 12	$_____
5.4.1.10	A12	$_____ x 12	$_____
5.4.1.11	A13	$_____ x 12	$_____
5.4.1.12	A14	$_____ x 12	$_____
5.4.1.13	A15	$_____ x 12	$_____
5.4.1.14	A16	$_____ x 12	$_____
5.4.1.15	A17	$_____ x 12	$_____
5.4.1.16	A18	$_____ x 12	$_____
5.4.1.17	A19	$_____ x 12	$_____
5.4.1.18	A20	$_____ x 12	$_____
5.4.1.19	A21	$_____ x 12	$_____
5.4.1.20	A22	$_____ x 12	$_____
5.4.1.21	A23	$_____ x 12	$_____
5.4.1.22	A24	$_____ x 12	$_____
5.4.1.23	A25	$_____ x 12	$_____
5.4.1.24	A26	$_____ x 12	$_____
5.4.1.25	B1	$_____ x 12	$_____
5.4.1.26	B2	$_____ x 12	$_____
5.4.1.27	B3	$_____ x 12	$_____
5.4.1.28	B4	$_____ x 12	$_____
5.4.1.29	B5	$_____ x 12	$_____
5.4.1.30	B6	$_____ x 12	$_____
5.4.1.31	B7	$_____ x 12	$_____
5.4.1.32	B8	$_____ x 12	$_____
5.4.1.33	B9	$_____ x 12	$_____
5.4.1.34	B10	$_____ x 12	$_____
5.4.1.35	B11	$_____ x 12	$_____
5.4.1.36	B13	$_____ x 12	$_____
5.4.1.37	B14	$_____ x 12	$_____
5.4.1.38	B15	$_____ x 12	$_____
5.4.1.39	B16	$_____ x 12	$_____
5.4.1.40	C17	$_____ x 12	$_____
5.4.1.41	C18	$_____ x 12	$_____
5.4.1.42	C19	$_____ x 12	$_____
5.4.1.43	C20	$_____ x 12	$_____

5.4.1.44	C21	$_____	x 12	$_____
5.4.1.45	C22	$_____	x 12	$_____
5.4.1.46	C23	$_____	x 12	$_____
5.4.1.47	C24	$_____	x 12	$_____
5.4.1.48	C25	$_____	x 12	$_____
5.4.1.49	C26	$_____	x 12	$_____
5.4.1.50	C27	$_____	x 12	$_____
5.4.1.51	C28	$_____	x 12	$_____
5.4.1.52	C29	$_____	x 12	$_____
5.4.1.53	C30	$_____	x 12	$_____
5.4.1.54	C31	$_____	x 12	$_____
5.4.1.55	D1	$_____	x 12	$_____
5.4.1.56	D2	$_____	x 12	$_____
5.4.1.57	D3	$_____	x 12	$_____
5.4.1.58	D4	$_____	x 12	$_____
5.4.1.59	D5	$_____	x 12	$_____
5.4.1.60	D6	$_____	x 12	$_____
5.4.1.61	D7	$_____	x 12	$_____
5.4.1.62	D8	$_____	x 12	$_____
5.4.1.63	D9	$_____	x 12	$_____
5.4.1.64	D10	$_____	x 12	$_____
5.4.1.65	D11	$_____	x 12	$_____
5.4.1.66	D12	$_____	x 12	$_____
5.4.1.67	D13	$_____	x 12	$_____
5.4.1.68	D14	$_____	x 12	$_____
5.4.1.69	D15	$_____	x 12	$_____
5.4.1.70	D16	$_____	x 12	$_____
5.4.1.71	E1	$_____	x 12	$_____
5.4.1.72	E2	$_____	x 12	$_____
5.4.1.73	E3	$_____	x 12	$_____
5.4.1.74	E4	$_____	x 12	$_____
5.4.1.75	E5	$_____	x 12	$_____
5.4.1.76	E6	$_____	x 12	$_____
5.4.1.77	E7	$_____	x 12	$_____
5.4.1.78	E8	$_____	x 12	$_____
5.4.1.79	E9	$_____	x 12	$_____
5.4.1.80	E10	$_____	x 12	$_____
5.4.1.81	E12	$_____	x 12	$_____
5.4.1.82	F1	$_____	x 12	$_____
5.4.1.83	F3	$_____	x 12	$_____
5.4.1.84	F5	$_____	x 12	$_____
5.4.1.85	F7	$_____	x 12	$_____
5.4.1.86	F9	$_____	x 12	$_____
5.4.1.87	F11	$_____	x 12	$_____
5.4.1.88	F13	$_____	x 12	$_____
5.4.1.89	F15	$_____	x 12	$_____
5.4.1.90	F24	$_____	x 12	$_____
5.4.1.91	F25	$_____	x 12	$_____
5.4.1.92	F26	$_____	x 12	$_____
5.4.1.93	F27	$_____	x 12	$_____
5.4.1.94	F28	$_____	x 12	$_____

5.4.1.95	F29	$_____	x 12	$_____
5.4.1.96	F30	$_____	x 12	$_____
5.4.1.97	F31	$_____	x 12	$_____
5.4.1.98	F32	$_____	x 12	$_____
5.4.1.99	F33	$_____	x 12	$_____
5.4.1.100	F34	$_____	x 12	$_____
5.4.1.101	F35	$_____	x 12	$_____
5.4.1.102	F36	$_____	x 12	$_____
5.4.1.103	F37	$_____	x 12	$_____
5.4.1.104	F38	$_____	x 12	$_____
5.4.1.105	F39	$_____	x 12	$_____
5.4.1.106	**TOTAL COST**	**$_____**	**x 12**	**$_____**

5.4.2 **400 HZ GROUND POWER**

	Gate No.	Price per Month	Price per Year
5.4.2.1	A2	$_____ x 12	$_____
5.4.2.2	A3	$_____ x 12	$_____
5.4.2.3	A4	$_____ x 12	$_____
5.4.2.4	A6	$_____ x 12	$_____
5.4.2.5	A7	$_____ x 12	$_____
5.4.2.6	A8	$_____ x 12	$_____
5.4.2.7	A9	$_____ x 12	$_____
5.4.2.8	A10	$_____ x 12	$_____
5.4.2.9	A11	$_____ x 12	$_____
5.4.2.10	A12	$_____ x 12	$_____
5.4.2.11	A13	$_____ x 12	$_____
5.4.2.12	A14	$_____ x 12	$_____
5.4.2.13	A15	$_____ x 12	$_____
5.4.2.14	A16	$_____ x 12	$_____
5.4.2.15	A17	$_____ x 12	$_____
5.4.2.16	A18	$_____ x 12	$_____
5.4.2.17	A19	$_____ x 12	$_____
5.4.2.18	A20	$_____ x 12	$_____
5.4.2.19	A21	$_____ x 12	$_____
5.4.2.20	A22	$_____ x 12	$_____
5.4.2.21	A23	$_____ x 12	$_____
5.4.2.22	A24	$_____ x 12	$_____
5.4.2.23	A25	$_____ x 12	$_____
5.4.2.24	A26	$_____ x 12	$_____
5.4.2.25	B1	$_____ x 12	$_____
5.4.2.26	B2	$_____ x 12	$_____
5.4.2.27	B3	$_____ x 12	$_____
5.4.2.28	B4	$_____ x 12	$_____
5.4.2.29	B5	$_____ x 12	$_____
5.4.2.30	B6	$_____ x 12	$_____
5.4.2.31	B7	$_____ x 12	$_____
5.4.2.32	B8	$_____ x 12	$_____
5.4.2.33	B9	$_____ x 12	$_____
5.4.2.34	B10	$_____ x 12	$_____
5.4.2.35	B11	$_____ x 12	$_____
5.4.2.36	B13	$_____ x 12	$_____
5.4.2.37	B14	$_____ x 12	$_____
5.4.2.38	B15	$_____ x 12	$_____
5.4.2.39	B16	$_____ x 12	$_____
5.4.2.40	C17	$_____ x 12	$_____
5.4.2.41	C18	$_____ x 12	$_____
5.4.2.42	C19	$_____ x 12	$_____
5.4.2.43	C20	$_____ x 12	$_____
5.4.2.44	C21	$_____ x 12	$_____
5.4.2.45	C22	$_____ x 12	$_____
5.4.2.46	C23	$_____ x 12	$_____
5.4.2.47	C24	$_____ x 12	$_____
5.4.2.48	C25	$_____ x 12	$_____

5.4.2.49	C26	$_____	x 12	$_____
5.4.2.50	C27	$_____	x 12	$_____
5.4.2.51	C28	$_____	x 12	$_____
5.4.2.52	C29	$_____	x 12	$_____
5.4.2.53	C30	$_____	x 12	$_____
5.4.2.54	C31	$_____	x 12	$_____
5.4.2.55	D1	$_____	x 12	$_____
5.4.2.56	D2	$_____	x 12	$_____
5.4.2.57	D3	$_____	x 12	$_____
5.4.2.58	D4	$_____	x 12	$_____
5.4.2.59	D5	$_____	x 12	$_____
5.4.2.60	D6	$_____	x 12	$_____
5.4.2.61	D7	$_____	x 12	$_____
5.4.2.62	D8	$_____	x 12	$_____
5.4.2.63	D9	$_____	x 12	$_____
5.4.2.64	D10	$_____	x 12	$_____
5.4.2.65	D11	$_____	x 12	$_____
5.4.2.66	D12	$_____	x 12	$_____
5.4.2.67	D14	$_____	x 12	$_____
5.4.2.68	D15	$_____	x 12	$_____
5.4.2.69	D16	$_____	x 12	$_____
5.4.2.70	E2	$_____	x 12	$_____
5.4.2.71	E4	$_____	x 12	$_____
5.4.2.72	E6	$_____	x 12	$_____
5.4.2.73	E8	$_____	x 12	$_____
5.4.2.74	E9	$_____	x 12	$_____
5.4.2.75	E10	$_____	x 12	$_____
5.4.2.76	E12	$_____	x 12	$_____
5.4.2.77	F1	$_____	x 12	$_____
5.4.2.78	F3	$_____	x 12	$_____
5.4.2.79	F5	$_____	x 12	$_____
5.4.2.80	F7	$_____	x 12	$_____
5.4.2.81	F9	$_____	x 12	$_____
5.4.2.82	F11	$_____	x 12	$_____
5.4.2.83	F13	$_____	x 12	$_____
5.4.2.84	F15	$_____	x 12	$_____
5.4.2.85	F24	$_____	x 12	$_____
5.4.2.86	F25	$_____	x 12	$_____
5.4.2.87	F26	$_____	x 12	$_____
5.4.2.88	F27	$_____	x 12	$_____
5.4.2.89	F28	$_____	x 12	$_____
5.4.2.90	F29	$_____	x 12	$_____
5.4.2.91	F30	$_____	x 12	$_____
5.4.2.92	F31	$_____	x 12	$_____
5.4.2.93	F32	$_____	x 12	$_____
5.4.2.94	F33	$_____	x 12	$_____
5.4.2.95	F34	$_____	x 12	$_____
5.4.2.96	F35	$_____	x 12	$_____
5.4.2.97	F36	$_____	x 12	$_____
5.4.2.98	F37	$_____	x 12	$_____
5.4.2.99	F38	$_____	x 12	$_____

5.4.2.100	F39	$_____	x 12	$_____
5.4.2.101	**TOTAL COST**	**$_____**	**x 12**	**$_____**

5.4.3 **PRE-CONDITIONED AIR UNITS**

	Gate No.	**Price per Month**		**Price per Year**
5.4.3.1	A14	$_____	x 12	$_____
5.4.3.2	A15	$_____	x 12	$_____
5.4.3.3	A16	$_____	x 12	$_____
5.4.3.4	A17	$_____	x 12	$_____
5.4.3.5	A18	$_____	x 12	$_____
5.4.3.6	A19	$_____	x 12	$_____
5.4.3.7	A20	$_____	x 12	$_____
5.4.3.8	A21	$_____	x 12	$_____
5.4.3.9	A22	$_____	x 12	$_____
5.4.3.10	A23	$_____	x 12	$_____
5.4.3.11	A24	$_____	x 12	$_____
5.4.3.12	A25	$_____	x 12	$_____
5.4.3.13	A26	$_____	x 12	$_____
5.4.3.14	B1	$_____	x 12	$_____
5.4.3.15	B2	$_____	x 12	$_____
5.4.3.16	B3	$_____	x 12	$_____
5.4.3.17	B4	$_____	x 12	$_____
5.4.3.18	B5	$_____	x 12	$_____
5.4.3.19	B6	$_____	x 12	$_____
5.4.3.20	B7	$_____	x 12	$_____
5.4.3.21	B8	$_____	x 12	$_____
5.4.3.22	B9	$_____	x 12	$_____
5.4.3.23	B10	$_____	x 12	$_____
5.4.3.24	B11	$_____	x 12	$_____
5.4.3.25	B13	$_____	x 12	$_____
5.4.3.26	B14	$_____	x 12	$_____
5.4.3.27	B15	$_____	x 12	$_____
5.4.3.28	B16	$_____	x 12	$_____
5.4.3.29	C17	$_____	x 12	$_____
5.4.3.30	C18	$_____	x 12	$_____
5.4.3.31	C19	$_____	x 12	$_____
5.4.3.32	C20	$_____	x 12	$_____
5.4.3.33	C21	$_____	x 12	$_____
5.4.3.34	C22	$_____	x 12	$_____
5.4.3.35	C23	$_____	x 12	$_____
5.4.3.36	C24	$_____	x 12	$_____
5.4.3.37	C25	$_____	x 12	$_____
5.4.3.38	C26	$_____	x 12	$_____
5.4.3.39	C27	$_____	x 12	$_____
5.4.3.40	C28	$_____	x 12	$_____
5.4.3.41	C29	$_____	x 12	$_____
5.4.3.42	C30	$_____	x 12	$_____
5.4.3.43	C31	$_____	x 12	$_____

5.4.3.44	D1	$_____	x 12	$_____
5.4.3.45	D2	$_____	x 12	$_____
5.4.3.46	D3	$_____	x 12	$_____
5.4.3.47	D4	$_____	x 12	$_____
5.4.3.48	D5	$_____	x 12	$_____
5.4.3.49	D6	$_____	x 12	$_____
5.4.3.50	D7	$_____	x 12	$_____
5.4.3.51	D8	$_____	x 12	$_____
5.4.3.52	D10	$_____	x 12	$_____
5.4.3.53	D11	$_____	x 12	$_____
5.4.3.54	D12	$_____	x 12	$_____
5.4.3.55	D13	$_____	x 12	$_____
5.4.3.56	D14	$_____	x 12	$_____
5.4.3.57	D15	$_____	x 12	$_____
5.4.3.58	D16	$_____	x 12	$_____
5.4.3.59	E8	$_____	x 12	$_____
5.4.3.60	E9	$_____	x 12	$_____
5.4.3.61	E10	$_____	x 12	$_____
5.4.3.62	E12	$_____	x 12	$_____
5.4.3.63	**TOTAL COST**	**$_____**	**x 12**	**$_____**

5.4.4 **POTABLE WATER CABINETS**

	Gate No.	**Price per Month**		**Price per Year**
5.4.4.1	A2	$_____	x 12	$_____
5.4.4.2	A4	$_____	x 12	$_____
5.4.4.3	A6	$_____	x 12	$_____
5.4.4.4	A7	$_____	x 12	$_____
5.4.4.5	A8	$_____	x 12	$_____
5.4.4.6	A9	$_____	x 12	$_____
5.4.4.7	A10	$_____	x 12	$_____
5.4.4.8	A11	$_____	x 12	$_____
5.4.4.9	A12	$_____	x 12	$_____
5.4.4.10	A13	$_____	x 12	$_____
5.4.4.11	A14	$_____	x 12	$_____
5.4.4.12	A15	$_____	x 12	$_____
5.4.4.13	A16	$_____	x 12	$_____
5.4.4.14	A17	$_____	x 12	$_____
5.4.4.15	A18	$_____	x 12	$_____
5.4.4.16	A19	$_____	x 12	$_____
5.4.4.17	A20	$_____	x 12	$_____
5.4.4.18	A21	$_____	x 12	$_____
5.4.4.19	A22	$_____	x 12	$_____
5.4.4.20	A23	$_____	x 12	$_____
5.4.4.21	A24	$_____	x 12	$_____
5.4.4.22	A25	$_____	x 12	$_____
5.4.4.23	A26	$_____	x 12	$_____
5.4.4.24	B1	$_____	x 12	$_____
5.4.4.25	B3	$_____	x 12	$_____

5.4.4.26	B6	$_____	x 12	$_____
5.4.4.27	B7	$_____	x 12	$_____
5.4.4.28	B9	$_____	x 12	$_____
5.4.4.29	B10	$_____	x 12	$_____
5.4.4.30	B14	$_____	x 12	$_____
5.4.4.31	B15	$_____	x 12	$_____
5.4.4.32	C17	$_____	x 12	$_____
5.4.4.33	C19	$_____	x 12	$_____
5.4.4.34	C20	$_____	x 12	$_____
5.4.4.35	C22	$_____	x 12	$_____
5.4.4.36	C27	$_____	x 12	$_____
5.4.4.37	C28	$_____	x 12	$_____
5.4.4.38	C30	$_____	x 12	$_____
5.4.4.39	C31	$_____	x 12	$_____
5.4.4.40	D1	$_____	x 12	$_____
5.4.4.41	D2	$_____	x 12	$_____
5.4.4.42	D5	$_____	x 12	$_____
5.4.4.43	D6	$_____	x 12	$_____
5.4.4.44	D8	$_____	x 12	$_____
5.4.4.45	D10	$_____	x 12	$_____
5.4.4.46	D12	$_____	x 12	$_____
5.4.4.47	D16	$_____	x 12	$_____
5.4.4.48	E1	$_____	x 12	$_____
5.4.4.49	E4	$_____	x 12	$_____
5.4.4.50	E5	$_____	x 12	$_____
5.4.4.51	E7	$_____	x 12	$_____
5.4.4.52	E8	$_____	x 12	$_____
5.4.4.53	F2	$_____	x 12	$_____
5.4.4.54	F3	$_____	x 12	$_____
5.4.4.55	F7	$_____	x 12	$_____
5.4.4.56	F8	$_____	x 12	$_____
5.4.4.57	F9	$_____	x 12	$_____
5.4.4.58	F12	$_____	x 12	$_____
5.4.4.59	F13	$_____	x 12	$_____
5.4.4.60	F17	$_____	x 12	$_____
5.4.4.61	F18	$_____	x 12	$_____
5.4.4.62	F19	$_____	x 12	$_____
5.4.4.63	F23	$_____	x 12	$_____
5.4.4.64	F24	$_____	x 12	$_____
5.4.4.65	F27	$_____	x 12	$_____
5.4.4.66	F28	$_____	x 12	$_____
5.4.4.67	F31	$_____	x 12	$_____
5.4.4.68	F32	$_____	x 12	$_____
5.4.4.69	F35	$_____	x 12	$_____
5.4.4.70	F36	$_____	x 12	$_____
5.4.4.71	F39	$_____	x 12	$_____
5.4.4.72	**TOTAL COST**	**$_____**	**x 12**	**$_____**

5.4.5 **AIRCRAFT PARKING OPTICAL GUIDANCE SYSTEM**

	Gate No.	Price per Month		Price per Year
5.4.5.1	A2	$_____	x 12	$_____
5.4.5.2	A4	$_____	x 12	$_____
5.4.5.3	A6	$_____	x 12	$_____
5.4.5.4	A8	$_____	x 12	$_____
5.4.5.5	A10	$_____	x 12	$_____
5.4.5.6	A12	$_____	x 12	$_____
5.4.5.7	A14	$_____	x 12	$_____
5.4.5.8	A15	$_____	x 12	$_____
5.4.5.9	A16	$_____	x 12	$_____
5.4.5.10	A17	$_____	x 12	$_____
5.4.5.11	A18	$_____	x 12	$_____
5.4.5.12	A19	$_____	x 12	$_____
5.4.5.13	A20	$_____	x 12	$_____
5.4.5.14	A21	$_____	x 12	$_____
5.4.5.15	A22	$_____	x 12	$_____
5.4.5.16	A23	$_____	x 12	$_____
5.4.5.17	A24	$_____	x 12	$_____
5.4.5.18	A25	$_____	x 12	$_____
5.4.5.19	A26	$_____	x 12	$_____
5.4.5.20	**TOTAL COST**	**$_____**	**x 12**	**$_____**

5.4.6 **SCHEDULE C – TOTAL COST**

	Passenger Loading Bridges & Gate Systems	**Price per Month**		**Price per Year**
5.4.6.1	Passenger Loading Bridges Total Cost	$_____	x 12	$_____
5.4.6.2	400Hz Ground Power Total Cost	$_____	x 12	$_____
5.4.6.3	Preconditioned Air Units Total Cost	$_____	x 12	$_____
5.4.6.4	Potable Water Cabinets Total cost	$_____	x 12	$_____
5.4.6.5	Aircraft Parking Optical Guidance Total Cost	$_____	x 12	$_____
5.4.6.6	**SCHEDULE C TOTAL COST**	**$_____**	**x 12**	**$_____**

5.5 **SCHEDULE D - PASSENGER TRANSPORT VEHICLES**

	Units	**Unit**	**Price**	**Price per month**		**Price per month**
5.5.1.1	Service Charge for active PTV Units	2 PTV's x	$_____/PTV	$____	x 12	$_____
5.5.1.2	Service Charge for idle PTV Units	4 PTV's x	$_____/PTV	$____	x 12	$_____
5.5.1.3	**SCHEDULE D - TOTAL COST**					**$_____**

5.6 **SCHEDULE E - STORM WATER & SANITARY DRAINAGE**

	Description	Price per Month	Price Per Year
5.6.1	Service Charge Per Mo. (Floor drains, roof drains and gutters inspection and cleaning)	$_____ x 12	$_____
5.6.2	Prevenative maintenance (inspection and cleaning) of sewage and sump pums	$_____ x 12	$_____
5.6.3	Service Charge for R/W 8-26 Ground Water Mitigation System	$_____ x 12	$_____
5.6.4	Service Charge for Cargo City Aircraft Deicing Facility Stormwater Discharge System	$_____ x 12	$_____
5.6.5	Service Charge for Annual Inspection of ARFFT Sewage Holding Tank	$_____ x 12	$_____

	Description	Units	Unit Price	Price Per Year
5.6.6	Pressure Jet Truck with crew	150 hours x	$_____/Hr	$_____
5.6.7	Vacuum Truck with crew.	150 hours x	$_____/Hr	$_____
5.6.8	Closed Circuit Television Service Crew for sanitary and storm water pipe (12” diam. or smaller) inspection and report. (includes set up, access, labor, equipment, complete)	10,000 linear feet x	$_____/LF	$_____
5.6.9	Closed Circuit Television Service Crew for sanitary and storm water pipe (larger than 12” diam.) inspection and report. (includes set up, access, labor, equipment, complete)	10,000 linear feet x	$_____/LF	$_____
5.6.10	Roll-Off Container Rental and Disposal	20 each x	$_____/Each	$_____
5.6.11	By-Pass Pump and Hoses Rental	50 days x	$_____/Day	$_____
5.6.12	Fresh air Van with crew.	150 Hours x	$_____/Hr	$_____
5.6.13	**SCHEDULE E - TOTAL COST**			**$**_____

5.7 **SCHEDULE F - FIRE PROTECTION SYSTEMS**

5.7.1 Water Based Fire Protection Systems

	Area	Price per Month	Price per Year
5.7.1.1	TERMINAL A WEST GROUND LEVEL SECT 1	$_____ x 12	$_____
5.7.1.2	TERMINAL A WEST GROUND LEVEL SECT 2	$_____ x 12	$_____
5.7.1.3	TERMINAL A WEST GROUND LEVEL SECT 3	$_____ x 12	$_____
5.7.1.4	TERMINAL A WEST GROUND LEVEL SECT 4	$_____ x 12	$_____
5.7.1.5	TERMINAL A WEST GROUND LEVEL SECT 5, 6, 9 & 10	$_____ x 12	$_____
5.7.1.6	TERMINAL A WEST GROUND LEVEL SECT 5	$_____ x 12	$_____
5.7.1.7	TERMINAL A WEST GROUND LEVEL SECT 6	$_____ x 12	$_____
5.7.1.8	TERMINAL A WEST GROUND LEVEL SECT 7	$_____ x 12	$_____
5.7.1.9	TERMINAL A WEST GROUND LEVEL SECT 8	$_____ x 12	$_____
5.7.1.10	TERMINAL A WEST GROUND LEVEL SECT 6, 7, 10 & 11	$_____ x 12	$_____
5.7.1.11	TERMINAL A WEST GROUND LEVEL SECT 8	$_____ x 12	$_____
5.7.1.12	TERMINAL A WEST GROUND LEVEL SECT 13	$_____ x 12	$_____
5.7.1.13	TERMINAL A WEST GROUND LEVEL SECT 11, 12 & 13	$_____ x 12	$_____
5.7.1.14	TERMINAL A WEST GROUND LEVEL SECT 9, 10, 11 & 12	$_____ x 12	$_____
5.7.1.15	TERMINAL A WEST,GARAGE CORE LEVEL"A"	$_____ x 12	$_____
5.7.1.16	TERMINAL A WEST SECOND AND THIRD LEVEL LEVEL SECT 1	$_____ x 12	$_____
5.7.1.17	TERMINAL A WEST SECOND LEVEL SECT 1&2	$_____ x 12	$_____
5.7.1.18	TERMINAL A WEST SECOND LEVEL SECT 2	$_____ x 12	$_____
5.7.1.19	TERMINAL A WEST SECOND LEVEL SECT 3	$_____ x 12	$_____
5.7.1.20	TERMINAL A WEST SECOND LEVEL SECT 3, 4 & 5	$_____ x 12	$_____
5.7.1.21	TERMINAL A WEST SECOND LEVEL SECT 4 & 5	$_____ x 12	$_____
5.7.1.22	TERMINAL A WEST SECOND LEVEL SECT 4 & 5	$_____ x 12	$_____
5.7.1.23	TERMINAL A WEST SECOND LEVEL SECT 4, 5, 6, 9 & 10	$_____ x 12	$_____
5.7.1.24	TERMINAL A WEST SECOND LEVEL SECT 5 & 6	$_____ x 12	$_____
5.7.1.25	TERMINAL A WEST SECOND LEVEL SECT 4 & 5	$_____ x 12	$_____
5.7.1.26	TERMINAL A WEST SECOND LEVEL SECT 5 & 6	$_____ x 12	$_____
5.7.1.27	TERMINAL A WEST SECOND LEVEL SECT 6 & 7	$_____ x 12	$_____
5.7.1.29	TERMINAL A WEST SECOND LEVEL SECT 6 & 7	$_____ x 12	$_____
5.7.1.29	TERMINAL A WEST SECOND LEVEL SECT 7 & 8	$_____ x 12	$_____
5.7.1.30	TERMINAL A WEST SECOND LEVEL SECT 7 & 8	$_____ x 12	$_____
5.7.1.31	TERMINAL A WEST SECOND LEVEL		

	SECT 6, 7, 10 & 11	$_____	x 12	$_____
5.7.1.32	TERMINAL A WEST SECOND AND THIRD LEVEL SECT 8 & 14	$_____	x 12	$_____
5.7.1.33	TERMINAL A WEST SECOND LEVEL SECT 8	$_____	x 12	$_____
5.7.1.34	TERMINAL A WEST SECOND LEVEL SECT 8	$_____	x 12	$_____
5.7.1.35	TERMINAL A WEST SECOND LEVEL SECT 11, 13 & 14	$_____	x 12	$_____
5.7.1.36	TERMINAL A WEST SECOND LEVEL SECT 13	$_____	x 12	$_____
5.7.1.37	TERMINAL A WEST GARAGE CORE LEVEL "B"	$_____	x 12	$_____
5.7.1.38	TERMINAL A WEST THIRD LEVEL SECT 5, 6, 9 & 10	$_____	x 12	$_____
5.7.1.39	TERMINAL A WEST THIRD LEVEL SECT 5 & 6	$_____	x 12	$_____
5.7.1.40	TERMINAL A WEST THIRD LEVEL SECT 6, 7, 10 & 11	$_____	x 12	$_____
5.7.1.41	TERMINAL A WEST THIRD LEVEL SECT 6 & 7	$_____	x 12	$_____
5.7.1.42	TERMINAL A WEST THIRD LEVEL SECT 12 & 13	$_____	x 12	$_____
5.7.1.43	TERMINAL A WEST THIRD LEVEL SECT 7, 11 & 14	$_____	x 12	$_____
5.7.1.44	TERMINAL A WEST THIRD LEVEL SECT 13	$_____	x 12	$_____
5.7.1.45	TERMINAL A WEST GARAGE CORE LEVEL "C"	$_____	x 12	$_____
5.7.1.46	TERMINAL A WEST MEZZANINE LEVEL SECTOR 5	$_____	x 12	$_____
5.7.1.47	TERMINAL A WEST MEZZANINE LEVEL SECTOR 5 & 6	$_____	x 12	$_____
5.7.1.48	TERMINAL A WEST MEZZANINE LEVEL SECTOR 5 & 6	$_____	x 12	$_____
5.7.1.49	TERMINAL A WEST MEZZANINE LEVEL SECTOR 6 & 7	$_____	x 12	$_____
5.7.1.50	TERMINAL A WEST MEZZANINE LEVEL SECTOR 6 & 7	$_____	x 12	$_____
5.7.1.51	TERMINAL A WEST MEZZANINE LEVEL SECTOR 7	$_____	x 12	$_____
5.7.1.52	TERMINAL A WEST GARAGE CORE LEVEL "D"	$_____	x 1	$_____
5.7.1.53	TERMINAL A WEST GARAGE CORE LEVEL "E"	$_____	x 12	$_____
5.7.1.54	TERMINAL A WEST GARAGE CORE LEVEL "F"	$_____	x 12	$_____
5.7.1.55	TERMINAL A WEST GARAGE CORE LEVEL "G"	$_____	x 12	$_____
5.7.1.56	TERMINAL A WEST GARAGE CORE			

	LEVEL "H"	$_____	x 12	$_____
5.7.1.57	TERMINAL A WEST GARAGE CORE MACHINE ROOM	$_____	x 12	$_____
5.7.1.58	BAGGAGE CLAIM A EAST	$_____	x 12	$_____
5.7.1.59	TERMINAL A EAST	$_____	x 12	$_____
5.7.1.60	CONCOURSE A EAST	$_____	x 12	$_____
5.7.1.61	BAGGAGE CLAIM B/C	$_____	x 12	$_____
5.7.1.62	TICKETING BUILDING B/C	$_____	x 12	$_____
5.7.1.63	TICKETING BUILDING B/C	$_____	x 12	$_____
5.7.1.64	TICKETING BUILDING B/C	$_____	x 12	$_____
5.7.1.65	TICKETING BUILDING B/C	$_____	x 12	$_____
5.7.1.66	TICKETING BUILDING B/C 3RD FLOOR	$_____	x 12	$_____
5.7.1.67	TICKETING BUILDING B/C 3RD FLOOR	$_____	x	$_____
5.7.1.68	TICKETING BUILDING B/C 4TH FLOOR	$_____	x 12	$_____
5.7.1.69	CONCOURSE "C" HAMMERHEAD	$_____	x 12	$_____
5.7.1.70	BAGGAGE CLAIM "D"	$_____	x 12	$_____
5.7.1.71	CONCOURSE "D" HAMMERHEAD	$_____	x 12	$_____
5.7.1.72	TERMINAL E	$_____	x 12	$_____
5.7.1.73	BAGGAGE CLAIM "E"	$_____	x 12	$_____
5.7.1.74	SATELLITE THERMAL PLANT	$_____	x 12	$_____
5.7.1.75	TERMINAL "E" TICKETING BUILDING	$_____	x 12	$_____
5.7.1.76	CONCOURSE "B" UTILITY TUNNEL	$_____	x 12	$_____
5.7.1.77	CONCOURSE "B" FIRST FLOOR	$_____	x 12	$_____
5.7.1.78	PEDESTRIAN BRIDGE "B" SECOND FLOOR	$_____	x 12	$_____
5.7.1.79	CONCOURSE "B" SECOND FLOOR	$_____	x 12	$_____
5.7.1.80	TERMINAL "B" 4TH, 5TH, 6TH &7TH FLOORS	$_____	x 12	$_____
5.7.1.81	CONCOURSE "C" UTILITY TUNNEL	$_____	x 12	$_____
5.7.1.82	CONCOURSE "C" FIRST FLOOR	$_____	x 12	$_____
5.7.1.83	PEDESTRIAN BRIDGE "C" SECOND FLOOR	$_____	x 12	$_____
5.7.1.84	CONCOURSE "C" SECOND FLOOR	$_____	x 12	$_____
5.7.1.85	TERMINAL C/D FIRST FLOOR	$_____	x 12	$_____
5.7.1.86	TERMINAL C/D SECOND FLOOR	$_____	x 12	$_____
5.7.1.87	TICKETING "D" FIRST FLOOR	$_____	x 12	$_____
5.7.1.88	CONCOURSE "D" APRON LEVEL - AREA BENEATH PEDESTRIAN BRIDGE	$_____	x 12	$_____
5.7.1.89	CONCOURSE "D" FIRST FLOOR	$_____	x 12	$_____
5.7.1.90	CONCOURSE "D" FIRST FLOOR AND BASEMENT	$_____	x 12	$_____
5.7.1.91	PEDESTRIAN BRIDGE "D" SECOND FLOOR	$____	x 12	$_____
5.7.1.92	CONCOURSE "D" SECOND FLOOR	$____	x 12	$_____
5.7.1.93	BAGGAGE CLAIM "E" BASEMENT	$____	x 12	$_____
5.7.1.94	BAGGAGE CLAIM "E" BASEMENT,			

	UTILITY ROOM, AND 1ST FLOOR	$____	x 12	$_____
5.7.1.95	TICKETING "E" FIRST FLOOR	$____	x 12	$_____
5.7.1.96	TICKETING "E" BASEMENT	$____	x 12	$_____
5.7.1.97	CONCOURSE "E" OUTBOUND BAGGAGE FIRST FLOOR	$____	x 12	$_____
5.7.1.98	CONCOURSE "E" BASEMENT	$____	x 12	$_____
5.7.1.99	CONCOURSE "E" FIRST FLOOR	$____	x 12	$_____
5.7.1.100	PEDESTRIAN BRIDGE "E" SECOND FLOOR	$____	x 12	$_____
5.7.1.101	TERMINAL D/E CONNECTOR BRIDGE SECOND FLOOR	$____	x 12	$_____
5.7.1.102	CONCOURSE "E" SECOND FLOOR	$____	x 12	$_____
5.7.1.103	TERMINAL F SECTOR 1 - TERMINAL BLDG	$____	x 12	$_____
5.7.1.104	TERMINAL F SECTOR 1 - CONCOURSE 1	$____	x 12	$_____
5.7.1.105	TERMINAL F SECTOR 1 - MEZZANINE	$____	x 12	$_____
5.7.1.106	TERMINAL F SECTOR 2 HUB BLDG	$____	x 12	$_____
5.7.1.107	TERMINAL F SECTOR 2 CONCOURSE 2	$____	x 12	$_____
5.7.1.108	TERMINAL F SECTOR 3 CONCOURSE 3	$____	x 12	$_____
5.7.1.109	TERMINAL F SECTOR 4 BAGGAGE	$____	x 12	$_____
5.7.1.110	TERMINAL F TOWER	$____	x 12	$_____
5.7.1.111	MAINTENANCE SUPPORT BUILDING (ISLAND AVE)	$____	x 12	$_____
5.7.1.112	WAREHOUSE (ISLAND AVE)	$____	x 12	$_____
5.7.1.113	HOG ISLAND ROAD TUNNEL DRY SYSTEM	$____	x 12	$_____
5.7.1.114	MAINT. VEHICLE STORAGE FACILITY (CARGO CITY)	$____	x 12	$_____
5.7.1.115	NORTHWEST AIR, TERMINAL	$____	x 12	$_____
5.7.1.116	USAIR, TERMINAL F HUB	$____	x 12	$_____
5.7.1.117	PRESTIGE PENS,TERMINAL F HUB	$____	x 12	$_____
5.7.1.118	SUNGLASS HUT, TERMINAL F HUB	$____	x 12	$_____
5.7.1.119	SBARRO, TERMINAL F HUB	$____	x 12	$_____
5.7.1.120	ASIAN CHAO, TERMINAL F HUB	$____	x 12	$_____
5.7.1.121	JET ROCK, TERMINAL F HUB	$____	x 12	$_____
5.7.1.122	HUDSON NEWS, TERMINAL F HUB	$____	x 12	$_____
5.7.1.123	HUDSON NEWS, GATE F32	$____	x 12	$_____
5.7.1.124	HUDSON NEWS, TERMINAL F, GATE F18	$____	x 12	$_____
5.7.1.125	F-TOWER STAIRS, TERMINAL	$____	x 12	$_____
5.7.1.126	ELEC. EQUIP RM, TERMINAL F	$____	x 12	$_____
5.7.1.127	TOWER4TH FLOOR, TERMINAL F	$____	x 12	$_____
5.7.1.128	TOWER 3RD FLOOR,TERMINAL F	$____	x 12	$_____
5.7.1.129	TERMINAL B FIELD SIDE STAIR, B-BAG MAKE-UP	$____	x 12	$_____

5.7.1.130	TERMINAL B 2ND FLOOR, B-BAG MAKE-UP	$____ x 12	$_____
5.7.1.131	**WATER BASED FIRE PROTECTION SYSTEMS TOTAL COST**	**$____ x 12**	**$_____**

5.7.2 FM-200 Fire Protection Systems

5.7.2.1	FM1 – FLER	$____ x 12	$_____
5.7.2.2	FM2 – FLV2	$____ x 12	$_____
5.7.2.3	FM3 – FLV3	$____ x 12	$_____
5.7.2.4	FM4 – FLV4	$____ x 12	$_____
5.7.2.5	FM5 - B/C1	$____ x 12	$_____
5.7.2.6	FM6 - B/C2	$____ x 12	$_____
5.7.2.7	FM7 - B/C3	$____ x 12	$_____
5.7.2.8	FM8 - B/C4	$____ x 12	$_____
5.7.2.9	FM9 - B/C5	$____ x 12	$_____
5.7.2.10	FM10-AW1	$____ x 12	$_____
5.7.2.11	FM11-AW2	$____ x 12	$_____
5.7.2.12	FM12-AW3	$____ x 12	$_____
5.7.2.13	FM13-AW4	$____ x 12	$_____
5.7.2.14	FM14-AW5	$____ x 12	$_____
5.7.2.15	FM15-AW6	$____ x 12	$_____
5.7.2.16	FM16-AW7	$____ x 12	$_____
5.7.2.17	FM17-AW8	$____ x 12	$_____
5.7.2.18	FM18-F1	$____ x 12	$_____
5.7.2.19	FM19-F2	$____ x 12	$_____
5.7.2.20	FM20-F3	$____ x 12	$_____
5.7.2.21	FM21-F4	$____ x 12	$_____
5.7.2.22	FM22-F5	$____ x 12	$_____
5.7.2.23	FM23-F6	$____ x 12	$_____
5.7.2.24	FM24-F7	$____ x 12	$_____
5.7.2.25	FM25-F8	$____ x 12	$_____
5.7.2.26	FM26-AE1	$____ x 12	$_____
5.7.2.27	**FM-200 TOTAL COST**	**$____ x 12**	**$_____**

5.7.3 Domestic/Fire Water Service Backflow Prevention Systems

	Device	Price per Month	Price Per Year
5.7.3.1	BFP 1F	$_____ x 12	$_____
5.7.3.2	BFP#2F	$_____ x 12	$_____
5.7.3.3	BFP#1D	$_____ x 12	$_____
5.7.3.4	BFP#3F	$_____ x 12	$_____
5.7.3.5	BFP#2D	$_____ x 12	$_____
5.7.3.6	BFP#4F	$_____ x 12	$_____
5.7.3.7	BFP#5F	$_____ x 12	$_____
5.7.3.8	BFP#3D	$_____ x 12	$_____
5.7.3.9	BFP#6F	$_____ x 12	$_____
5.7.3.10	BFP#4D	$_____ x 12	$_____
5.7.3.11	BFP#7F	$_____ x 12	$_____
5.7.3.12	BFP#8F	$_____ x 12	$_____
5.7.3.13	BFP#5D	$_____ x 12	$_____
5.7.3.14	BFP#6D	$_____ x 12	$_____
5.7.3.15	BFP#7D	$_____ x 12	$_____
5.7.3.16	BFP#9F	$_____ x 12	$_____
5.7.3.17	BFP#10F	$_____ x 12	$_____
5.7.3.18	BFP#11F	$_____ x 12	$_____
5.7.3.19	BFP#8D	$_____ x 12	$_____
5.7.3.20	BFP#12F	$_____ x 12	$_____
5.7.3.21	BFP#9D	$_____ x 12	$_____
5.7.3.22	BFP #16F	$_____ x 12	$_____
5.7.3.23	BFP #27D	$_____ x 12	$_____
5.7.3.24	BFP#13F	$_____ x 12	$_____
5.7.3.25	BFP#10D	$_____ x 12	$_____
5.7.3.26	BFP#14F	$_____ x 12	$_____
5.7.3.27	BFP#11D	$_____ x 12	$_____
5.7.3.28	BFP#15F	$_____ x 12	$_____
5.7.3.29	BFP#12D	$_____ x 12	$_____
5.7.3.30	BFP#13D	$_____ x 12	$_____
5.7.3.31	BFP #17F	$_____ x 12	$_____
5.7.3.32	BFP #15D	$_____ x 12	$_____
5.7.3.33	BFP #16D	$_____ x 12	$_____
5.7.3.34	BFP #18F	$_____ x 12	$_____
5.7.3.35	BFP #19F	$_____ x 12	$_____
5.7.3.36	BFP#14D	$_____ x 12	$_____
5.7.3.37	BFP#19D	$_____ x 12	$_____
5.7.3.38	BFP#20D	$_____ x 12	$_____
5.7.3.39	BFP#25D	$_____ x 12	$_____
5.7.3.40	BFP#26D	$_____ x 12	$_____
5.7.3.41	BFP #20F	$_____ x 12	$_____
5.7.3.42	BFP#21D	$_____ x 12	$_____
5.7.3.43	BFP#22D	$_____ x 12	$_____

5.7.3.44 **DOMESTIC/FIRE WATER SERVICE BACKFLOW PREVENTION SYTEM TOTAL COST** **$_____ x 12** **$_____**

5.7.4 Other Fire Protection Systems

	Quantity	Unit Price	Price Per Year
5.7.4.1 Annual Fire Hydrant Inspection and Flow Test	100 Each	$_____/Each	$____
5.7.4.2 Monthly Fire Hydrant Visual Inspection	100 Each	$_____/Each per Month x 12	$____
5.7.4.3 Annual Fire Hose Inspection and Test	26 Each	$_____/Each	$____
5.7.4.4 Annual Dry Standpipe Inspection and Test	5 Each	$_____/Each	$____
5.7.4.5 Concession Area Water Based System Monthly Charge (3" max. Service)	26 Each	$_____/Each per Month x 12	$___
5.7.4.6 Pre-Action Water Based System (not in zones listed above) Inspection and Test	5 Each	$_____/Each	$___
5.7.4.7 Dry Pipe Water Based System (not in zones listed above) Inspection and Test	5 Each	$_____/Each	$___
5.7.4.8 Monthly Fire Pump Inspection	2 Each	$_____/Each per Month x 12	$_____

5.7.4.9 **SUBTOTAL COST (5.7.4.1 – 5.7.4.8)** **$_____**

5.7.5 Fire Protection Systems Total Cost

5.7.5.1 **SCHEDULE F - TOTAL COST** **$_____**

5.8 SCHEDULE G - HVAC MAINTENANCE

		Price per Month	Price Per Year
5.8.1	**Service Charge**	$_____ x 12	$_____
5.8.2	**SCHEDULE G – TOTAL COST**		**$**_____

5.9 SCHEDULE H – FACILITY AUTOMATED CONTOL SYSTEMS

	System	Price per Month	Price Per Year
5.9.1	SCADA	$_____ x 12	$_____
5.9.2	Airfield Lighting Control System	$_____ x 12	$_____
5.9.3	Building Lighting Control System	$_____ x 12	$_____
5.9.4	**SCHEDULE H – TOTAL COST**		**$**_____

5.10 SCHEDULE I - UNINTERRUPTIBLE POWER SUPPLY (UPS)

		Price per Month	Price Per Year
5.10.1	Service Charge	$_____ x 12	$_____
5.10.2	**SCHEDULE I – TOTAL COST**		**$**_____

5.11 SCHEDULE J - SWITCHGEAR

		Unit Price Per Month	Price Per Year
5.11.1	Main Terminal Substation (including Emergency Generator Switchgear)	$_____ X 12	$_____
5.11.2	Cargo City Substation	$_____ X 12	$_____
5.11.3	Bernard Henry Substation (Island Avenue)	$_____ X 12	$_____
5.11.4	Philadelphia Northeast Airport Substation	$_____ X 12	$_____
5.11.5	SUBSTATION TBD	$_____ X 12	$_____
5.11.6	SUBSTATION TBE	$_____ X 12	$_____
5.11.7	SUBSTATION FPE	$_____ X 12	$_____
5.11.8	SUBSTATION CUB	$_____ X 12	$_____
5.11.9	SUBSTATION S2A	$_____ X 12	$_____
5.11.10	SUBSTATION S2B	$_____ X 12	$_____
5.11.11	SUBSTATION S3A	$_____ X 12	$_____
5.11.12	SUBSTATION S3B	$_____ X 12	$_____
5.11.13	SUBSTATION S4B	$_____ X 12	$_____
5.11.14	SUBSTATION BBC	$_____ X 12	$_____
5.11.15	SUBSTATION S4A	$_____ X 12	$_____
5.11.16	SUBSTATION ETBB	$_____ X 12	$_____
5.11.17	SUBSTATION ETBC	$_____ X 12	$_____
5.11.18	SUBSTATION ETBE	$_____ X 12	$_____
5.11.19	SUBSTATION ETBD-1	$_____ X 12	$_____
5.11.20	SUBSTATION ETBD-2	$_____ X 12	$_____

5.11.21	SUBSTATION ECUB	$_____	X 12	$_____
5.11.22	SUBSTATION TBA	$_____	X 12	$_____
5.11.23	SUBSTATION FCA	$_____	X 12	$_____
5.11.24	SUBSTATION TV-1	$_____	X 12	$_____
5.11.25	SUBSTATION TV-2	$_____	X 12	$_____
5.11.26	SUBSTATION TV-3	$_____	X 12	$_____
5.11.27	SUBSTATION TV-3.2	$_____	X 12	$_____
5.11.28	SUBSTATION TV-4	$_____	X 12	$_____
5.11.29	SUBSTATION TV-5	$_____	X 12	$_____
5.11.30	SUBSTATION TV-6	$_____	X 12	$_____
5.11.31	SUBSTATION ETBA	$_____	X 12	$_____
5.11.32	SUBSTATION EFCA	$_____	X 12	$_____
5.11.33	SUBSTATION EBBC	$_____	X 12	$_____
5.11.34	SUBSTATION STP	$_____	X 12	$_____
5.11.35	SUBSTATION 1C1-N1	$_____	X 12	$_____
5.11.36	SUBSTATION 1T1-N3	$_____	X 12	$_____
5.11.37	SUBSTATION 1T1-N5	$_____	X 12	$_____
5.11.38	SUBSTATION 1T4-N6	$_____	X 12	$_____
5.11.39	SUBSTATION 1C1-E2	$_____	X 12	$_____
5.11.40	SUBSTATION 1T1-E4	$_____	X 12	$_____
5.11.41	SUBSTATION S4C	$_____	X 12	$_____
5.11.42	SUBSTATION TBF	$_____	X 12	$_____
5.11.43	SUBSTATION ETBF	$_____	X 12	$_____
5.11.44	SUBSTATION FLV-3	$_____	X 12	$_____
5.11.45	SUBSTATION FLV-4	$_____	X 12	$_____
5.11.46	Oil Filled Automatic Transfer Switches	$_____	X 12	$_____
5.11.47	Site Distribution Exterior Loop Switches	$_____	X 12	$_____
5.11.48	Medium Voltage Contactors	$_____	X 12	$_____
5.11.49	Medium Voltage Air Switches	$_____	X 12	$_____
5.11.50	Emergency Generator Testing Support Services	$_____	X 12	$_____
5.11.51	Spare Part Allowance: $10,000 cost x 1+ markup rate not to exceed 15% per 5.26. (Spec. Para.2.33.5) per month	$_____	X 12	$_____

5.11.52 **SCHEDULE J - TOTAL COST** **$_____**

5.12 SCHEDULE K - HIGH VOLTAGE CABLE REPAIR

5.12.1 Investigation Phase

Crew and equipment cost to find fault per hour Maximum (24) hour allotted to find fault.

	Units	**Unit Price**	**Price Per Year**

5.12.1.1 200 Hours x $_____/Hr $_____

Repair Phase – Items below shall include all labor, material, equipment and all appurtenances, complete, in-place.

5.12.2 Cable Replacement - Cost per foot (12") to provide and install 3-1/C type EPR insulated, (copper tape or concentric neutral) 15 KV, copper, conductor size AWG #1/0. Cost shall include removal of faulted cable. (133% insulation level includes fireproofing of exposed cable.

	Units	**Unit Price**	**Price Per Year**
5.12.2.1	2000 Feet x	$_____/Foot	$_____

5.12.3 Cost per foot to provide and install 3 - 1/C type EPR insulated, shielded (copper tape or concentric neutral) 15 KV, copper, conductor size AWG #2/0. Cost shall include removal of faulted cable. (133% insulation level) include fireproofing of exposed cable.

	Units	**Unit Price**	**Price Per Year**
5.12.3.1	2000 Feet x	$_____/Foot	$_____

5.12.4 Cost per foot to provide and install 3 - 1/C type EPR insulated, 15 KV shielded (copper tape or concentric neutral), copper conductor, size AWG #250 KCM. Cost shall include removal of faulted cable. (133% insulation level). Include fireproofing of exposed cable.

	Units	**Unit Price**	**Price Per Year**
5.12.4.1	2000 Feet x	$_____/Foot	$_____

5.12.5 Cost per foot to provide and install 3 - 1/C type EPR insulated, 15 KV shielded (copper tape or concentric neutral), copper conductor, size AWG #350 KCM. Cost shall include removal of faulted cable. (133% insulation level). Include fireproofing of exposed cable.

	Units	**Unit Price**	**Price Per Year**
5.12.5.1	2000 Feet x	$_____/Foot	$_____

5.12.6 Cost per (1) 2-way, single conductor splice per type EPR insulated, shielded 15 KV, copper cable, sizes AWG #250 KCM and/or #350 KCM.

		Units	**Unit Price**	**Price Per Year**
5.12.6.1		24 Each x	$_____/Each	$_____

5.12.7 Cost per (1) 2-way, single conductor splice for type EPR insulated, 15 KV shielded, copper cable, sizes AWG #1/0 and/or #2/0.

		Units	**Unit Price**	**Price Per Year**
5.12.7.1		24 Each x	$_____/Each	$_____

5.12.8 Cost per (1) 3-way tee, single conductor splice for type shielded, EPR insulated, 15 KV, copper cable, size #1/0 and/or #2/0.

		Units	**Unit Price**	**Price Per Year**
5.12.8.1		30 Each x	$_____/Each	$_____

5.12.9 Cost per (1) 3-way tee, single conductor splice for type shielded, EPR insulated, 15 KV, copper cable, sizes #250 KCM and/or #350 KCM.

		Units	**Unit Price**	**Price Per Year**
5.12.8.1		24 Each x	$_____/Each	$_____

5.12.10 Cost per (1) 2-way, single, conductor splice for type paper insulated, lead covered, AWG #1/0 and/or #2/0, shielded 15 KV, copper cable, concentric round.

		Units	**Unit Price**	**Price Per Year**
5.12.10.1		24 Each x	$_____/Each	$_____

5.12.11 Cost per (1) 2-way, single, conductor splice for type paper insulated, lead covered, AWG #250 KCM and/or #350 KCM, shielded 15 KV copper cable, concentric, round.

	Units	**Unit Price**	**Price Per Year**
5.12.11.1	24 Each x	$_____/Each	$_____

5.12.12 Cost per (1) 3-way WYE, single conductor splice for type paper insulated, lead covered, AWG #1/0 and/or #2/0, shielded 15 KV, copper cable, concentric round.

	Units	**Unit Price**	**Price Per Year**
5.12.12.1	24 Each x	$_____/Each	$_____

5.12.13 Cost per (1) 3-way WYE, single conductor splice for type paper insulated, lead covered, AWG #250 KCM and/or #350 KCM shielded 15 KV, copper cable concentric round.

	Units	**Unit Price**	**Price Per Year**
5.12.13.1	30 Each x	$_____/Each	$_____

5.12.14 Cost for replacement of three (3) loadbreak terminators type Elastimold #165LPR/165LRG, or equal; including terminators for three (3) conductors cable type EPR insulated, shielded 15 KV, copper, conductor size AWG #1/0: include all racks, mounting, end caps, parking stand, all appurtenances, etc. for complete installation, including male and female connectors, grounding, baling assemblies.

	Units	**Unit Price**	**Price Per Year**
5.12.14.1	24 Each x	$_____/Each	$_____

5.12.15 Cost for replacement of three (3) loadbreak terminators type Elastimold #165LPR/165LRG, or equal; including terminators for three (3) conductors cable type EPR insulated, shielded 15 KV, copper, conductor size AWG #2/0: include all racks, mounting, end caps, parking stands, all appurtenances, etc. for complete installation, including male and female connectors, grounding, baling assemblies.

	Units	**Unit Price**	**Price Per Year**
5.12.15.1	24 Each x	$_____/Each	$_____

5.12.16 Cost for replacement of three (3) loadbreak terminators type Elastimold #165LPR/165LRG, or equal; including terminators for three (3) conductors cable type EPR insulated, shielded 15 KV, copper, conductor size AWG #250 MCM: include all racks, mounting, end caps, parking stands, all appurtenances, etc. for complete installation, including male and female connectors, grounding, baling assemblies.

	Units	**Unit Price**	**Price Per Year**
5.12.16.1	24 Each x	$_____/Each	$_____

5.12.17 Cost for replacement of three (3) loadbreak terminators type Elastimold #165LPR/165LRG, or equal; including terminators for three (3) conductors cable type EPR insulated, shielded 15 KV, copper, conductor size AWG #350 MCM: include all racks, mounting, end caps, parking stands, all appurtenances, etc. for complete installation, including male and female connectors, grounding, baling assemblies.

	Units	**Unit Price**	**Price Per Year**
5.12.17.1	24 Each x	$_____/Each	$_____

5.12.18 Cost for replacement of 3 phase oil fuse cutout type G and W FC 61 rate 7.8KV/100A, or equal, including terminations for 3 conductor cable type EPR insulated, shielded 15 KV, copper, conductor size #2/0 or smaller.

	Units	**Unit Price**	**Price Per Year**
5.12.18.1	6 Each x	$_____/Each	$_____

5.12.19 Cost for replacement of (3) slip on dry terminators type G&W #SD7, or equal, including terminations for 3 conductor cable, type EPR insulated, shielded 15 KV, copper, conductor size #2/0 or smaller.

	Units	**Unit Price**	**Price Per Year**
5.12.19.1	6 Each x	$_____/Each	$_____

5.12.20 Cost for (1) soldertite termination for type G&W TRA-shape C, 3 conduct pothead. Do not include price of pothead into cost. For cable type EPR insulated, shielded 15 KV, copper, size AWG #2/0 or smaller.

	Units	**Unit Price**	**Price Per Year**
5.12.20.1	6 Each x	$_____/Each	$_____

5.12.21 Cost for replacement of (1) slip on terminator type G&W Pat. 1773, or equal, including termination for (1) cable conductor type EPR insulated, shielded 15 KV, copper, conductor size AWG #2/0 or smaller.

	Units	**Unit Price**	**Price Per Year**
5.12.21.1	6 Each x	$_____/Each	$_____

5.12.22 Cost per foot for replacement of grounding conductor, copper, 600V, #1/0 AWG, including all terminations and removal of existing.

	Units	**Unit Price**	**Price Per Year**
5.12.22.1	3000 Feet x	$_____/Foot	$_____

5.12.23 Cost for rental of 750KVA, 3 phase, 13.2KV/120/208Y or 13.2KV/277/480Y transformer (outdoor type - NO PCB's). Include delivery, setup, primary and/or secondary protection, ground, temporary cable and connections, pad, protection, cable support, building cable entrance, and removal. Connection to primary source and connection to secondary load each up to 200 feet from transformer. Time period begins with acceptable operation of transformer and ends with approved transformer shut-off.

		Units	**Unit Price**	**Price Per Year**
5.12.23.1	5 day Rental	3 Each x	$_____/Each	$_____
5.12.23.2	10 day Rental	2 Each x	$_____/Each	$_____
5.12.23.3	30 day Rental	1 Each x	$_____/Each	$_____

5.12.24 Cost for rental of 150KVA, 3 phase, 120/208Y or 277/480Y generator. Include delivery, setup, fuel, over current protection, ground, temporary cable and connections, pad, protection, cable support, building cable entrance, generator monitoring and servicing, and removal. Connection to load up to 200 feet from generator. Time period begins with acceptable operation of generator and ends with approved generator shut-off.

		Units	**Unit Price**	**Price Per Year**
5.12.24.1	5 day Rental	3 Each x	$_____/Each	$_____
5.12.24.2	15 day Rental	2 Each x	$_____/Each	$_____
5.12.24.3	30 day Rental	1 Each x	$_____/Each	$_____

5.12.25 Cost for rental of 1000KVA, 3 phase, 120/208Y or 277/480Y generator. Include delivery, setup, fuel, over current protection, ground, temporary cable and connections, pad, protection, cable support, building cable entrance, generator monitoring and servicing, and removal. Connection to load up to 200 feet from generator. Time period begins with acceptable operation of generator and ends with approved generator shut-off.

		Units	**Unit Price**	**Price Per Year**
5.12.25.1	5 day Rental	3 Each x	$_____/Each	$_____
5.12.25.2	15 day Rental	2 Each x	$_____/Each	$_____
5.12.25.3	30 day Rental	1 Each x	$_____/Each	$_____

SCHEDULE K - TOTAL COST $_____/year

5.13 SCHEDULE L – FIRE ALARM SYSTEMS

	Node	**Area**	**Price per Month**	**Price Per Year**
5.13.1	2	"D" Concourse	$_____ x 12	$_____
5.13.2	3	"D" Terminal	$_____ x 12	$_____
5.13.3	4	"D" Baggage	$_____ x 12	$_____
5.13.4	5	"D" Garage	$_____ x 12	$_____
5.13.5	7	"E" Concourse	$_____ x 12	$_____
5.13.6	8	"E" Terminal	$_____ x 12	$_____
5.13.7	9	"E" Baggage	$_____ x 12	$_____
5.13.8	11	"B" Terminal 1	$_____ x 12	$_____
5.13.9	12	"B" Terminal 2	$_____ x 12	$_____
5.13.10	13	"B" Terminal 3	$_____ x 12	$_____
5.13.11	14	"B" Concourse	$_____ x 12	$_____
5.13.12	15	C.U.B.	$_____ x 12	$_____
5.13.13	16	"C" Baggage	$_____ x 12	$_____
5.13.14	17	"C" Garage	$_____ x 12	$_____
5.13.15	18	"B" Baggage	$_____ x 12	$_____
5.13.16	19	"C" Concourse	$_____ x 12	$_____
5.13.17	20	"C" Terminal 1	$_____ x 12	$_____
5.13.18	23	"A" Baggage	$_____ x 12	$_____
5.13.19	24	Lighting Vault #4	$_____ x 12	$_____
5.13.20	26	"F" Concourse	$_____ x 12	$_____
5.13.21	27	"F" Terminal	$_____ x 12	$_____
5.13.22	28	"Term-1"TerminalEast	$_____ x 12	$_____
5.13.23	29	"Term-1" Terminal Mezzanine	$_____ x 12	$_____
5.13.24	30	"Term-1" Terminal West	$_____ x 12	$_____
5.13.25	31	"Term-1" Concourse (Flrs 2&3)	$_____ x 12	$_____
5.13.26	32	"Term-1" Football #1	$_____ x 12	$_____
5.13.27	33	"Term-1" Football #2	$_____ x 12	$_____

5.13.28	34	Ramp Control Tower	$_____	x 12	$_____
5.13.29	36	"Term-1" Concourse (Flr 1)	$_____	x 12	$_____
5.13.30	37	Runway 8-26 Tunnel	$_____	x 12	$_____
5.13.31	38	ARFF Training Facility	$_____	x 12	$_____
5.13.32	39	Garage Terminal "1"	$_____	x 12	$_____
5.13.33	40	Garage E/F	$_____	x 12	$_____
5.13.34	41	Deicing Facility	$_____	x 12	$_____
5.13.35	42	USAir Express Hanger	$_____	x 12	$_____
5.13.36	44	"Term-1" USAir Club- Mezz. #2	$_____	x 12	$_____
5.13.37	45	Carpenter's Shop	$_____	x 12	$_____
5.13.38		**SCHEDULE L – TOTAL COST**	**$_____**	**x 12**	**$_____**

5.14 SCHEDULE M - FENCING AND GUIDERAILS

5.14.1 FAA regulated and airport security chain link fencing replacement including removal of existing fence poles, foundation fabric, rails, barbed wire and providing new poles, rails, fabric, barbed wire, barbed wire supports, grounding, connection to existing fence and all appurtenances; complete, in-place; straight and/or with change in direction in any length increment.

	Units	**Unit Price**	**Price Per Year**
5.14.1.1	2000 Linear Feet x	$_____/LF	$_____

5.14.2 New FAA regulated and airport security chain link fence including poles, foundation, rails, fabric, barbed wire, barbed wire supports, grounding, and all appurtenances; complete, in-place; straight and/or with change in direction in any length increment.

	Units	**Unit Price**	**Price Per Year**
5.14.2.1	2000 Linear Feet x	$_____/LF	$_____

5.14.3 Privacy Slats per linear foot of fence fabric.

		Units	**Unit Price**	**Price Per Year**
5.14.3.1	In existing	1000 Linear Feet x	$_____/LF	$_____

5.14.3.2	In new fence	1000 Linear Feet x	$_____/LF	$_____

5.14.4 Removal and replacement of fence fabric including removal of fabric, providing new fabric on existing post and rails (including gates), connections to existing fabric, complete, in place.

	Units	**Unit Price**	**Price Per Year**
5.14.4.1	1000 Linear Feet x	$_____/LF	$_____

5.14.5 Repair of manual swing gates including repair of hinges, realignment of gate frame and locking hardware, per leaf.

		Units	**Unit Price**	**Price Per Year**
5.14.5.1	Large gate (greater than 3 ft. leaf)	10 Repairs x	$_____/Repair	$_____
5.14.5.2	Small gate (3ft. leaf or less)	30 Repairs x	$_____/Repair	$_____

5.14.6 Plastic snow fence furnished and installed including steel posts driven into earth, fabric, maintenance and removal.

	Units	**Unit Price**	**Price Per Year**
5.14.6.1	10,000 Linear Feet x	$_____/LF	$_____

5.14.7 Temporary fence furnished and installed including secured surface mounted posts, rails, fabric, maintenance and removal.

	Units	**Unit Price**	**Price Per Year**
5.14.7.1	1000 Linear Feet x	$_____/LF	$_____

5.14.8 Guiderail

5.14.8.1 Guiderail rubbing rail replacement including removal and providing new rubbing rails including all mounting hardware

	Units	**Unit Price**	**Price Per Year**
5.14.8.1.1	1000 Linear Feet x	$_____/LF	$_____

5.14.8.2 Guiderail post replacement including removal of existing posts and providing new posts

	Units	**Unit Price**	**Price Per Year**
5.14.8.2.1	100 Posts x	$_____/Post	$_____

5.14.8.3 New complete guiderail system including posts, rubbing rails, hardware and all appurtenances, complete, in place:

	Units	**Unit Price**	**Price Per Year**
5.14.8.3.1	2000 Linear Feet x	$_____/LF	$_____

5.14.8.4 New guiderail terminal section including post, hardware, terminal section complete in-place

	Units	**Unit Price**	**Price Per Year**
5.14.8.4.1	20 Sections x	$_____/Section	$_____

5.14.8.5 New precast concrete highway median barrier, complete and in-place. 10 ft. long, 34” high

	Units	**Unit Price**	**Price Per Year**
5.14.8.5.1	100 Linear Feet x	$_____/LF	$_____

5.14.8.6 New precast concrete highway median barrier, tapered end section, complete and in-place. 10 ft. sect.

		Units	Unit Price	Price Per Year
5.14.8.6.1		10 Section x	$_____/Sect.	$_____

5.14.8.7 Replacement of guiderail posts mounted in concrete. Includes removal of existing posts and providing new posts, base plates, and anchors.

		Units	Unit Price	Price Per Year
5.14.8.7.1		100 Post x	$_____/Post	$_____

5.14.8.8 Removal of damaged concrete mounted guiderail, including removal of posts and cut down of post studs flush with concrete surface.

		Units	Unit Price	Price Per Year
5.14.8.8.1		500 Linear Feet x	$_____/LF	$_____

5.14.9 **SCHEDULE M – TOTAL COST**

		Price Per Year
5.14.9.1	**SCHEDULE M – TOTAL COST**	$_____

5.15 SCHEDULE N - BIRD CONTROL

5.15.1 Two applications of "Roost No More" or similar effective Anti Roosting Agent per year to all areas to be treated. Approximately 50,000 linear feet per application.

		Units	Unit Price	Price Per Year
5.15.1.1		2 Applications x	$_____/Application	$_____

5.15.2 Spot application of "Roost No More" or similar effective Anti Roosting Agent price per linear foot.

		Units	Unit Price	Price Per Year
5.15.2.1		1000 Linear	$_____/LF	$_____

5.15.3 Special nylon screening with specialized installation (example: Screening will be attached to concrete or metal superstructure using aluminum strips (1"x.125") sandwiching the nylon screening to and providing exclusion from roosting).

	Units	**Unit Price**	**Price Per Year**
5.15.3.1	4000 Square Yards x	$_____/Sq. Yd.	$_____

5.15.4 Special nylon screening with zipper along three sides for access to utilities above per square yard.

	Units	**Unit Price**	**Price Per Year**
5.15.4.1	4000 Square Yards x	$_____/Sq. Yd.	$_____

5.15.5

Sanitizing Service includes clean up of droppings, removal of dead birds, roosting materials, and the application of a sanitizing agent, fungicide, deodorizer and insecticide.

	Units	**Unit Price**	**Price Per Year**
5.15.5.1	4000 Square Yards x	$_____/Sq. Yd.	$_____

5.15.6 Labor and material to install concrete insert. Insert size (14"x24"x4")

	Units	**Unit Price**	**Price Per Year**
5.15.6.1	10 Inserts x	$_____/Inserts	$_____

5.15.7 Repairs to existing inserts-replace missing or damaged mortar around inserts.

	Units	**Unit Price**	**Price Per Year**
5.15.7.1	10 Repairs x	$_____/Repairs	$_____

5.15.8 Labor and materials to install (brown or black) anodized aluminum inserts. Insert size (24"x24"x.0625").

		Units	**Unit Price**	**Price Per Year**
5.15.8.1		10 Inserts	$_____/Inserts	$_____

5.15.9 Non-metallic spikes to prevent bird roosting attached to building structure the price per linear foot.

		Units	**Unit Price**	**Price Per Year**
5.15.9.1		2000 Linear Feet x	$_____/LF	$_____

5.15.10 SCHEDULE N - TOTAL COST

	SCHEDULE N - TOTAL COST	**Price Per Year**
5.15.10.1		$_____

5.16 SCHEDULE O - AIRFIELD SUPPORT SERVICES

5.16.1 Rubber Removal

		Units	**Unit Price**	**Price Per Year**
5.16.1.1	Square Feet of Rubber Removal Inclusive of:Chemical Soak,High Pressure Water Wash, Vacuum, Clean-up, and Laboratory Tests	500,000	$_____/sq. ft.	$_____

5.16.2 Runway Friction Measurement Equipment Maintenance

		Price per Month	**Price Per Year**
5.16.2.1	Semi-Annual Preventive Maintenance with Evaluation Reports	$_____ x 2	$_____
5.16.2.2	Software Revisions with Installation, Test & Training	$_____ x 4	$_____
5.16.2.3	Service Charge Allowance $10,000	X (1 + __% mark up) (Not to exceed 15% Exclusive of Labor)	$_____

5.16.3 Groundskeeping

		Quantity per Year	**Price Per Year**
5.16.3.1	Herbicide – Round-up	150 gal.	$_____

5.16.3.2	Turf Growth Retardant	300 gal.	$_____
5.16.3.3	Insecticide – Dormant Oil Spray	30 gal.	$_____
5.16.3.4	Insecticide – Sevin	30 gal.	$_____
5.16.3.5	Grass Seed – K-31 Tall Fescue Perennial Rye	200 lb.	$_____
5.16.3.6	Mulch 17% or <	100 lb.	$_____

5.16.3.7 Service Charge X (1 + __% mark up)
Allowance $10,000 (Not to exceed 15% Exclusive of Labor) $_____

5.16.4 Wildlife Hazards Management

		Price per Month	**Price Per Year**
5.16.4.1	Service Charge Allowance $15,000 X (1 + __% mark up) (Not to exceed 15% Exclusive of Labor)		$_____

5.16.5 Fire Trainer ARFFT Live Fire Training System

		Price per Month	**Price Per Year**
5.16.5.1	Fixed Service Charge	$_____	$_____

5.16.6 ARFFT Propane Fuel Supply and Vaporizer System (Preventative Maintenance)

		Price per Month	**Price Per Year**
5.16.6.1	Fixed Service Charge	$_____	$_____
5.16.7	Pavement Marking Removal 20,000 S.F.	$_____	$_____

5.16.8 **SCHEDULE O - TOTAL COST** **Price Per Year** $_____

5.17 SCHEDULE P - BUILDING MOUNTED SIGNAGE

		Price Per Year
5.17.1	Service Charge Allowance $20,000 X (1 + ____% mark up) (Not to Exceed 15% Exclusive of Labor	$_____
5.17.2	SCHEDULE P - TOTAL COST	

5.17.2.1 **SCHEDULE P - TOTAL COST** **Price Per Year**

5.18 SCHEDULE Q - GLASS, PLASTIC REPLACEMENT

Costs below shall include all labor, materials, equipment, and all appurtenances, necessary for a complete, in-place installation; and also include removal of damaged glass.

		Quantity	Unit Price	Price Per Year
5.18.1	¼" Clear tempered or heat absorbing T-Window	100 S.F.	$_____/S.F.	$_____
5.18.2	¼" Tinted tempered or heat absorbing T-Window	100 S.F.	$_____/S.F.	$_____
5.18.3	1" Clear insulated tempered or heat absorbing T-Window	500 S.F.	$_____/S.F.	$_____
5.18.4	1" Tinted insulated tempered or heat absorbing T-Window	500 S.F.	$_____/S.F.	$_____
5.18.5	Rough herculite ¾"	100 S.F.	$_____/S.F.	$_____
5.18.6	Tempered polished plate glass door and side lights ¾" complete with aluminited aluminum top and bottom shoes	10 S.F.	$_____/S.F.	$_____
5.18.7	¼" clear Mirrors as used in Restrooms	1000 S.F.	$_____/S.F.	$_____
5.18.8	¼" Clear tempered or heat absorbing glass in aluminum frame	100 S.F.	$_____/S.F.	$_____
5.18.9	¼" tinted tempered or heat absorbing glass in aluminum frame	100 S.F.	$_____/S.F.	$_____
5.18.10	1" Clear insulated heat absorbing or tempered glass in aluminum frame	100 S.F.	$_____/S.F.	$_____
5.18.11	1" Tinted insulated heat absorbing or tempered glass in aluminum frame	100 S.F.	$_____/S.F.	$_____
5.18.12	1" Clear insulated annealed glass in aluminum frame	100 S.F.	$_____/S.F.	$_____
5.18.13	1" Tinted insulated annealed glass in aluminum frame	100 S.F.	$_____/S.F.	$_____
5.18.14	1" Clear insulated, tempered interior, laminated exterior in aluminum frame	100 S.F.	$_____/S.F.	$_____
5.18.15	1" Tinted insulated, tempered interior,			

	laminated exterior in aluminum frame	100 S.F.	$_____/S.F.	$_____
5.18.16	1-1/2" Clear insulated, tempered interior, 1/2'" laminated exterior in aluminum frame	100 S.F.	$_____/S.F.	$_____
5.18.17	1-1/2" Tinted insulated, tempered interior, ½" laminated exterior in aluminum frame	100 S.F.	$_____/S.F.	$_____
5.18.18	1" Clear insulated, tempered interior, laminated exterior, Low E coating in aluminum frame	100 S.F.	$_____/S.F.	$_____
5.18.19	1" Tinted insulated, tempered interior, laminated exterior, Low E coating in aluminum frame	100 S.F.	$_____/S.F.	$_____
5.18.20	3/8" Clear tempered glass in aluminum frame	100 S.F.	$_____/S.F.	$_____
5.18.21	3/8" tinted tempered glass in aluminum frame	100 S.F.	$_____/S.F.	$_____
5.18.22	¾" laminated glass, (2)3/8" clear glass with clear or white translucent interlayer	100 S.F.	$_____/S.F.	$_____
5.18.23	3/8" clear laminated glass	100 S.F.	$_____/S.F.	$_____
5.18.24	½" clear laminated glass	100 S.F.	$_____/S.F.	$_____
5.18.25	½" Acuosta-Pane 39 (Globe Amerida)in aluminum frame	100 S.F.	$_____/S.F.	$_____
5.18.26	¼" heat strengthened Spandrel Glass	100 S.F.	$_____/S.F.	$_____
5.18.27	Flight Information Display (FIDS)Cabinet glass	100 S.F.	$_____/S.F.	$_____
5.18.28	¾" Plexiglass for temporary closure, installed and removed	100 S.F.	$_____/S.F.	$_____
5.18.29	½" Plexiglass for temporary closure, installed and removed	100 S.F.	$_____/S.F.	$_____
5.18.30	¼" Plexiglass for temporary closure, installed and removed	100 S.F.	$_____/S.F.	$_____
5.18.31	Tinting film applied to existing glass	1,000 S.F.	$_____/S.F.	$_____

5.18.32	Resealing of glass including removal, new gasket/seals, replacement and cleaning, per linear foot of glass perimeter	2000 L.F.	$_____/L.F.	$_____
5.18.33	3/8" Clear annealed laminated bent glass	500 S.F.	$_____/S.F.	$_____
5.18.34	1-1/8" Insulated; Tinted Tempered Glass (Exterior) 3/8" Vinyl Laminated Glass (Interior)	100 S.F.	$_____/S.F.	$_____
5.18.35	1" Insulated; Tinted Tempered Glass (Exterior) Clear Tempered Glass Interior)	100 S.F.	$_____/S.F.	$_____
5.18.36	1" Insulated; Tinted Tempered Glass (Exterior) Annealed Glass (Interior)	100 S.F.	$_____/S.F.	$_____
5.18.37	¼" Uninsulated; Tinted Tempered Glass (Exterior)	100 S.F.	$_____/S.F.	$_____
5.18.38	3/8" Uninsulated; Tinted Tempered Glass (Exterior)	100 S.F.	$_____/S.F.	$_____
5.18.39	1" Insulated; Tinted Tempered Glass (Exterior) 3/8" Vinyl Laminated Glass (Interior)	100 S.F.	$_____/S.F.	$_____
5.18.40	1-1/8" Insulated; Tinted Tempered Glass (Exterior) 3/8" Vinyl Laminated Glass (Interior)	100 S.F.	$_____/S.F.	$_____
5.18.41	1" Insulated; Exterior Lite ¼" Thk Laminated, Graylite Interior Lite ¼" Thk Laminated, Clear Glass	100 S.F.	$_____/S.F.	$_____
5.18.42	3/8' Spandrel glass; Laminated	100 S.F.	$_____/S.F.	$_____
5.18.43	3/8" Spandrel glass; Laminated, To Match Glaze	100 S.F.	$_____/S.F.	$_____
5.18.44	3/8" Azurlite glass; Laminated	100 S.F.	$_____/S.F	$_____
5.18.45	1" Vision glass - Clear Annealed Glass (Exterior) Clear Laminated Glass (Interior)	100 S.F.	$_____/S.F.	$_____
5.18.46	1" Vision glass - Clear H.S. with Reflective Coating (Exterior)			

	Clear Annealed Glass (Interior)	100 S.F. $____/S.F. $_____
5.18.47	1" Spandrel glass – Reflective Coating Tempered (Exterior) Tempered Glass (Interior)	100 S.F. $_____/S.F.$_____
5.18.48	Glass fins - Clear Annealed Laminated Glass Clear Liquid Resin Interlayer (Polished Edges)	100 S.F. $_____/S.F.$_____
5.18.49	1" Vision Glass-Clear Tempered Glass (Exterior) Clear Laminated Glass	100 S.F. $_____/S.F.$_____
5.18.50	1"Vision Glass Clear Heat Strengthen (Exterior) Clear Anneald Glass (Interior)	100 S.F. $____/S.F.$_____
5.18.51	1"Vision Glass Clear Heat Strengthen (Exterior) Clear Tempered Glass (Interior)	100 S.F. $____/S.F.$_____
5.18.52	1" Vision Glass Clear H.S. w/reflective coating (Exterior) Clear Tempered Glass (Interior)	100 S.F. $____/S.F.$_____
5.18.53	1" Vision Glass H.S.(Exterior) Clear Laminated Glass (Interior)	100 S.F. $____/S.F.$_____
5.18.54	1" Vision Glass Clear H.S. w/reflective Coating (Exterior) Clear Laminated Glass (Interior)	100 S.F. $_____/S.F.$____

SCHEDULE Q - TOTAL COST $_____/year

5.19 SCHEDULE R - INTERIOR COSMETIC REPAIRS AND EXTERIOR FINISHES RESTORATION/MAINTENANCE

5.19.1 Resilient Flooring: Cost below shall include all labor, materials, equipment, and all appurtenances, complete, in-place. Cost shall not include surface preparation.

		Qty	Unit Price	Price Per Year
5.19.1.1	Vinyl composition Tile 1/8" gauge commercial vinyl, standard size tile, as manufactured by Armstrong or equal	5000 S.F.	$_____/ S.F.	$___
5.19.1.2	Sheet vinyl flooring standard width, .085" gauge as manufactured by Armstrong or equal	5000 S.F.	$_____/ S.F.	$___
5.19.1.3	Rubber Tile, smooth 1/8 gauge as manufactured by Endura or equal	5000 S.F.	$_____/ S.F	$___
5.19.1.4	- Standard Size Tile	5000 S.F	$_____/ S.F.	$____
5.19.1.5	- Standard Width Sheeting	5000 S.F	$_____/ S.F.	$____
5.19.1.6	Rubber, raised circular and raised square design, standard profile or low profile design as manufactured by Enduro or equal.	5000 S.F	$_____/ S.F.	$____
5.19.1.7	- Standard Size Tile	5000 S.F	$_____/ S.F.	$____
5.19.1.8	- Standard Width Sheeting	5000 S.F	$_____/ S.F.	$____
5.19.1.9	Rubber Stair Treads, Heavy duty depth round or square nose 12 ½, thickness ¼".			

400 L.F. $_____/ L.F. $____

5.19.1.10 Stair treads, raised circular design, raised square design, low profile as manufactured by Endura or equal. 100 Ea. $_____/each.

$____Resilient Flooring and adhesive Removal and subsurface cleaning 1000 S.Y. $_____/ S.Y. $___

5.19.2 Tile - Cost below shall include all labor, materials,equipment, and all appurtenances, complete, in-place. Cost shall not include surface preparation.

		Qty	**Unit Price**	**Price Per Year**
	Ceramic: Unglazed ceramic tile as manufactured by Mid-State Tile Co. or equal.			
5.19.2.1	- 1 x 1	100S.F.	$_____/ S.F.	$___
5.19.2.2	- 2 x 2	100 S.F.	$_____/ S.F.	$____
5.19.2.3	- 1 x 2	100 S.F.	$_____/ S.F.	$____
5.19.2.4	- 4 x 4	100 S.F.	$_____/ S.F.	$____
5.19.2.5	- 6 x 6	100 S.F.	$_____/ S.F.	$____
	Glazed wall tile as manufactured by Mid-State Tile Co. or equal			
5.19.2.6	- 2 x 2	100 S.F.	$_____/ S.F.	$____
5.19.2.7	- 4 x 4	100 S.F.	$_____/ S.F.	$____
5.19.2.8	- 6 x 6	100 S.F.	$_____/ S.F.	$_____
	Quarry Tile Flooring standard grade as manufactured by Summitville Tiles, Inc. or equal.			
5.19.2.9	- 6 x 6 x ¾"	100 S.F.	$_____/ S.F.	$____

5.19.3 Formica:

		Qty	Unit Price	Price Per Year
5.19.3.1	Formica or Wilson Art of equal 4' x 8' sheets	20 Ea.	$_____/each.	$____

5.19.4 Carpet Tile - Cost below shall include all labor, materials, equipment, and all appurtenances, complete, in-place. Cost shall not include surface preparation.

		Qty	Unit Price	Price Per Year
5.19.4.1	Carpet Tile: Collins & Aikman – Symphony – 2193, 120/sq. in. tuft density, 26 oz./sq. yd. yarn weight, 100% DuPont Antron Legacy yarn	5000 Square Yards	$_____/Sq. Yd.	$____

5.19.5 Broadloom Carpet - Cost below shall include all labor, materials, equipment, and all appurtenances, complete, in-place. Cost shall not include surface preparation.

		Qty	Unit Price	Price Per Year
5.19.5.1	Carpet, Atlas Carpet Mills, Exeter Place 26 EX 57, Level loop pile, 26 oz./sq. yd. yarn weight, 100% DuPont Antron Legacy nylon yarn	5000 Square Yards	$_____/Sq. Yd.	$___

5.19.6 Carpet Removal

	Qty	Unit Price	Price Per Year
5.19.6.1 Carpet, padding, and adhesive removal and sub-surface cleaning	5000 Square Yards	$_____/Sq. Yd.	$___

5.19.7 Vinyl Cove Base - Cost below shall include all labor, materials, equipment, and all appurtenances, complete, in-place. Cost shall not include surface preparation

	Qty	Unit Price	Price Per Year
5.19.7.1 Vinyl Cove Base	500 linear feet	$_____/ L.F.	$____

5.19.8 Replacement Solid Surface Toilet Stall Doors (furnished and installed to match existing)

	Qty	Unit Price	Price Per Year
5.19.8.1 Corian toilet stall door up to 10 square feet, with hardware	10 each	$_____/ each	$____
5.19.8.2 Corian toilet stall door 10 square feet and larger, with hardware	10 each	$_____/ each	$____

5.19.9 Exterior Finishes Restoration/Maintenance

	Per	**Price Per Year**
5.19.9.1 Exterior finishes restoration/ maintenance Service Charge Allowance $20,000	x (1 + ____% mark up) (Not to Exceed 15% Exclusive of Labor Rates already included in 5.27)	$____

5.19.10 SCHEDULE R - TOTAL COST

	Price Per Year
5.19.10.1 **SCHEDULE R - TOTAL COST**	**$**_____

5.20 SCHEDULE S - AIRPORT EXHIBITIONS & DECORATIONS

		Per	**Price Per Year**
5.20.1	Service Charge Allowance $200,000	x (1 + ____% mark up) (Not to Exceed 15%, Exclusive of Labor Rates already included in 5.27)	$_____

		Qty	**Unit Price**	**Price Per Year**
5.20.2	Exhibition Preparator	1,000 Hours	$_____/hour	$_____
5.20.3	Assistant Director Of Exhibitions	1,000 Hours	$_____/hour	$_____
5.20.4	Exhibition Assistant	1,000 Hours	$_____/hour	$_____
5.20.5	Registrar	1,000 Hours	$_____/hour	$_____
5.20.6	Exhibitions Preparator	1,000 Hours	$_____/hour	$_____
5.20.7	Exhibitions			

Installer 1,000 Hours $_____/hour $_____

Price Per Year

5.20.8 **SCHEDULE S - TOTAL COST** **$_____**

5.21 SCHEDULE T - SPECIALIZED EQUIPMENT SERVICES

5.21.1 Heavy bulldozer-crawler type not less than 285 drawbar H.P.; not less than 65,000 lbs. Cat. D-8 or equal with rear mounted hydraulic connections if required. Equipment to be delivered within two (2) days after notice.

	Units	**Unit Price**	**Price Per Year**
5.21.1.1	5 days x	$_____/Day	$_____

YEAR _____

MAKE _____

MODEL _____

5.21.2 Water Spray Truck; 3500 gal. capacity, (minimum). Equipment must be delivered within one (1) day after notice.

	Units	**Unit Price**	**Price Per Year**
5.21.2.1	5 days x	$_____/Day	$_____

YEAR _____

MAKE _____

MODEL _____

5.21.3 Medium bulldozer-crawler not less than 17,000 lbs. and a minimum of 75 horsepower. Equipment must be delivered within one (1) day after notice reference. Reference Model Cat.D-4 or equal.

	Units	**Unit Price**	**Price Per Year**
5.21.3.1	10 days x	$_____/Day	$_____

YEAR _____

MAKE _____

MODEL _____

5.21.4 Hydraulic backhoe, crawler mounted, w/digging depth to 18 ft. min. and equipped w/not less than 0.75 cubic yard bucket. Cat. 315 or equal. Equipment must be delivered within one (1) day after notice.

	Units	**Unit Price**	**Price Per Year**
5.21.4.1	10 days x	$_____/Day	$_____

YEAR _____

MAKE _____

MODEL _____

5.21.5 Asphalt Finisher (Paving) Machine. Paving width, 10 ft. with minimum ext. of 2 ft. on each side. Barber-Greene model BG-240 or equal. Equipment must be delivered within one (1) day after notice.

	Units	**Unit Price**	**Price Per Year**
5.21.5.1	5 days x	$_____/Day	$_____

YEAR _____

MAKE _____

MODEL _____

5.21.6 General purpose farm tractor without operator minimum 70 horsepower take-off and Category II 3 point hitch. Must be delivered to the job site by contractor within two (2) days.

	Units	**Unit Price**	**Price Per Year**
5.21.6.1	20 days x	$_____/Day	$_____

YEAR _____

MAKE _____

MODEL _____

5.21.7 Skid steer loader, Bobcat 753 or equal. There is a height limitation of 6'6". To be equipped with enclosed cab, angle broom, 60" construction/industrial buckel. Equipment must be delivered within one (1) day after notice.

	Units	**Unit Price**	**Price Per Year**
5.21.7.1	5 days x	$_____/Day	$_____

YEAR _____

MAKE _____

MODEL _____

5.21.8 Hydraulic Mobile Crane: To be equipped with three (3) section power boom with 8' extension and enclosed cab, 10 ton capacity. There is a height limitation of 12 ft. Equipment must be delivered within two (2) days after notice.

	Units	**Unit Price**	**Price Per Year**
5.21.8.1	5 days x	$_____/Day	$_____

YEAR _____

MAKE _____

MODEL _____

5.21.9 Small crane "Cherry Picker" Type; 20 Ton Capacity, with three (3) section, 60 foot boom with jib. Equipment must be provided within one (1) day after notice.

	Units	**Unit Price**	**Price Per Year**
5.21.9.1	5 days x	$_____/Day	$_____

YEAR _____

MAKE _____

MODEL _____

5.21.10 Dump Truck, Single Axle, minimum 6 cubic yard capacity. Equipment must be provided within one (1) day after notice.

	Units	**Unit Price**	**Price Per Year**
5.21.10.1	5 days x	$_____/Day	$_____

YEAR _____

MAKE _____

MODEL _____

5.21.11 Dump Truck, Tandem Axle, minimum 12 cubic yard capacity. Equipment must be provided within one (1) day after notice.

	Units	**Unit Price**	**Price Per Year**
5.21.11.1	5 days x	$_____/Day	$_____

YEAR _____

MAKE _____

MODEL _____

5.21.12 Dump Truck, Tri-axle, minimum 15 cubic yard capacity. Equipment must be provided within one (1) day after notice.

	Units	**Unit Price**	**Price Per Year**
5.21.12.1	5 days x	$_____/Day	$_____

YEAR _____

MAKE _____

MODEL _____

5.21.13 Fork-lift Truck (Outdoor Type), gasoline powered; 8000 LB. G.V.W., 8000 lb. min lift capacity.

	Units	**Unit Price**	**Price Per Year**
5.21.13.1	5 days x	$_____/Day	$_____

YEAR _____

MAKE _____

MODEL _____

5.21.14 Bulldozer, medium, crawler type; low ground pressure. Provide rear hydraulic connections when required. Equipment must be delivered with two (2) days after notice. Reference Model Cat. D-4 LGP or equal.

	Units	**Unit Price**	**Price Per Year**
5.21.14.1	10 days x	$_____/Day	$_____

YEAR _____

MAKE _____

MODEL _____

5.21.15 Fuel Truck, 2800 Gal capacity, minimum 50 ft. of discharge hose with nozzle. Equipment must be provided within one (1) day after notice.

	Units	**Unit Price**	**Price Per Year**
5.21.15.1	5 days x	$_____/Day	$_____

YEAR _____

MAKE _____

MODEL _____

5.21.16 Self-propelled Aerial Work Platform (Man Lift) Working height at 65 ft., Capacity 500 lbs. Equipment must be provided within one (1) day after notice.

	Units	**Unit Price**	**Price Per Year**
5.21.16.1	10 days x	$_____/Day	$_____

YEAR _____

MAKE _____

MODEL _____

5.21.17 Self-propelled Aerial Work Platform (Man Lift) Working height at 45 ft., Capacity 500 lbs. Equipment must be provided within one (1) day after notice.

	Units	**Unit Price**	**Price Per Year**
5.21.17.1	10 days x	$_____/Day	$_____

YEAR _____

MAKE _____

MODEL _____

5.21.18 Boom Truck, 20 ft. minimum knuckle boom, including grapple. Prentis 120E or equal. Equipment must be provided within 12 hours after notice.

	Units	**Unit Price**	**Price Per Year**
5.21.18.1	20 days x	$_____/Day	$_____

YEAR _____

MAKE _____

MODEL _____

5.21.19 Bucket Truck, 35 ft. platform height on telescopic or articulating aerial lift. Equipment must be provided within 12 hours after notice.

	Units	**Unit Price**	**Price Per Year**
5.21.19.1	5 days x	$_____/Day	$_____

YEAR _____

MAKE _____

MODEL _____

5.21.20 Truck mounted hydraulic excavator, minimum 0.6 cu. yd. bucket. Reference Model, Gradall XL4100 or equal. Equipment must be provided within one (1) day after notice.

	Units	**Unit Price**	**Price Per Year**
5.21.20.1	5 days x	$_____/Day	$_____

YEAR _____

MAKE _____

MODEL _____

5.21.21 Standard crawler loader, minimum 3.5 cu. yd. bucket. Reference Model, Cat. 973 or equal. Equipment must be provided within one (1) day after notice.

	Units	**Unit Price**	**Price Per Year**
5.21.21.1	10 days x	$_____/Day	$_____

YEAR _____

MAKE _____

MODEL _____

5.21.22 Roller, minimum 60” wide, self-propelled, double drum, smooth vibratory. Reference Model, IR DD90 or equal. Equipment must be provided within one (1) day after notice.

	Units	**Unit Price**	**Price Per Year**
5.21.22.1	5 days x	$_____/Day	$_____

YEAR _____

MAKE _____

MODEL _____

5.21.23 Trailer mounted brush chipper. Minimum 16” chipping capacity. Reference Model, Bandit 1690 or equal. Equipment must be provided within one (1) day after notice.

	Units	**Unit Price**	**Price Per Year**
5.21.23.1	10 days x	$_____/Day	$_____

YEAR _____

MAKE _____

MODEL _____

5.21.24 Crawlre mounted milling machine (pavement profiler), 6’ wode minimum cutting width. Include cutting teeth replacement. Equipment must be provided within one (1) day after notice.

	Units	**Unit Price**	**Price Per Year**
5.21.24.1	5 days x	$_____/Day	$_____

YEAR _____

MAKE _____

MODEL _____

5.21.25 Rubber tire loader backhoe, 4WD, 1 cu.yd. minimum loader bucket, extendable backhoe. Reference Model, Case 580 or equal. Equipment must be provided within one (1) day after notice.

	Units	**Unit Price**	**Price Per Year**
5.21.25.1	10 days x	$_____/Day	$_____

YEAR _____

MAKE _____

MODEL _____

5.21.26 Office Trailer 8 ft x 20 ft; delivered with steps and installation at site; desk at each end of trailer; electric baseboard heat (60 Amps at 220 Volt service).

	Units	**Unit Price**	**Price Per Year**
5.21.26.1	26 weeks x	$_____/Week	$_____

5.21.27 Portable Compressed Natural Gas Station

	Units	**Unit Price**	**Price Per Year**
5.21.27.1	26 weeks x	$_____/Week	$_____

5.21.28 SCHEDULE T - TOTAL COST

		Price Per Year
5.21.28.1	**SCHEDULE T - TOTAL COST**	**$**_____

5.22 SCHEDULE U - ROOFING

Items below shall include investigation time and all labor, Material, equipment, accessories, and appurtenances, compete and in-place.

		Units	Unit Price	Price Per Year
5.22.1	Semi Annual Inspection and Report	2 Inspections x	$_____/Insp.	$_____

Items below shall include investigation time, all labor, material, equipment, accessories and all appurtenances, complete, in-place.

5.22.2 Patching

		Units	Unit Price	Price Per Year
5.22.2.1	Build-up roofing (cold)	1000 S.F. x	$_____/S.F.	$_____
5.22.2.2	Build-up roofing (hot)	1000 S.F. x	$_____/S.F.	$_____
5.22.2.3	Build-up Blister Repair (up to 25 sq. ft.)	10 Each. x	$_____/Each	$_____
5.22.2.4	EPDM Patching	1000 S.F. x	$_____/S.F.	$_____
5.22.2.5	EPDM Blister Repair (up to 25 sq. ft.)	10 Each. X	$_____/Each	$_____

5.22.3 Flashing

		Units	Unit Price	Price Per Year
5.22.3.1	Copper	50 L.F. x	$_____/L.F.	$_____
5.22.3.2	Stainless Steel	200 L.F. x	$_____/L.F.	$_____
5.22.3.3	Aluminum	100 L.F. x	$_____/L.F.	$_____

5.22.4 Coping-Cap Block-Parapet Wall

		Units	Unit Price	Price Per Year
5.22.4.1	Coping-Stainless Steel	100 L.F. x	$_____/L.F.	$_____
5.22.4.2	Coping-Copper	50 L.F. x	$_____/L.F.	$_____
5.22.4.3	Coping-Aluminum	100 L.F. x	$_____/L.F.	$_____
5.22.4.4	Cap Block-Stainless Steel	50 L.F. x	$_____/L.F.	$_____
5.22.4.5	Cap Block-Concrete	50 L.F. x	$_____/L.F.	$_____
5.22.4.6	Parapet Wall-Concrete	30 L.F. x	$_____/L.F.	$_____
5.22.4.7	Parapet Wall-Concrete Block	30 L.F. x	$_____/L.F.	$_____

5.22.5 Miscellaneous

		Units	Unit Price	Price Per Year
5.22.5.1	Neoprene 60 mil thick	250 S.F. x	$_____/S.F.	$_____
5.22.5.2	Elastomeric Sheeting Adhered .045	5000 S.F. x	$_____/S.F.	$_____
5.22.5.3	Elastomeric Sheeting Adhered .060	5000 S.F. x	$_____/S.F.	$_____
5.22.5.4	Temporary Leak Stoppage	1000 S.F. x	$_____/S.F.	$_____

5.22.6 SCHEDULE U- TOTAL COST

	Price Per Year
5.22.6.1 SCHEDULE U - TOTAL COST	**$**_____

5.23 SCHEDULE V - LANDSCAPING SERVICES

		Per	Price Per Year
5.23.1	Service Charge Allowance $500,000	X (1 + ____% mark up) (Not to exceed 15%, Exclusive of Labor Rates included in 5.27)	$_____

		Price Per Month	Price Per Year
5.23.2	Interior Facilities - Plant Care and Maintenance	$_____. X 12	$_____

5.23.3 SCHEDULE V - TOTAL COST

Price Per Year

5.23.3.1 **SCHEDULE V - TOTAL COST** **$**_____

5.24 TOTAL BASE BID COST

Amount Per Year

5.24.1 Manager and Supervision (per 5.1.8) $_____

5.24.2 Schedule A - Elevator/Escalator/Moving Walkways $_____

5.24.3 Schedule B - Baggage Conveyor System $_____

5.24.4 Schedule C - Passenger Loading Bridges And Gate Systems $_____

5.24.5 Schedule D - Passenger Transfer Vehicles $_____

5.24.6 Schedule E - Storm Water And Sanitary Drainage $_____

5.24.7 Schedule F - Fire Protection Systems $_____

5.24.8 Schedule G - HVAC Maintenance $_____

5.24.9 Schedule H - Facility Automated Control Systems $_____

5.24.10 Schedule I - Uninterruptible Power Supply $_____

5.24.11 Schedule J – Switchgear $_____

5.24.12 Schedule K - High Voltage Cable Repair $_____

5.24.13 Schedule L – Fire Alarm Systems $_____

5.24.14 Schedule M - Fencing And Guiderails $_____

5.24.15 Schedule N - Bird Control $_____

5.24.16 Schedule O - Airfield Support Services $_____

5.24.17 Schedule P - Building Mounted Signage $_____

5.24.18 Schedule Q - Glass, Plastic Replacement $_____

5.24.19 Schedule R - Interior Cosmetic Repairs and Exterior Finishes Restoration/Maintenance $_____

5.24.20 Schedule S - Airport Exhibitions & Decorations $_____

5.24.21 Schedule T - Specialized Equipment Services $_____

5.24.22 Schedule U – Roofing $_____

5.24.23 Schedule V – Landscaping $_____

5.24.24 **BASE BID - TOTAL COST** **$_____**

5.25 CONTRACT EXTRAS - LABOR
(Rates from paragraph 5.27)

Amount

5.25.1 Elevator/Escalator - Contract Extras

5.25.1.1 Mechanic Labor Rate – Straight Time X 200 Hours/Year $_____
5.25.1.2 Electrician Labor Rate – Straight Time X 200 Hours/Year $_____
5.25.1.3 Technician Labor Rate – Straight Time X 200 Hours/Year $_____
5.25.1.4 Helper Labor Rate – Straight Time X 200 Hours/Year $_____

5.25.2 Baggage Conveyor System – Contract Extras

5.25.2.1 Mechanic Labor Rate – Straight Time X 100 Hours/Year $_____
5.25.2.2 Electrician Labor Rate – Straight Time X 100 Hours/Year $_____

5.25.3 Passenger Loading Bridges – Contract Extras

5.25.3.1 Mechanic Labor Rate – Straight Time X 100Hours/Year $_____
5.25.3.2 Electrician Labor Rate – Straight Time X 100 Hours/Year $_____

5.25.4 Passenger Transfer Vehicles

5.25.4.1 Mechanic Labor Rate – Straight Time X 100 Hours/Year $_____
5.25.4.2 Operator Labor Rate – Straight Time X 100 Hours/Year $_____

5.25.5 Storm Water And Sanitary Drainage - Contract Extras

5.25.5.1 Laborer Labor Rate – Straight Time X 100 Hours/Year $_____
5.25.5.2 Sanitizing Technician

Labor Rate- Straight
Time X 100 Hours/Year $_____

5.25.6 Fire Protection Systems - Contract Extras

5.25.6.1 Technician Labor Rate –
Straight Time X 200 Hours/Year $_____

5.25.6.2 Pipe Fitter Labor Rate –
Straight Time X 200 Hours/Year $_____

5.25.7 HVAC Maintenance – Contract Extras

5.25.7.1 Technician Labor Rate –
Straight Time X 100 Hours/Year $_____

5.25.7.2 HVAC Equipment Cleaner
Labor Rate - Straight
Time X 100 Hours/Year $_____

5.25.8 Uninterruptible Power Supply - Contract Extras

5.25.8.1 Electrician Labor Rate –
Straight Time X 100 Hours/Year $_____

5.25.9 Switchgear - Contract Extras

5.25.9.1 Electrician Labor Rate –
Straight Time X 100 Hours/Year $_____

5.25.10 High Voltage Cable Repair –
Contract Extras

5.25.10.1 Electrician Labor Rate –
Straight Time X 100 Hours/Year $_____

5.25.11 Fire Alarm System – Contract Extras

5.25.11.1 Technician Labor Rate –
Straight Time X 100 Hours/Year $_____

5.25.12 Fencing and Guiderails – Contract Extras

5.25.12.1 Mechanic Labor Rate –
Straight Time X 200 Hours/Year $_____

5.25.13 Bird Control - Contract Extras

5.25.13.1 Laborer Labor Rates –
Straight Time X 100 Hours/Year $_____

5.25.14 Airfield Support Services – Contract Extras

5.25.14.1 Foreman Labor Rates – Straight Time X 100 Hours/Year $_____

5.25.14.2 Laborer Labor Rates – Straight Time X 100Hours/Year $_____

5.25.14.3 Arborist Labor Rates – Straight Time X 100 Hours/Year $_____

5.25.14.4 Plant Technician Labor Rates – Straight Time X 100 Hours/Year $_____

5.25.14.5 Gardener Labor Rates – Straight Time X 100 Hours/Year $_____

5.25.14.6 Engineering Technician – Straight Time X 100 Hours/Year $_____

5.25.14.7 Teamster Class 2 – Straight Time X 100 Hours/Year $_____

5.25.14.8 Operating Engineer 2A – Straight Time X 100 Hours/Year $_____

5.25.14.9 Mechanic – Straight Time X 100 Hours/Year $_____

5.25.15 Building Mounted Signage – Contract Extras

5.25.15.1 Mechanic Labor Rates – Straight Time X 100 Hours/Year $_____

5.25.16 Glass, Plastic Replacement – Contract Extras

5.25.16.1 Laborer Labor Rates – Straight Time X 100 Hours/Year $_____

5.25.16.2 Glazier Labor Rates – Straight Time X 100 Hours/Year $_____

5.25.16.3 Mechanic Labor Rates – Straight Time X 100 Hours/Year $_____

5.25.17 Interior Cosmetic Repairs – Contract Extras

5.25.17.1 Laborer Labor Rates – Straight Time X 100 Hours/Year $_____

5.25.17.2 Carpenter Labor Rates – Straight Time X 100 Hours/Year $_____

5.25.17.3 Electrician Labor Rates – Straight Time X 100 Hours/Year $_____

5.25.18 Airport Decorations Services – Contract Extras

5.25.18.1 Laborer Labor Rates – Straight Time X 100 Hours/Year $_____

5.25.19 Specialized Equipment Services – Contract Extras

5.25.19.1 Mechanic Labor Rates –
Straight Time X 100 Hours/Year $_____

5.25.20 Roofing - Contract Extras

5.25.20.1 Mechanic Labor Rates –
Straight Time X 100 Hours/Year $_____

5.25.21 Landscaping Services – Contract Extras

5.25.21.1 Foreman Labor Rates –
Straight Time X 200 Hours/Year $_____
5.25.21.2 Gardener Labor Rates –
Straight Time X 200 Hours/Year $_____
5.25.21.3 Laborer Labor Rates –
Straight Time X 200 Hours/Year $_____
5.25.21.4 Helper Labor Rates –
Straight Time X 200 Hours/Year $_____

5.25.22 TOTAL CONTRACT EXTRAS – LABOR $_____

5.26 CONTRACT EXTRAS - MATERIALS, SUPPLIES, EQUIPMENT AND SERVICES

Extra material, supply, equipment and services costs for all systems as contract extras:

Amount

5.26.1 **TOTAL CONTRACT EXTRAS - MATERIALS, SUPPLIES, EQUIPMENT AND SERVICES (Not to exceed 15%) (1 + ____%) X $500,000** **$_____**

5.27 LABOR RATES

Airport Holidays are defined as: New Years Day, Martin Luther King Jr. Day, Presidents' Day, Good Friday, Labor Day, July 4th, Memorial Day, Columbus Day, Thanksgiving and Christmas.

LABOR RATES –

5.27.1 Schedule A -Elevator/Escalator/Moving Walkways

			Amount
5.27.1.1	Mechanic:		
5.27.1.1.1		Straight Time	$_____/hr
5.27.1.1.2		Overtime	$_____/hr
5.27.1.1.3		Sundays and Holidays	$_____/hr
5.27.1.2	Electrician:		
5.27.1.2.1		Straight Time	$_____/hr
5.27.1.2.2		Overtime	$_____/hr
5.27.1.2.3		Sundays and Holidays	
5.27.1.3	Technician:		
5.27.1.3.1		Straight Time	$_____/hr
5.27.1.3.2		Overtime	$_____/hr
5.27.1.3.3		Sundays and Holidays	
5.27.1.4	Helper:		
5.27.1.4.1		Straight Time	$_____/ hr
5.25.1.4.2		Overtime	$_____/ hr
5.25.1.4.3		Sundays and Holidays	$_____/ hr

5.27.2 Schedule B - Baggage Conveyor System

			Amount
5.27.2.1	Mechanic:		
5.27.2.1.1		Straight Time	$_____/hr
5.27.2.1.2		Overtime	$_____/hr
5.27.2.1.3		Sundays and Holidays	$_____/hr
5.27.2.2	Electrician:		
5.27.2.2.1		Straight Time	$_____/hr
5.27.2.2.2		Overtime	$_____/hr
5.27.2.2.3		Sundays and Holidays	$_____/hr

5.27.3 Schedule C - Passenger Loading Bridges And Gate Systems

			Amount
5.27.3.1	Mechanic:		
5.27.3.1.1		Straight Time	$_____/hr
5.27.3.1.2		Overtime	$_____/hr
5.27.3.1.3		Sundays and Holidays	$_____/hr
5.27.3.2	Electrician:		
5.27.3.2.1		Straight Time	$_____/hr
5.27.3.2.2		Overtime	$_____/hr
5.27.3.2.3		Sundays and Holidays	$_____/hr

5.27.4 Schedule D - Passenger Transfer Vehicles

			Amount
5.27.4.1	Mechanic:		
5.27.4.1.1		Straight Time	$_____/hr
5.27.4.1.2		Overtime	$_____/hr
5.27.4.1.3		Sundays and Holidays	$_____/hr
5.27.4.2	Operator:		
5.27.4.2.1		Straight Time	$_____/hr
5.27.4.2.2		Overtime	$_____/hr
5.27.4.2.3		Sundays and Holidays	$_____/hr

5.27.5 Schedule E - Storm Water And Sanitary Drainage

			Amount
5.27.5.1	Laborer:		
5.27.5.1.1	Straight Time		$_____/hr
5.27.5.1.2		Overtime	$_____/hr
5.27.5.1.3		Sundays and Holidays	$_____/hr
5.27.5.2	Sanitizing Technician:		
5.27.5.2.1		Straight Time	$_____/hr
5.27.5.2.2		Overtime	$_____/hr
5.27.5.2.3		Sundays and Holidays	$_____/hr

5.27.6 Schedule F - Fire Protection Systems

			Amount
5.27.6.1	Technician:		
5.27.6.1.1		Straight Time	$_____/hr
5.27.6.1.2		Overtime	$_____/hr
5.27.6.1.3		Sundays and Holidays	$_____/hr
5.27.6.2	Pipe Fitter:		
5.27.6.2.1		Straight Time	$_____/hr
5.27.6.2.2		Overtime	$_____/hr
5.27.6.2.3		Sundays and Holidays	$_____/hr

5.27.7 Schedule G - HVAC Systems

			Amount
5.27.7.1	Technician:		
5.27.7.1.1		Straight Time	$_____/hr
5.27.7.1.2		Overtime	$_____/hr
5.27.7.1.3		Sundays and Holidays	$_____/hr
5.27.7.2	HVAC Equipment Cleaner:		
5.27.7.2.1		Straight Time	$_____/hr
5.27.7.2.2		Overtime	$_____/hr
5.27.7.2.3		Sundays and Holidays	$_____/hr

5.27.8 Schedule I - Uninterruptible Power Supply

			Amount
5.27.8.1	Electrician:		
5.27.8.1.1		Straight Time	$_____/hr
5.27.8.1.2		Overtime	$_____/hr
5.27.8.1.3		Sundays and Holidays	$_____/hr

5.27.9 Schedule J -Switchgear

			Amount
5.27.9.1	Electrician:		
5.27.9.1.1		Straight Time	$_____/hr
5.27.9.1.2		Overtime	$_____/hr
5.27.9.1.3		Sundays and Holidays	$_____/hr

5.27.10 Schedule K -High Voltage Cable Repair

			Amount
5.27.10.1	Electrician:		
5.27.10.1.1		Straight Time	$_____/hr
5.27.10.1.2		Overtime	$_____/hr
5.27.10.1.3		Sundays and Holidays	$_____/hr

5.27.11 Schedule L - Fire Alarm Systems

Note: Wage Rate for Alarm Technician shall be same as Journeyman Electrician.

			Amount
5.27.11.1	Technician:		
5.27.11.1.1		Straight Time	$_____/hr
5.27.11.1.2		Overtime	$_____/hr
5.27.11.1.3		Sundays and Holidays	$_____/hr

5.27.12 Schedule M - Fencing And Guiderails

			Amount
5.27.12.1	Mechanic:		
5.27.12.1.1		Straight Time	$_____/hr
5.27.12.1.2		Overtime	$_____/hr
5.27.12.1.3		Sundays and Holidays	$_____/hr

5.27.13 Schedule N - Bird Control

			Amount
5.27.13.1	Laborer:		
5.27.13.1.1		Straight Time	$_____/hr
5.27.13.1.2		Overtime	$_____/hr
5.27.13.1.3		Sundays and Holidays	$_____/hr

5.27.14 Schedule O - Airfield Support Services

			Amount
5.27.14.1	Mechanic:		
5.27.14.1.1		Straight Time	$_____/hr
5.27.14.1.2		Overtime	$_____/hr
5.27.14.1.3		Sundays and Holidays	$_____/hr
5.27.14.2	Foreman:		
5.27.14.2.1		Straight Time	$_____/hr
5.27.14.2.2		Overtime	$_____/hr
5.27.14.2.3		Sundays and Holidays	$_____/hr
5.27.14.3	Arborist:		
5.27.14.3.1		Straight Time	$_____/hr
5.27.14.3.2		Overtime	$_____/hr
5.27.14.3.3		Sundays and Holidays	$_____/hr
5.27.14.4	Plant Technician:		
5.27.14.4.1		Straight Time	$_____/hr
5.27.14.4.2		Overtime	$_____/hr
5.27.14.4.3		Sundays and Holidays	$_____/hr
5.27.14.5	Gardener:		
5.27.14.5.1		Straight Time	$_____/hr
5.27.14.5.2		Overtime	$_____/hr
5.27.14.5.3		Sundays and Holidays	$_____/hr
5.27.14.6	Laborer:		
5.27.14.6.1		Straight Time	$_____/hr
5.27.14.6.2		Overtime	$_____/hr
5.27.14.6.3		Sundays and Holidays	$_____/hr
5.27.14.7	Engineering Technician:		
5.27.14.7.1		Straight Time	$_____/hr
5.27.14.7.2		Overtime	$_____/hr
5.27.14.7.3		Sundays and Holidays	$_____/hr
5.27.14.8	Operating Engineer 2A:		
5.27.14.8.1		Straight Time	$_____/hr
5.27.14.8.2		Overtime	$_____/hr
5.27.14.8.3		Sundays and Holidays	$_____/hr
5.27.14.9	Teamster Class 2:		
5.27.14.9.1		Straight Time	$_____/hr
5.27.14.9.2		Overtime	$_____/hr
5.27.14.9.3		Sundays and Holidays	$_____/hr

5.27.15 Schedule P - Building Mounted Signage

			Amount
5.27.15.1	Mechanic:		
	5.27.15.1.1	Straight Time	$_____/hr
	5.27.15.1.2	Overtime	$_____/hr
	5.27.15.1.3	Sundays and Holidays	$_____/hr

5.27.16 Schedule Q - Glass, Plastic Replacement

			Amount
5.27.16.1	Laborer:		
	5.27.16.1.1	Straight Time	$_____/hr
	5.27.16.1.2	Overtime	$_____/hr
	5.27.16.1.3	Sundays and Holidays	$_____/hr
5.27.16.2	Glazier:		
	5.27.16.2.1	Straight Time	$_____/hr
	5.27.16.2.2	Overtime	$_____/hr
	5.27.16.2.3	Sundays and Holidays	$_____/hr
5.27.16.3	Mechanic:		
	5.27.16.3.1	Straight Time	$_____/hr
	5.27.16.3.2	Overtime	$_____/hr
	5.27.16.3.3	Sundays and Holidays	$_____/hr

5.27.17 Schedule R - Interior Cosmetic Repairs And Exterior Finishes Restoration/Maintenance

			Amount
5.27.17.1	Laborer:		
	5.27.17.1.1	Straight Time	$_____/hr
	5.27.17.1.2	Overtime	$_____/hr
	5.27.17.1.3	Sundays and Holidays	$_____/hr
5.27.17.2	Carpenter:		
	5.27.17.2.1	Straight Time	$_____/hr
	5.27.17.2.2	Overtime	$_____/hr
	5.27.17.2.3	Sundays and Holidays	$_____/hr
5.27.17.3	Electrician:		
	5.27.17.3.1	Straight Time	$_____/hr
	5.27.17.3.2	Overtime	$_____/hr
	5.27.17.3.3	Sundays and Holidays	$_____/hr

5.27.18 Schedule S- Airport Exhibitions and Decorations

			Amount
5.27.18.1	Laborer:		
	5.27.18.1.1	Straight Time	$_____/hr
	5.27.18.1.2	Overtime	$_____/hr
	5.27.18.1.3	Sundays and Holidays	$_____/hr

5.27.19 Schedule T - Specialized Equipment Services

Amount

5.27.19.1	Mechanic:		
5.27.19.1.1	Straight Time	$_____/hr	
5.27.19.1.2	Overtime	$_____/hr	
5.27.19.1.3	Sundays and Holidays	$_____/hr	

5.27.20 Schedule U - Roofing

			Amount
5.27.20.1	Mechanic:		
5.27.20.1.1	Straight Time	$_____/hr	
5.27.20.1.2	Overtime	$_____/hr	
5.27.20.1.3	Sundays and Holidays	$_____/hr	

5.27.21 Schedule V - Landcaping

			Amount
5.27.21.1	Foreman:		
5.27.21.1.1	Straight Time	$_____/hr	
5.27.21.1.2	Overtime	$_____/hr	
5.27.21.1.3	Sundays and Holidays	$_____/hr	
5.27.21.2	Gardener:		
5.27.21.2.1	Straight Time	$_____/hr	
5.27.21.2.2	Overtime	$_____/hr	
5.27.21.2.3	Sundays and Holidays	$_____/hr	
5.27.21.3	Laborer:		
5.27.21.3.1	Straight Time	$_____/hr	
5.27.21.3.2	Overtime	$_____/hr	
5.27.21.3.3	Sundays and Holidays	$_____/hr	
5.27.21.4	Helper:		
5.27.21.4.1	Straight Time	$_____/hr	
5.27.21.4.2	Overtime	$_____/hr	
5.27.21.4.3	Sundays and Holidays	$_____/hr	

5.28 TOTAL BID SUMMARY

		Amount per Year
5.28.1	**TOTAL BASE BID – TOTAL COST**	$_____
5.28.2	**TOTAL CONTRACT EXTRAS – LABOR**	$_____
5.28.3	**TOTAL CONTRACT EXTRAS - MATERIALS, SUPPLIES, EQUIPMENT AND SERVICES**	$_____
5.28.4	TOTAL BID	$_____

ATTACHMENT A

CITY OF PHILADELPHIA
PROCUREMENT DEPARTMENT

Bid Number U5Z49550 **Opening Date**_____

CERTIFICATION OF SITE VISITS
(To be submitted with bid package)

This form MUST be signed and dated by a representative of the Department of Commerce, Division of Aviation (or their designee), to certify that the vendor has inspected the area.

FAILURE TO VISIT THE SITE MAY DISQUALIFY YOUR BID

VENDOR:

NAME:_____

ADDRESS:_____

_____

PHONE#:_____

FAX# :_____

DEPARTMENT:_____

NAME: _____

SIGNATURE:_____

DATE:_____

ATTCHMENT B

CITY OF PHILADELPHIA

Prevailing Wage Rate Schedule

FACILITY MAINTENANCE FOR BOTH INTERNATIONAL AND NORTHEAST AIRPORTS FACILITIES

See attached Schedule for appropriate Classifications, Base Rates and Fringe Benefits

If a lower job classification performs the work of the higher classification, the City of Philadelphia will pay the lower classification and their appropriate rate BUT the vendor is responsible for paying the person the higher rate.

Notes of Interest:

(1) On all overtime hours, fringe benefits will be paid at the straight (base) rate only.

(2) Contractors are advised to contact the Procurement Department with any questions regarding job classifications, prevailing wage rates, fringe benefits, and area working conditions:

Procurement Department

Municipal Services Building
1401 J.F.K. Boulevard - 1st Floor
Philadelphia, PA 19102-1670

Telephone Numbers: (215)686-4755
(215)686-4756
Fax Number: (215)686-4727

MEMORANDUM

TO: **Municipal Operating Departments and Awarding Agencies**

FROM: **Perry DiVirgilio, Director, Fair Labor Standards**

DATE: **Effective: June 5, 2006**

RE: **Updated Prevailing Wage Schedule for the City of Philadelphia**

The Philadelphia Labor Standards Unit has issued an updated prevailing wage rate schedule for construction projects done on behalf of the City of Philadelphia. Enclosed herein you will find the two (2) decisions, which comprise the updated prevailing wage schedule. They are as the follows:

I. Building Construction
II. Heavy and Highway Construction

Please direct any questions or concerns regarding the prevailing wage rate schedule to my attention:

Philadelphia Labor Standards Unit
Municipal Services Bldg., 6th Floor Room 630
1401 John F. Kennedy Blvd.
Philadelphia, PA 19102-1670
Telephone Numbers: (215) 686-2132

Fax Number: (215) 686-2116

Thank you for your cooperation.

PREVAILING WAGE RATE SCHEDULE
FOR CONSTRUCTION WORK DONE ON BEHALF OF CITY OF PHILADELPHIA
INCLUDING REPAIR, ALTERATION, AND REMODELING WORK

I. BUILDING CONSTRUCTION

A. Job Classification and Wage Rates

	Basic Hourly Rate	Fringe Benefits
ASBESTOS WORKER		
Journeyman	$ 34.11	$21.55
Handler Level 1	21.05	14.14
Handler Level 2	29.58	14.14
BOILERMAKER	33.01	18.06
BRICKLAYER	32.06	17.35
CARPENTER	33.75	17.90
CEMENT MASON	28.95	20.11
DRY WALL FINISHER	31.00	16.89
ELECTRICIAN	41.91	18.66
ELEVATOR CONSTRUCTOR		
Journeyman	39.695	12.02
Helper	27.79	12.02
Probationary Helper	19.85	12.02
GLAZIER	31.65	19.15
IRONWORKER		
Structural & Ornamental	37.90	19.35
Reinforcing (Rodsetter)	31.10	18.75
Rigger & Machinery Mover	29.77	17.58
LABORER		
Journeyman Class One	21.75	18.60
Journeyman Class Two	21.85	18.60
Journeyman Class Three	21.90	18.60
Journeyman Class Four	22.05	18.60
Journeyman Class Five	22.15	18.60
Journeyman Class Six	21.89	18.60
Journeyman Class Seven	23.00	18.60
Journeyman Class Eight	23.05	18.60
Journeyman Class Nine	23.15	18.60
Journeyman Class Ten	23.30	18.60
Journeyman Class Eleven	23.55	18.60
Lather & Plaster	22.42	18.10

Prevailing Wage Schedule (Effective 06/05/06)
Building Construction (cont'd)

LABORER: ASBESTOS ABATEMENT, LEAD ABATEMENT, TOXIC WASTE HANDLING, HAZARDOUS WASTE HANDLING		
Master Abatement Technician	23.87	18.53
Apprentice Level 3 (Asbestos)	18.97	15.88
Apprentice Level 2 (Asbestos)	16.90	15.88
Apprentice Level 1 (Asbestos)	14.97	15.88
LANDSCAPE LABORER		
Class I	17.13	16.87
Class II	17.88	16.87
LATHER	31.75	16.56
LINE CONSTRUCTION		
Lineman	39.27	15.96
WinchTruck Operator	27.49	12.83
Truck Driver	25.53	12.32
Groundman	23.56	11.79
Watch/Flag Person	16.79	10.00
MARBLE SETTER	32.12	17.08
MARBLE FINISHER	25.65	16.70
MILLWRIGHT	30.85	18.01
PAINTER		
Brush & Roller	29.50	16.40
Spray, Steel, & Swing	30.75	16.40
Bridges	36.54	16.40
PILEDRIVERMAN	31.60	20.75
PLASTERER	30.85	17.40
PLUMBER	38.93	20.01
POINTER, CAULKER, & CLEANER	26.52	12.18
POWER EQUIPMENT OPERATOR		
Group One	32.90	18.46
Group One A	35.90	19.35
Group Two	32.65	18.39
Group Two A	35.66	19.27
Group Three	29.18	16.57
Group Four	28.88	16.48
Group Five	27.15	15.98
Group Six	26.16	15.69
Group Seven A	39.48	21.30
Group Seven B	37.18	21.22

TOXIC/HAZARDOUS WASTE REMOVAL
Add 20 percent to basic hourly rate for all classifications

Prevailing Wage Schedule (Effective 06/05/06)
Building Construction (cont'd)

ROOFER	**27.00**	**19.10**
Shingle Slate & Tile	**21.25**	**11.27**
SHEET METAL WORKER	**34.48**	**26.35**
SOFT FLOOR LAYER (Resilient Floor)	**33.76**	**18.42**
SPRINKLER FITTER	**41.22**	**15.45**
STEAM FITTER	**37.09**	**22.07**
STONE MASON	**32.12**	**17.08**
TERRAZZO MECHANIC	**33.22**	**17.08**
TERRAZZO FINISHER	**29.02**	**16.20**
TILE SETTER	**32.80**	**17.43**
TILE FINISHER	**26.65**	**16.66**
TRUCK DRIVER		
Journeyman Class I	**22.50**	**11.3725**
Journeyman Class II	**22.60**	**11.3725**
Journeyman Class III	**22.85**	**11.3725**

WELDER - Rate for craft to which welding work is incidental.

B. Job Classification Definitions: Building Construction

1. Laborer Classifications:

Class One: Strip concrete, dismantle concrete, load, unload, handle and/or transport reinforced steel and steel mesh, carry lumber, handle miscellaneous building materials, operate jack hammers, use paving breakers and other pneumatic tools, build scaffolds, perform raking, handle asphalt, perform spading and concrete pit work, perform grading, perform form pinning or shorting, perform demolition work with exception of burners, lay conduits, lay ducts, perform sheating or lagging, lay non-metallic pipe, perform caulking.

Class Two: Mason Tender, Power Buggies, Burners on Demolition.

Class Three: Wagon drill operator (single)

Class Four: Powderman, wagon drill operator (multiple), perform circular caissons excavations, caisson groundman, perform underpinning excavation, perform laborers'work at depth of eight (8) feet or below.

Class Five: Caisson bottom worker.

Class Six: Yard worker.

Class Seven: Trackmen, Brakemen, Groutmen, Bottom Shaft Men, All Other Men in Free Air Tunnels.

Class Eight: Caisson Foreman

Class Nine: Miner Helper, Form Setters.

Class Ten: Miners Bore Driver, Blasters, Drillers, Pneumatic Shield Operator.

Class Eleven: Welders & Burners.

Landscape Laborers:
Class I: Landscape laborer
Class II: Farm tractor driver, hydro seeder, mulched nozzle worker, backhoe operator, bulldozer crawler type loader, tree crane operator.

Laborer - Lather and Plasterer: Wheel and/or hod carry any lather and plaster materials used by lathering and plastering contractors' build scaffolds; build runways; perform clean-up and removal of debris as covered by lathering and plastering contractor's contract; deliver any material used by lathering and plastering contractor, from curbside to building and back, unless motor vehicles are permitted to enter building with required materials; all mortar designated for use by plasterer shall be carried via wheel barrow or hod; all plastering and fire proofing machines, as well as guns and mixers requiring the assistance of a worker other than plasterer operator, shall be manned by helper (tender).

2. Truck driver classifications
Class I: Helper, stake body truck operator (single axle, dumpster).
Class II: Dump truck operator, tandem truck operator, batch truck operator, semi-trailer truck operator, agitator-mixer truck operator, dump Crete type vehicle operator, asphalt distributor, farm tractor operator (when tractor used to transport materials), stake body truck (tandem) operator.
Class III: Euclid type; off highway equipment back truck operator; belly dump truck operator; double-hitched equipment trailer operator; straddle carrier (Ross) operator; low-bed trailer truck operator.

3. Power Equipment Operator Classifications - Building

Group One:
Handling steel and stone in connection with erection Cranes doing hook work
Any machines handling machinery
Cable spinning machine
Helicopters
Concrete Pumps (building)
Machines similar to above, including remote control equipment
**Toxic/Hazardous Waste Removal Rate-20 Per Cent Added to All Classifications

Group One A:
Handling steel and stone in connection with erection.
Cranes doing hook work
Any machines handling machinery
Concrete Pumps (Building)
High Rail/Burro Crane
Rail Loader (Winch Boom Type)

Group One (A): (cont'd)

All equipment in this group which previously received the hour in lieu of an oiler will receive Wage Group I(A). Equipment in this Wage Group that does not require an oiler.

Machines similar to above, including remote control equipment

Group Two:

All types of cranes
All types of backhoes
Cableways
Draglines
Keystones
All types of shovels
Derricks
Pavers 21E and over
Trenching machines
Trench shovels
Gradalls
Front- end Loaders
Boat Captain
Hoist with Two Towers
Building Hoists-double drum (unless used as a single drum)
Pippin type backhoes
Tandem scrapers
Tower type crane operation erecting dismantling jumping or jacking
Drills self-contained (Drillmaster type)
Fork lift (20ft. and over)
Motor Patrols (fine grade)
Batch Plant with Mixer
Carryalls, Scrapers, Tournapulls
Roller (High Grade Finishing)
Spreaders (Asphalt)
Bulldozers and Tractors
Mechanic-Welder
Conveyor Loaders (Euclid-Type Wheel)
Concrete Pumps (Heavy Highway)
Milling Machine
Bobcat
Side Boom

Group Two: (cont'd)

Directional Boring Machines
Vermeer Saw Type Machine (other than hand held)
Tractor Mounted Hydro Axe
Chipper with boom
All Autograde and concrete finishing machines
Bundle Pullers/Extractors (Tubular)
Machines similar to the above including remote control equipment
*Surcharge
**Toxic/Hazardous Waste Removal Rate-20 Per Cent Added to All Classifications

Group Two (A):

Crawler backhoes and Crawler gradalls over one (1) cubic yard factory rating
Hydraulic backhoes over one (1) cubic yard factory rating
Single person operation truck cranes 15 ton and over factory rating
Cherry picker type machinery and equipment 15 ton and over factory rating, etc.
Cranes doing hook work will be paid Wage Group I (A).
All equipment in this Group which previously received the hour in lieu of an oiler will receive Wage Group II (A) including concrete pumps (Heavy/Highway).
Machines similar to the above including remote control equipment
*Surcharge
**Toxic/Hazardous Waste Removal Rate-20 Per Cent Added to All Classifications

Group Three:

Asphalt Plant Engineers
Conveyors (except building conveyors)
Well Drillers
Forklift Trucks of all types
Ditch Witch (small trenchers)
Motor Patrols
Fine Grade machines
Rollers
Concrete Breaking Machines (Guillotine Only)
Stump Grinder
High or Low Pressure Boilers
Building Hoist (single drum)
Elevator Operator (New Construction)
Machines similar to above including remote control equipment
**Toxic/Hazardous Waste Removal Rate-20 Per Cent Added to All Classifications

Group Four:

Seamen Pulverizing Mixer
Form Line Graders
Farm Tractors
Road Finishing Machines
Concrete Spreaders (Heavy Highway)

Group Four: (cont'd)
Power Broom (self-contained)
Seed Spreader
Grease Truck
Machines similar to the above including remote control equipment
**Toxic/Hazardous Waste Removal Rate-20 Per Cent Added to All Classifications

Group Five:
Compressors
Pumps
Well pint pumps
Conveyors (Building)
Welding Machines
Heaters
Tireman, Power Equipment
Maintenance Engineers (Power Boats)
Miscellaneous Equipment
Operator
Elevator Operator (Renovations)
House Car
Machines similar to above including remote control equipment
**Toxic/Hazardous Waste Removal Rate-20 Per Cent Added to All Classifications

Group Six:
Fireman
Oilers and Deck Hands (Personnel Boats)/Grease Truck Helpers
*Surcharge
**Toxic/Hazardous Waste Removal Rate-20 Per Cent Added to All Classifications

Group Seven (A):
Handling steel and stone in connection with erection
Cranes doing hook work
Any machines handling machinery
Cable spinning machine
Helicopters
Concrete pumps (Building)
High Rail/Burro Crane
Rail Loader (Winch Boom Type)
Machines similar to above, including remote control equipment
**Toxic/Hazardous Waste Removal Rate-20 Per Cent Added to All Classifications

Group Seven B:
All types of cranes
All types of backhoes
Cableways
Conveyor Loader (Euclid-Type Wheel)

Group Seven B: (cont'd)

Drag Lines
Keystones
All types of shovels
Derricks
Pavers 21E and over
Trench shovels
Trenching machines
Gradalls
Front-end Loaders
Boat Captain
Hoist with two towers
Concrete Pumps (Heavy, Highway)
Building Hoists-double drum (unless used as a single drum)
Milling Machine
Mucking Machines in Tunnel
Pippin type backhoes
Bobcat
Tandem scrapers
Side Boom
Tower type crane–operation, erecting, dismantling,
Jumping or jacking
Directional Boring Machines
Vermeer Saw Type Machine (other that hand held)
Drills self-contained (Drillmaster type)
Fork Lift (20 ft & over)
Track or Mounted Hydro Axe
Motor Patrols (Fine Grade)
Chipper with boom
Batch Plant with Mixer
All autograde and concrete finishing machines
Carryalls, Scapers & Tournapulls
Rollers (High Grade Finishing)
Bundle Pullers/Extractors (Tubular)
Spreaders (Asphalt)
Bulldozers and Tractors
Mechanic – Welders
Production Switch Tamper
Ballast Regulators
Tie Replacer
Rail/Road Loader
Power Jack liner
Machines similar to above, including remote control equipment
**Toxic/Hazardous Waste Removal Rate-20 Per Cent Added to All Classifications

II. HEAVY AND HIGHWAY CONSTRUCTION

A. JOB CLASSIFICATION AND WAGE RATES

	Basic Hourly Rate	Fringe Benefits
CARPENTER	$34.15	$17.90
CEMENT MASON	27.70	20.09
ELECTRICIAN	41.91	18.66
IRONWORKERS		
Rigger & Machinery Mover	29.77	17.58
Structural & Ornamental	37.90	19.35
Reinforcing Steel Mesh, Rebar Work	31.10	18.75
LABORERS		
Group One	22.80	18.35
Group Two	22.90	18.35
Group Three	23.00	18.35
Group Four	17.60	18.35
Group Five	23.65	18.35
Group Six	23.70	18.35
Group Seven	23.55	18.35
Group Eight	23.30	18.35
Group Nine	23.15	18.35
Group Ten	23.30	18.35
Group Eleven	23.20	18.35
Group Twelve	24.90	18.35
Group Thirteen	26.93	18.35
Group Fourteen	23.05	18.35
LANDSCAPING LABORER		
Class I	17.23	16.17
Class II	17.88	16.17
LINE CONSTRUCTION		
Lineman	39.27	15.96
Winch Truck Operator	27.49	12.86
Truck Driver	25.53	12.32
Groundman	23.56	11.79
Watch/Flag Person	16.79	10.00
MILLWRIGHT	30.85	18.01
PAINTERS		
Brush & Roller	29.50	16.40
Spray, Steel & Swing	30.75	16.40
Bridges	36.54	16.40

POWER EQUIPMENT OPERATOR		
Group One	**32.90**	**17.96**
Group One A	**35.90**	**18.85**
Group Two	**32.65**	**17.89**
Group Two A	**35.66**	**18.77**
Group Three	**29.18**	**16.07**
Group Four	**28.88**	**15.98**
Group Five	**27.15**	**15.48**
Group Six	**26.16**	**15.19**
Group Seven A	**39.48**	**20.70**
Group Seven B	**39.18**	**20.62**
*****TOXIC/HAZARDOUS WASTE REMOVAL*****		
Add 20 percent to basic hourly rate for all classifications		
PILEDRIVERMAN	**31.60**	**20.75**
TRUCK DRIVER		
Class I	**22.35**	**11.3725**
Class II	**22.45**	**11.3725**
Class III	**22.70**	**11.3725**

B. Job Classification Definitions: Heavy and Highway Construction

1. Laborer Classifications:

Group One: Yard workers: (laborer, scale mixerman, burnerman, dustman, feeder).

Group Two: General laborer; Asphalt Shovelers; Sheeting, Shoring & Lagging – Laborer; Stone, Granite & Artificial Stone Setting Laborer; Hod Carriers; Scaffold Building; Relief Joint & Approach Slabs; Assembling & Placing Gabions; Pneumatic Tool Laborers; Concrete Forms & Stripping Laborers; Concrete Lumber Material Laborers; Steel & Steel Mesh (carrying & handling); Form Pinners; Mortar Mixers; Pouring & Placing Concrete; Grade Men

Group Three: Vibrator Laborers; Finish Surface Asphalt Rackers; Jackhammer Operators; Paving Breaker Operator; Pipelayer & Caulker (all joints up to within 5 feet of the Building Foundation Line); Conduit & Duct Layers

Group Four: Flagperson

Group Five: Miners

Group Six: Welders and Burners.

Group Seven: Miner Bore Driver; Blasters; Drillers Pneumatic Shield Operator

Group Eight: Form Setters

Group Nine: Trackmen; Brackmen; Groutmen; Bottom Shaft Men; All other Laborers in Free Air Tunnels; Underpinning (When an underpinning excavation for a pier hole of five feet square or less and eight feet or more deep is dug, the rate shall apply only after a depth of eight feet is reached, to the men working in the bottom)

1. Laborer Classifications: (cont'd)

Group Ten: Circular Caissons (Where an excavation for circular caissons are dug eight feet or more below the natural grade level adjacent to the starting point of the caisson hole, at ground level, for the men working in the bottom); Welders, Burners & Air Tuggers
Group Eleven: Powdermen; Multiple Wagon Drill Operator Laborer
Group Twelve: Caisson Laborer Foreman
Group Thirteen: Toxic/Hazardous waste Handler
Group Fourteen: Wagon Drill/Hydraulic Track Drill Operator Laborer

Landscape Laborers:

Class I: Landscape laborer
Class II: Farm tractor driver, hydroseeder, mulcher nozzle worker, backhoe operator, bulldozer crawler type loader, tree crane operator.

2. Power Equipment Operator Classifications - Heavy, & Highway

Group One:

Handling steel and stone in connection with erection Cranes doing hook work
Any machines handling machinery
Cable spinning machine
Helicopters
Concrete Pumps (building)
Machines similar to above including remote control equipment

Group One A:

Handling steel and stone in connection with erection.
Cranes doing hook work
Any machines handling machinery
Concrete Pumps (Building)
High Rail/Burro Crane
Rail Loader (Winch Boom Type)
All equipment in this group which previously received the hour in lieu of an oiler will receive Wage Group I (A). Equipment in this Wage Group that does not require an oiler.

Machines similar to above, including remote control equipment

Group Two:

All types of cranes
All types of backhoes
Cableways
Draglines
Keystones
All types of shovels
Derricks
Pavers 21E and over

Group Two: (cont'd)

Trenching machines
Trench shovels
Gradalls
Front- end Loaders
Boat Captain
Hoist with Two Towers
Building Hoists-double drum (unless used as a single drum)
Pippin type backhoes
Tandem scrapers
Tower type crane operation erecting dismantling jumping or jacking
Drills self-contained (Drillmaster type)
Fork lift (20ft. and over)
Motor Patrols (fine grade)
Batch Plant with Mixer
Carryalls, Scrapers, Tournapulls
Roller (High Grade Finishing)
Spreaders (Asphalt)
Bulldozers and Tractors
Mechanic-Welder
Conveyor Loaders (Euclid-Type Wheel)
Concrete Pumps (Heavy Highway)
Milling Machine
Bobcat
Side Boom
Directional Boring Machines
Vermeer Saw Type Machine (other than hand held)
Tractor Mounted Hydro Axe
Chipper with boom
All Autograde and concrete finishing machines
Bundle Pullers/Extractors (Tubular)
Machines similar to the above including remote control equipment

Group Two A:

Crawler backhoes and Crawler gradalls over one (1) cubic yard factory rating
Hydraulic backhoes over one (1) cubic yard factory rating
Single person operation truck cranes 15 ton and over factory rating
Cherry picker type machinery and equipment 15 ton and over factory rating, etc.
Cranes doing hook work will be paid Wage Group I (A).
All equipment in this Group which previously received the hour in lieu of an oiler will receive Wage Group II (A) including concrete pumps (Heavy/Highway).
Machines similar to the above including remote control equipment

Prevailing Wage Schedule (Effective 06/05/06)
Heavy and Highway Construction (cont'd)

Group Three:
Asphalt Plant Engineers
Conveyors (except building conveyors)
Well Drillers
Forklift Trucks of all types
Ditch Witch (small trenchers)
Motor Patrols
Fine Grade machines
Rollers
Concrete Breaking Machines (Guillotine Only)
Stump Grinder
High or Low Pressure Boilers
Building Hoist (single drum)
Elevator Operator (New Construction)
Machines similar to above including remote control equipment

Group Four:
Seamen Pulverizing Mixer
Form Line Graders
Farm Tractors
Road Finishing Machines
Concrete Spreaders (Heavy Highway)
Power Broom (self-contained)
Seed Spreader
Grease Truck
Machines similar to the above including remote control equipment

Group Five:
Compressors
Pumps
Well pint pumps
Conveyors (Building)
Welding Machines
Heaters
Tireman, Power Equipment
Maintenance Engineers (Power Boats)
Miscellaneous Equipment
Operator
Elevator Operator (Renovations)
House Car
Machines similar to above including remote control equipment

Group Six:
Fireman
Oilers and Deck Hands (Personnel Boats)
Grease Truck Helpers

Prevailing Wage Schedule (Effective 06/05/06)
Heavy and Highway Construction (cont'd)

Group Seven (A):
Handling steel and stone in connection with erection
Cranes doing hook work
Any machines handling machinery
Cable spinning machine
Helicopters
Concrete pumps (Building)
High Rail/Burro Crane
Rail Loader (Winch Boom Type)
Machines similar to above, including remote control equipment
**Toxic/Hazardous Waste Removal Rate-20 Per Cent Added to All Classifications
Group Seven B:
All types of cranes
All types of backhoes
Cableways
Conveyor Loader (Euclid-Type Wheel)
Drag Lines
Keystones
All types of shovels
Derricks
Pavers 21E and over
Trench shovels
Trenching machines
Gradalls
Front-end Loaders
Boat Captain
Hoist with two towers
Concrete Pumps (Heavy, Highway)
Building Hoists-double drum (unless used as a single drum)
Milling Machine
Mucking Machines in Tunnel
Pippin type backhoes
Bobcat
Tandem scrapers
Side Boom
Tower type crane operation, erecting, dismantling,
Jumping or jacking
Directional Boring Machines
Vermeer Saw Type Machine
(other that hand held)
Drills self-contained (Drillmaster type)
Fork Lift (20 ft & over)
Tractor Mounted Hydro Axe

Motor Patrols (Fine Grade)
Chipper with boom
Batch Plant with Mixer
All autograde and concrete finishing machines
Carryalls, Scapers & Tournapulls
Rollers (High Grade Finishing)
Bundle Pullers/Extractors (Tubular)
Spreaders (Asphalt)
Bulldozers and Tractors
Mechanic – Welders
Production Switch Tamper
Ballast Regulators
Tie Replacer
Rail/Road Loader
Power Jack liner
Machines similar to above, including remote control equipment
*Surcharge
**Toxic/Hazardous Waste Removal Rate-20 Per Cent Added to All Classifications

3. Truck Driver Classifications:

Class I: Helper, stake body truck operator (single axle, dumpster)
Class II: Dump truck operator, tandem truck operator, batch truck operator, semi-trailer truck operator, agitator-mixer truck operator, dumpcrete type vehicle operator, asphalt distributor, farm tractor operator (when used to transport materials), stake body truck (tandem) operator.
Class III: Euclid type, off highway equipment back truck operator, belly dump truck operator, double-hitched equipment trailer operator, straddle carrier (Ross) operator; lowbed trailer truck operator.

NOTE:

1. Contractors are advised to contact the Philadelphia Labor Standards Unit with any questions regarding job classification, prevailing wage rates, and fringe benefits.

2. Prior to employing apprentices on a public works project, the contractor is required to provide written evidence of employee's registration with a statewide training program recognized by the U.S. Bureau of Apprenticeship and Training (BAT). Contractors shall forward proper documentation for each bona fide apprentice to:

Philadelphia Labor Standards Unit
Municipal Services Building
1401 John F. Kennedy Boulevard - 6th Floor, Room 630
Philadelphia, PA 19102-1670
Telephone Number: (215) 686-2132
Fax Number: (215) 686-2116

Attachment C
Philadelphia International Airport
Facility Maintenance Contract
Initial Inventory – Elevator, Escalator, Moving Walkway

Part Number	Description	Manufacturer's Part Numbers	Beginning Balance
MEES00000001	ARM ASSY. DOOR PIVOT HIGH	P-31360	3
MEES00000002	ARM ASSY. DOOR PIVOT LOW	P-31361	3
MEES00000003	ARM LINK SAFE EDGE	101687	4
MEES00000004	BAR, GLOW VECTOR	61032	10
MEES00000005	BEARING, 210 MACHINE	46311-008	2
MEES00000006	BEARING, 210 MACHINE	46312-008	2
MEES00000007	BEARING, ESC GEAR BOX	44278	2
MEES00000008	BEARING GEAR BOX	39485	2
MEES00000009	BEARING UPTHRUST	P-31131	2
MEES00000010	BEARING, BALL SGL	46332-002	2
MEES00000011	BELT DOOR	19501-021	3
MEES00000012	BELTO DOOR 2 SET	19501-022	3
MEES00000013	BELT HYDRO	41813-560	5
MEES00000014	BOARD	P-24377	1
MEES00000015	BOARD ASSY. PROM M2	P-24298	1
MEES00000016	BOARD, BI-LOGIC OUTPUT	P-24147	1
MEES00000017	BOARD, CPU, SC/MP	P-15783	1
MEES00000018	BOARD, INPUT 11 N/TS	P-15761	1
MEES00000019	BOARD, INPUT MOLEX	P-15762	1
MEES00000020	BOARD, I/O INTERFACE	P-16783	1
MEES00000021	BOARD, OUTPUT 8K	P-15775	1
MEES00000022	BOARD OUTPUT 8K	P-15774	1
MEES00000023	BOARD, POWER SUPPLY	P-16835	1
MEES00000024	BOARD, POWER SUPPLY VECTOR	P-29077	1
MEES00000025	BOARD, PROM I/O	P-24301	1
MEES00000026	BOARD PUSHBUTTON VECTOR	P-24418	1
MEES00000027	RELAY OUTPUT	P-24100	1
MEES00000028	TIMER 14K	P-15760	1
MEES00000029	BOARD, CA, BA, DC	P-24650	1
MEES00000030	BOARD, MSU	P-24321	1
MEES00000031	BOARD, PC	P-24532	1
MEES00000032	BOARD, PC, DC CONTROL	P-24531	1
MEES00000033	BOARD, PC, S/O	P-24530	1
MEES00000034	BOARD, PROM 11 6K	P-15885	1
MEES00000035	BRAKE, WARNER	P-24673	1
MEES00000036	BRAKE FAIL-SAFE 90YDC	P-23860	1
MEES00000037	BRUSH KIT ESC	P-23598	2
MEES00000038			
MEES00000039			
MEES00000040			
MEES00000041	BUTTON RETAINER	65270	15
MEES00000042	CABLE, DOOR SAFE EDGE	P-31408	4
MEES00000042	CABLE, DOOR SAFE EDGE	P-31408	4

Part Number	Description	Manufacturer's Part Numbers	Beginning Balance
MEES00000043	CHAIN HANDRAIL DRIVE	59455	2
MEES00000044	CHAIN HANDRAIL DRIVE	0332AW12	2
MEES00000045	CHAIN HANDRAIL DRIVE	44461	2
MEES00000046	CHAIN HANDRAIL DRIVE	44462	2
MEES00000047	CLOSER REEL	101304	5
MEES00000048	COIL VALVE US-4	50638	3
MEES00000049	COMB SEG 3E	46670	50
MEES00000050	COMB SEG 3E	46671	50
MEES00000051	COMB SEG 3E	46635	50
MEES00000052	COMB SEGMENT CENTER	32484	100
MEES00000053	COMB SEG OTIS	0453Z1-13	10
MEES00000054	COMB SEG E5	46634	10
MEES00000055	CONTACT LEAF SINGLE	40594	20
MEES00000056	CONTACTOR, 1-3/4 HYDRO	51202-175	3
MEES00000057	CONTACT - BRIDGE BAR ASSY.	45556	5
MEES00000058	COUPLING, ESC MOTOR	P-7596	2
MEES00000059	COVER STOP SW	P-13184	10
MEES00000060	DRIVE WHEEL, HANDRAIL	44460	2
MEES00000061	GEAR BOX, A	P-26609	1
MEES00000062	GEAR BOX B, D, D, E	P-15065	1
MEES00000063	GONG 120VAC	P-15865	5
MEES00000064			
MEES00000065	GUIDE H.R.	46637	9
MEES00000066	GUIDE IDLER	0265AW2	1
MEES00000067	GUIDE SHEAVE	0265AS1	1
MEES00000068			
MEES00000069			
MEES00000070			
MEES00000071	HANDRAIL DRIVE SPROCKET	0195BV1	1
MEES00000072	HANDRAIL BLACK 101' 10"	44861-111	2
MEES00000073	HANDRAIL BLACK 115' 7"	44861-111	2
MEES00000074	HANDRAIL BLACK 78' 10"	44861-111	2
MEES00000075	HANDRAIL BLACK 83' 3"	44861-111	2
MEES00000076	INTERLOCK CONTRACTOR	51204-002	5
MEES00000077	INTERLOCK CONTRACTOR	50494-002	5
MEES00000078	INTERLOCK CONTRACTOR	51204-001	5
MEES00000079	KIT HIGH-SPEED SEAL	P-15363	4
MEES00000080	LAMB BAY 120V	45210-120	200
MEES00000081			
MEES00000082	NOVATEX CURVE URS	32926	4
MEES00000083	NOVATEX UP STAT	59259	4
MEES00000084	NOVATEX BOARD, SUPPORT	59889	4
MEES00000085			
MEES00000086	PUSHBUTTON VECTOR	P-24368	15
MEES00000087	RELEASE ARM DOOR	P-31418-001	5
MEES00000088	RELAY, OVERLOAD 3P	51202-175	
MEES00000089	RELAY PLUG IN 120V 4PDT	36244	10
MEES00000090	RING GEAR ESC.	46823	1
MEES00000091	RISER CLEATED CENTER	29105	50
MEES00000092	RISER CLEATED LH	56434	25

Part Number	Description	Manufacturer's Part Numbers	Beginning Balance
MEES00000093	RISER CLEATED RH	59433	25
MEES00000094	ROD, DOOR LIFT	101204	4
MEES00000095	ROD ASSY. DOOR	P-31252	5
MEES00000096	ROLLER	P-27375	5
MEES00000097	ROLLER DOOR DRIVE	101142	5
MEES00000098	ROLLER ESC STEP	P-12963	50
MEES00000099	ROLLER ESC STEP	P-5985	50
MEES00000100	ROLLER, GUIDE 6.5	P-13787	10
MEES00000101	ROLLER SHEAVE 2.5	P-31341	50
MEES00000102	ROLLER SHEAVE 3.25	P-31344	20
MEES00000104	ROLLER CLUSTER L.H.	P-22707	1
MEES00000105	ROLLER CLUSTER L.H.	P-22705	1
MEES00000106	ROLLER CLUSTER R.H.	P-22706	1
MEES00000107	ROLLER CLUSTER R.H.	P-22708	1
MEES00000108	ROLLER & INK	42898	25
MEES00000109	ROUND ROD PACKING	43300	100
MEES00000110	SEAL 4.5	9096-005	5
MEES00000111	SEAL 4.5	9096-046	5
MEES00000112	SEAL ESC GEAR BOX	44257	6
MEES00000113	SHIM, ESC GEAR BOX	44259	6
MEES00000114	SOCKET RELAY	P-1401034	10
MEES00000115	SPACER, ESC	28841	100
MEES00000116	SPACER, ESC	44479	50
MEES00000117	SPROCKET 24 TOOTH	0195BZ1	1
MEES00000118	SPROCKET 68 TOOTH	0195CB1	1
MEES00000119	SPROCKET HR DRIVE	44434	1
MEES00000120	SPROCKET HR DRIVE	59011	1
MEES00000121	STEP 5E GLASS A	P2773002	25
MEES00000122			
MEES00000123	STEP 5E B C D E	P27817002	50
MEES00000124			
MEES00000125			
MEES00000126			
MEES00000127	STEP CHAIN 24P B C D E	42860	10
MEES00000128	STEP CHAIN 4P A	35672	5
MEES00000129	STEP CHAIN 4P B C D E	42761	5
MEES00000130			
MEES00000132	STEP CHAIN 10 AXEL	0970DK13	1
MEES00000133	STOP SWITCH	R23625601	5
MEES00000134	TOP SWITCH ESC	P23893	5
MEES00000135	SWITCH BROKEN STEP CHAIN	P7938	4
MEES00000136	SWITCH ESC	59563	4
MEES00000137	SWITCH ESC 2P	P29518018	4
MEES00000138	SWTICH ESC PLUNGER	26236	3
MEES00000139	SWITCH KEY	48350002	5
MEES00000140	SWITCH KEY	48334	5
MEES00000141	SWITCH MAG LEVELING 120VAC	P12962	10
MEES00000142	SWITCH MAG MFS	P13347	10
MEES00000143	SWITCH ACCESS COVER	60031	10
MEES00000144	SWITCH ESC BROKEN STEP	59564	5

Part Number	Description	Manufacturer's Part Numbers	Beginning Balance
MEES00000145	SWITCH SPEED	66924	2
MEES00000146	TIMER GREEN .9 90SEC	47263	10
MEES00000147	TIMER WHITE .125 10SEC	47261	10
MEES00000148	TIMER RED .9 90SEC	47262	10
MEES00000149	TREAD STEP CENTER	67790002	25
MEES00000150	TREAD STEP LEFT	67792002	20
MEES00000151	TREAD STEP LONG EXT LH	67371002	20
MEES00000152	TREAD STEP LONG EXT RH	67372002	20
MEES00000153	TREAD STEP LONG INT	67370002	25
MEES00000154	TREAD STEP RIGHT	67791002	20
MEES00000155	VALVE MAXTON UC-4	50605	1
MEES00000156	VALVE KIT UC-4	50628	1
MEES00000157	WASHER ESC	38758	50
MEES00000158	WEAR SLEEVE ESC	44258	20

Number of Items	Description
1	Master Record Drawing of the Electrical Power Diagrams
2	Operations Maintenance Manual for the LE300 Series UPS

Number of Items	Parts Number	Description
1	N/A	9" 115 VAC Fan
1	100478-003	5" 115 VAC Fan
1	950-016-A043-1	PC Board
1	950-016-A027-1	PC Board
1	950-016-A058	PC Board
2	N/A	450 VDC 3700 UF Capacitor
2	IOR-IRKT230	Rectifier
2	PRX-KS624540	Terminating Blocks
1	100818-001	Insulator Pad
1	100818-002	Insulator Pad
1	100818-004	Insulator Pad
12	A50P150-4	150 Amp 500 VAC Fuses
12	10007201-003	Fuse 1A 250V Fast Blow Pig Tail
18	10007201-005	Fuse 2A 250V Fast Blow Pig Tail
4	100424-0088	Fuse 1/10 A Time Delay
6	29002-A008	Fuse 1A 125 V Pico Fuse
1	100690-005	350 V Filter
4	100417-012	Fuse ATM3 600 VAC
3	100451-001	Fuse ATQ 1/10 500 VAC
6	100173-006	Fuse A50P100 500 VAC (100A)
4	100421-008	Fuse ATDR3 600 VAC (30A)
12	290002-A005	Fuse 2 1/2 Amp
6	100729-005	Fuse 3 Amp 250 V
12	100729-003	Fuse 1 Amp 250 V

Webb Part No. or Vendor Part No.	Manufacturer Name	Description	Qty. Used in System	Qty. Ordered
P8100000065V1	Baldor	2HP STD. "C" FACE MOTOR	2	1
P8100000070V1	Baldor	3HP STD. FT. MT. MOTOR	15	1
P8100000085V1	Baldor	5HP STD. "C" FACE MOTOR	8	1
P8100000160V1	Baldor	2 HP STD. FT. MT. MOTOR W/BRK.	5	1
P8100000170V1	Baldor	3HP STD. FT. MT. MOTOR W/BRK.	9	1
P8100000180V1	Baldor	5HP STD. FT. MT. MOTOR W/BRK.	21	1
P8100000190V1	Baldor	7-1/2 HP STD. FT. MT. MOTOR W/BRK.	16	1
P8100002050V1	Baldor	1-1/2HP INVERTER DUTY FT. MT. MOTOR	3	1
P8100002070V1	Baldor	3HP INVERTER DUTY FT. MT. MOTOR	1	1
P8090001277V2	Dodge	HELICAL IN LINE FT MNT "IHL" 482 REDUCER	2	1
P8090001410V2	Dodge	HELICAL IN LINE FT MNT "IHL" 682 REDUCER	8	1
P8090005018V2		TXT115T "ABHS" SHAFT MOUNT REDUCER	20	1
P8090005024V2	Dodge	TXT315AT SHAFT MOUNT REDUCER	1	1
P8090005025V2	Dodge	TXT325AT SHAFT MOUNT REDUCER	8	1

Webb Part No. or Vendor Part No.	Manufacturer Name	Description	Qty. Used in System	Qty. Ordered
P8090005038V2	Dodge	TXT125T "ABHS" SHAFT MOUNT REDUCER	2	1
P173206	Martin	#60 RC SPKT 3.608"PD FOR A 1-7/16 FINISH BORE	16	1
P8050001013V1	Martin	RC-80 SPROCKET, 13 TOOTH FOR 1-1/4" FINISH BORE	2	1
P8050001028V1	Martin	RC-80 SPROCKET, 28TOOTH FOR 1-11/16" FINISH BORE	2	1
P8050001032V1	Martin	RC-80 SPROCKET, 32 TOOTH FOR 1-15/16" FINISH BORE	8	1
P8050002016V1	Martin	RC-80 SPROCKET, 16 TOOTH FOR 1-5/8" FINISH BORE	8	1
P8060005003V2	Dodge	1-1/8 #1610 SPLIT TAPER LOCK BUSHING	155	4
P8060005017V2	Dodge	1-1/8 #1210 SPLIT TAPER LOCK BUSHING	20	4
P8060005018V2	Dodge	15/16 #1610 S;LIT TPAER LOCK BUSHING	62	4
P8060005023V2	Dodge	7/8 #1610 SPLIT TAPER LOCK BUSHING	60	4
P8060005024V2	Dodge	7/8 #1210 S;LIT TAPER LOCK BUSHING	28	4
P8060005028V2	Dodge	1-1/4 #1610 SPLIT TAPER LOCK BUSHING	9	4
P8060005029V2	Dodge	1-7/16 TDT1 TAPER LOCK REDUCER BUSHING	106	4
P8060005030V2	Dodge	1-11/16 TDT2 TAPER LOCK REDUCER BUSHING	44	4
P8060005031V2	Dodge	1-15/16 TDT3 TAPER LOCK REDUCER BUSHING	9	4
P8060005032V2	Dodge	1-15/16 TDT2 TAPER LOCK REDUCER BUSHING	16	4
P8060005035V2	Dodge	1-3/8 #2517 SPLIT TAPER LOCK BUSHING	20	4
P8060005042V2	Dodge	1-11/16 #2517 SPLIT TAPER LOCK BUSHING	2	4
P8060005048V2	Dodge	1-1/4 #1615 SPLIT TAPER LOCK BUSHING	2	4
P8060005049V2	Dodge	1-15/16 #2517 SPLIT TAPER LOCK BUSHING	8	4
P8060005065V2	Dodge	1-5/8 #2012 SPLIT TAPER LOCK BUSHING	8	4
P131098	Clipper	BOX PIN NYLN #13 COVERED CBL	10	1
P173228	Clipper	BOX BLT LACING #UCM36LLSP 316SS X 12" STRIPS	10	1
P173229	Clipper	BOX CLIPPER BELT LACING PIN, S.S. NYLON COATED	10	1
P173990	Clipper	BOX BELT LACIG CLIPPER CONN PIN	10	1
P8041021101V5	Link-Belt	2 HOLE B.B. FLANGE BEARING, 1-7/16" W/ END CAP	400	6
P8041021110V5	Link-Belt	2 HOLE B.B. FLANGE BEARING, 1-15/16" W/ END CAP	100	6
P8041022101V5	Link-Belt	3 HOLE B.B. FLANGE BEARING, 1-71/16" W/ END CAP	50	6
P8041024101V5	Link-Belt	WIDE SLOT B.B. T.U. BEARING, 1-7/16" W/ END CAP	100	6
P131129	Habasit	QUEUE BELTING, 38-1/4"WD X 87-7/16" LG EDGE GUIDED	3	2
P171019	Habasit	MERGE BELTING, 36"WD X 284"LG	1	2
P174328	Habasit	LIN. INCH. BELTING, 38-1/4"WD EDGE GUIDED	6000	1000
P8111202360V3	Habasit	LIN. INCH. BELTING, 36" WD. BLACK, RT X FS, PVC120	24000	1000
P8111402360V3	Habasit	LIN. INCH. BELTING, 36" WD. BLACK, FS X FS, PVC120	48000	1000
P140895	Tsubaki	BOX CHN RLR #80 COTTERED TYPE	10	1
P174444	Tsubaki	BOX RC-60 SIDE BOW CHAIN	10	1
B4938N96110FC/100	TransNorm	POWER TURN BELTING #P176773	1	1
B4938N9624FC/100	TransNorm	POWER TURN BELTING #P176774	1	1
B4938N9630FC/145	TransNorm	POWER TURN BELTING #P176775	2	1
B4938N9643FC/100	TransNorm	POWER TURN BELTING #P176776	8	1
B4938N9645HC/12/100	TransNorm	POWER TURN BELTING #P175333 Belt #TC1-05	2	1

Webb Part No. or Vendor Part No.	Manufacturer Name	Description	Qty. Used in System	Qty. Ordered
B4938N9655HC/15/145	TransNorm	POWER TURN BELTING #P176777	2	1
B4938N9657FC/145	TransNorm	POWER TURN BELTING #P176778	1	1
B4938N9660FC/145	TransNorm	POWER TURN BELTING #P176779	2	1
B4938N9670FC/145	TransNorm	POWER TURN BELTING #P176780	2	1
B4938N9670HC/24/145	TransNorm	POWER TURN BELTING #P176781	1	1
B4938N9688.5FC/100	TransNorm	POWER TURN BELTING #P176782	2	1
B4938N9688.5HC/24/100	TransNorm	POWER TURN BELTING #P176783	1	1
B4938N9690FC/100	TransNorm	POWER TURN BELTING #P175332 Belt #RX1-05	19	1
B4938N9690FC/145	TransNorm	POWER TURN BELTING #P178583 Belt #RX1-01	1	1
B5532N9630FC/100	TransNorm	POWER TURN BELTING #P176784	1	1
B5532N9660FC/100	TransNorm	POWER TURN BELTING #P176785	1	1
P493871/145	TransNorm	POWER TURN DRIVE PULLEYS #P176786	3	1
P49387/45/12/100	TransNorm	POWER TURN DRIVE PULLEYS #P176787	1	1
P493871/55/15/145	TransNorm	POWER TURN DRIVE PULLEYS #P176788	2	1
P493871/70/24/145	TransNorm	POWER TURN DRIVE PULLEYS #P176790	1	1
P4938710/100	TransNorm	POWER TURN DRIVE PULLEYS #P176791	31	1
P4938710/88.5/24/100	TransNorm	POWER TURN DRIVE PULLEYS #P176792	1	1
P493870/145	TransNorm	POWER TURN DRIVE PULLEYS #P176793	5	1
P493870/45/12/100	TransNorm	POWER TURN DRIVE PULLEYS #P176794	1	1
P5532710/100	TransNorm	POWER TURN DRIVE PULLEYS #P176795	2	1
100-C12D10	Allen-Bradley	CONTACTOR, 7.5 HP	159	5
100-C23D10	Allen-Bradley	CONTACTOR, 15 HP	8	2
140-MN-0160	Allen-Bradley	MANUAL MOTOR PROTECTOR, 1.0A TO 1.6A	4	2
140-MN-0400	Allen-Bradley	MANUAL MOTOR PROTECTOR, 2.5A TO 4.0A	83	4
140-MN-0630	Allen-Bradley	MANUAL MOTOR PROTECTOR, 4.0A TO 6.3A	40	2
140-MN-1000	Allen-Bradley	MANUAL MOTOR PROTECTOR, 6.3A TO 10A	72	4
140-A10	Allen-Bradley	AUX. CONTACT FOR MANUAL MOTOR PROTECTOR	162	6
140-A11	Allen-Bradley	AUX. CONTACT FOR MANUAL MOTOR PROTECTOR	29	4
193-TAB40	Allen-Bradley	THERMAL OVERLOAD RELAY, 2.4 TO 4 AMP	72	4
193-TAB60	Allen-Bradley	THERMAL OVERLOAD RELAY, 4 TO 6 AMP	39	4
193-TAC10	Allen-Bradley	THERMAL OVERLOAD RELAY, 6 TO 10 AMP	64	4
595-A	Allen-Bradley	MOTOR STARTER AUX CONTACT NO	16	2
595-A02	Allen-Bradley	OVERLOAD RELAY AUX CONTACT NO	16	2
W53	Allen-Bradley	10.8 AMP HEATER ELEMENT FOR A 7.5 HP MOTOR	48	6
700-P200A1	Allen-Bradley	TYPE-P INDUSTRIAL RELAY, 2 POLE	17	2
700-P400A1	Allen-Bradley	TYPE-P INDUSTRIAL RELAY, 4 POLE	22	2
700-P800A1	Allen-Bradley	TYPE-P INDUSTRIAL RELAY, 8 POLE	24	2
700-PK400A1	Allen-Bradley	TYPE-PK INDUSTRIAL RELAY, 4 POLE	2	2
1492-GH100	Allen-Bradley	1 POLE HIGH DENSITY CIRCUIT BREAKER 10 AMP	8	1
1492-CB1G300	Allen-Bradley	1 POLE CIRCUIT BREAKER 30 AMP	6	3
1492-CB2G200	Allen-Bradley	2 POLE CIRCUIT BREAKER 20 AMP	4	1
1492-CB2G100	Allen-Bradley	2 POLE CIRCUIT BREAKER 10 AMP	5	1
160-BA04NPS1P1	Allen-Bradley	VFD, 2 AMP, 2 HP	3	2
160-BA06NPS1P1	Allen-Bradley	VFD, 6 AMP, 3 HP	1	2
1321-3R4-B	Allen-Bradley	LINE REACTOR FOR 2 HP VFD	3	2
1321-3R8-B	Allen-Bradley	LINE REACTOR FOR 3 HP VFD	1	1
150-A09NB	Allen-Bradley	SMC-2 STARTING TORQUE CONTROLLER -9A	16	2

Webb Part No. or Vendor Part No.	Manufacturer Name	Description	Qty. Used in System	Qty. Ordered
154-A11NB	Allen-Bradley	STC STARTING TORQUE CONTROLLER - 11A	16	2
800T-H2A	Allen-Bradley	2 POS. SELECTOR SWITCH, 1 N.O. 1 N.C. MAINTAINED	16	2
800T-H2B	Allen-Bradley	2 POS. SELECTOR SWITCH, 2 N.O. 2 N.C. MAINTAINED	1	2
800T-A1D1	Allen-Bradley	Green flush head push button, 1 N.O.	11	1
800T-A4D1	Allen-Bradley	Grey flush head push button, 1 N.O.	11	1
800Y-A9D1	Allen-Bradley	Yellow flush head push button, 1 N.O.	12	1
800T-PT16R	Allen-Bradley	RED PUSH-TO-TEST PILOT LIGHT	4	2
60-1785	Allen-Bradley	Series 5000 Photoeye Mounting Bracket	198	4
42LRC-5200	Allen-Bradley	Series 5000 Polarized Retroreflective Photohead	198	6
42LTB-5000	Allen-Bradley	Series 5000 Polarized Retroreflective Power Base	198	4
92-39	Allen-Bradley	3 in. Reflector	198	2
802T-ATP	Allen-Bradley	Limit Switch	24	1
802T-W2B	Allen-Bradley	Limit Switch Actuator Arm	24	2
1746-P2	Allen-Bradley	SLC POWER SUPPLY	16	1
1746-C16	Allen-Bradley	4' CHASSIS INTERCONNECT CABLE	8	1
1746-IA16	Allen-Bradley	16 POINT INPUT CARD	88	2
1746-OA16	Allen-Bradley	16 POINT OUTPUT CARD	24	2
1746-OX8	Allen-Bradley	8 POINT RELAY CONTACT OUTPUT CARD	8	2
1786-XT	Allen-Bradley	CONTROLNET TERMINATOR	10	2
1794-IA16	Allen-Bradley	16 POINT INPUT CARD	25	2
1794-OA16	Allen-Bradley	16 POINT OUTPUT CARD	13	2
1794-TBN	Allen-Bradley	TERMINAL BASE UNIT	38	2
1794-PS1	Allen-Bradley	FLEX I/O POWER SUPPLY	1	2
1794-PS13	Allen-Bradley	FLEX I/O POWER SUPPLY	3	2
1771-P4S	Allen-Bradley	POWER SUPPLY, 1 SLOT	8	1
1771-IBD	Allen-Bradley	10-30 VDC INPUT MODULE	12	1
1771-IAD	Allen-Bradley	120VAC INPUT MODULE	2	1
1771-OW	Allen-Bradley	8 PT. RELAY CONTACT OUTPUT CARD	2	1
1771-OBD	Allen-Bradley	16 PT. 10-60 VDC OUTPUT CARD	8	1
1756-PA72	Allen-Bradley	CONTROL LOGIX POWER SUPPLY	2	1
BPE-01MBB1A	Best Power	UPS Bypass Switch	2	1
EVCRB84-0006	Black Box	6' CAT5E Yellow Crossover Cable	1	1
EFN4021-002M	Black Box	Composit Terminated Fiber Optic Cable, SC-SC, 2 Meters	1	1
EL04MS-25	Black Box	RJ-11 Modular Cable, Straight Pinned, 25ft.	1	1
EL04MS-04	Black Box	RJ-11 Modular Cable, Straight Pinned, 45ft.	1	1
FM008	Black Box	RJ-11 T Adapter	1	1
FM820	Black Box	RJ 25 Modular Splitter, 5 position	2	1
EVNSL21-0006	Black Box	Cable, Cat5, Blue Patch Cable, 6ft	1	1
EVNSL21-0025	Black Box	Cable, Cat5, Blue Patch Cable, 25ft	1	1
EVNSL23-0006	Black Box	Cable, Cat5, Red Patch Cable, 6ft	1	1
EVNSL23-0025	Black Box	Cable, Cat5E, Red Patch Cable, 25ft	1	1
EVNSL93-0006	Black Box	Cable, Cat5, Red Patch Cable, 6ft	7	1
EVNSL93-0025	Black Box	Cable, Cat5E, Red Patch Cable, 25ft	8	1
R25030-1PR	Black Box	FUSE BLOCK, 1 POLE, 30 AMP, 250V	71	3
RH-50 300<1%	Dale	300 OHM, 50W RESISTOR	4	2
HS1F2AS	Sola/Hevi-Duty	CONTROL TRANSFORMER, 2 KVA	9	1
HS5F3AS	Sola/Hevi-Duty	CONTROL TRANSFORMER, 3 KVA	2	1

Webb Part No. or Vendor Part No.	Manufacturer Name	Description	Qty. Used in System	Qty. Ordered
63-23-150-8	Sola/Hevi-Duty	CONDITIONED CONTROL TRANSFORMER, 500VA	8	1
63-23-215-8	Sola/Hevi-Duty	CONDITIONED CONTROL TRANSFORMER, 1.5KVA	2	1
A-TEMNO	Hoffman	N.O. TEMP. Contro Switch	4	1
IHC15-3	International Power	POWER SUPPLY, 15VDC, 3 AMP	2	1
IOVP-12	International Power	OVERVOLTAGE PROTECTION MODULE	2	2
BZ-2RW82299-A2	MicroSwitch	ROLLER LEVER LIMIT SWITCH	13	1
MN1123HST	MultiComp	AC Tubeaxial Fan	6	2
2488	MultiComp	Fan Filter Assembly Kit	6	2
701301	Webb	Wheel Assembly	1208	50
701304	Webb	Short Guide Wheel Spacer	1208	12
701405	Webb	Long Guide Wheel Spacer	1208	12
701403	Webb	Bumper Splice Insert	1208	6
700801	Webb	16" Chain Link	1208	6
700309	Webb	Drive Chain Master Link	16	8
701101	Webb	Chain Idler	32	1
700302	Webb	Idler Bearing Cone	64	4
700303	Webb	Idler Bearing Cup	64	4
700311	Webb	Drive Chain w/Rollers	16	2
700307	Webb	Drive Sproket	16	1
600-RLC18-40	Electra Gear	Gear Reducer	16	1
700308	Baldor	Motoer, 5HP, 184TC, Hi-Slip, 460V, 3 Ph, 60 Hz	16	1

3	1	1	34	4960518	Actuator, Linear 4" Stroke	NEW
4	1	1	34	4960519	Actuator, Linear 12" Stroke (Brake Repaired)	NEW
5	1	1	33	415001	Bell (Gong Only) Vibratone	NEW
6	1	1	33	4150018	Buzzer	NEW
7	2	2	31	4960518-001	Capacitor, 30-36 Mfd., 330 WVDC	NEW
8	1	1	11	2910144	Circuit Board, 24 Phase	NEW
9	1	1	11	2900556	Circuit Board, Auto Level Assembly	NEW
10	1	1	11	2910193	Circuit Board, Bite	NEW
11	1	1	30	2901684	Circuit Board, D.C. Power Supply (New #3631970)	NEW
12	1	1	31	2910041	Circuit Board, Horizontal Signal Axis	NEW
13	1	1	32	2910016	Circuit Board, Keypad	NEW
14	1	1	11	2910162	Circuit Board, Logic	NEW
15	1	1	32	2910279	Circuit Board, Low Voltage Suppressor	NEW
16	1	1	11	2910162	Circuit Board, Power Supply	NEW
17	1	1	11	2910921	Circuit Board, RC Discharge	NEW
18	1	1	32	2910188	Circuit Board, Res/Cap	NEW
19	1	1	32	2910178	Circuit Board, Suppressor	NEW
20	2	2	32	2911129	Circuit Board, Transistor Drive	NEW
21	1	1	30	2901438	Circuit Board, Master Relay Control	NEW
22	2	2	32	10250T2	Contact Block 2n/o	NEW
23	5	5	32	4140403	Contact Block 1n/o	NEW
24	1	1	32	4140323	Contact Block 1n/o 1n/c	NEW
25	1	1	33	4140969	Contactor 3 Pole	NEW
26	1	1	33	4140357	Contactor 3 Pole, Size 0	NEW
27	1	1	33	4140359	Contactor 3 Pole, Size 1	NEW
28	2	2	16	4500752	Core, Moving Iron & Brake Lining	NEW
29	2	2	16	4500831	Core, Moving Iron w/Lining	NEW
30	6	6	Whse	3669734	Filter Cartridge 4-1/2" O.D. x 9-3/4"	/
31	1	1	14	2112309	Filter Support Bracket	/
32	10	10	42	4141657	Fuse 150 Amp 600 Volt	NEW
33	2	2	33	4501030	Fuse 400 Amp 700 Volt Type 4	NEW
34	1	1	36	4500585	Gearmotor	NEW
35	1	1	Floor	4960608	Gearmotor 3 HP	NEW
36	1	1	Floor	4960559	Gearmotor 5 HP	NEW
37	2	2	38	3692037	hanger, Pipe 1"	NEW
38	1	1	39	2110391	Heater Bar Assembly	NEW
39	200'	200'	Whse	946	Hose, Clear Reinforced, Nylon Braid, 3/4" I.D.	NEW
40	1	1	38	2112917	Hose Guide	NEW
41	8	8	38	3664543	Hose Stop 4-1/2" O.D.	NEW
42	1	1	31	4141187	Indicator, Wheel Position	NEW
43	1	1	30	2910040	Jetpak 90 Amp 240 Volt Armature 240 Volt Field	NEW
44	0	0	xx	xxxxx	Joystick (See: Operator Assembly Single Axis)	NEW
45	1	1	Whse	3694002	Liner, Tube 40 x 14	NEW
46	1	1	Floor	L-75	Load Bank	Tool
47	2	2	38	4060086	Locknut 1/2" Conduit	NEW
48	1	1	31	4141652	Meter, Height Indicator Full Scale LED	NEW
49	1	1	33	4501032	Meter, Panel 3-1/2" Digit	NEW
50	1	1	32	4141132 501	Operator Assembly Single Axis	NEW
51	1	1	31	2910109	Potentiometer	NEW

52	1	1	31	2911676	Potentiometer	NEW
53	1	1	31	2902985501	Potentiometer	NEW
54	1	1	31	2902985500	Potentiometer	NEW
55	2	2	31	4140331	Pushbutton, Operator Full Guard	NEW
56	2	2	31	4140408	Pushbutton, Operator 120 VAC	NEW
57	2	2	31	4140412	Pushbutton, Operator 120 VAC	NEW
58	0	0	xx	xxxxx	xxxxxxxxxxx	/
59	1	1	14	3669741	Regulator, Pressure	NEW
60	4	4	31	4140947	Relay 12 VDC 4PDT	NEW
61	2	2	31	4141041	Relay 120 VAC 3PDT	NEW
62	1	1	31	4141072	Relay 120 VAC DPDT Off Delay	NEW
63	1	1	43	8007503	Roller, A Tunnel	NEW
64	1	1	43	8007275	Roller, B Tunnel, Forward	NEW
65	1	1	43	1600617	Roller, B Tuennel, Lower	NEW
66	1	1	43	1600618	Roller, C Tunnel, Lower	NEW
67	1	1	43	1600623	Roller Unit Assembly	NEW
68	1	1	43	1600622	Roller Unit Assembly	NEW
69	1	1	43	8007569	Rolelr Unit B & C Tunnel, Top	NEW
70	1	1	33	4500992	SCR, 160 Amp 700 VAC	NEW
71	2	2	38	3664542	Strainer "Y", 1" NPT	NEW
72	1	1	38	2113845	Strainer , Marine	NEW
73	1	1	31	4140220	Switch, Assy.	NEW
74	1	1	31	4100042	Switch, Limit	NEW
75	1	1	31	4100044	Switch, Limit	NEW
76	1	1	31	4100045	Switch, Limit	NEW
77	1	1	31	4100083	Switch, Limit	NEW
78	1	1	31	4100078	Switch, Limit Roller Plunger 90 Degree	NEW
79	1	1	31	4100093	Switch, Limit Roller Plunger	NEW
80	1	1	30	4100095	Switch, Limit, Extended Plunger	NEW
81	1	1	31	4142181	Switch, Push/Pull	NEW
82	1	1	12	4141614	Switch, Selectro (Key) w/D-10 Key	NEW
83	1	1	38	4142189	Thermostat	NEW
84	1	1	Whse	3694080	Tire 40 x 14 x 24 Ply Recap	NEW
85	1	1	Whse	8015604	Tire, Spare Kit 24 Ply Recap w/Hub & Sproket	NEW
86	2	2	32	4500973	Transistor, Power 100 Amp	NEW
87	2	2	Whse	2129808	Tube, Inner 1100 x 15	NEW
88	3	3	30	BBV100	Valve, Brass Ball 1" NPT	NEW
89	2	2	38	3669736	Vavle, Check 1" NPT	NEW
90	1	1	31	2001940-500	Wheel, Auto Level	NEW
91						NEW
101	1	1	T/S	GIS9001	Switch, Hand	NEW
102	1	1	T/S	GIS4030	Transformer	NEW
103	1	1	T/S	GIS200	Tube, Azimuth	NEW
104	1	1	T/S	GIS200	Tube, Azimuth	NEW
108	4	4	23	131743	Bearing, Flange 2 Bolt, F2B-SXV-103, 1-3/16" Bore	NEW
109	4	4	23	131748	Bearing, Flange 2 Bolt, F2B-SXV-107, 1-7/16" Bore	NEW
110	2	2	23	131070	Bearing, Flange 2 Bolt, F2B-SXR-111, 1-11/16" Bore	NEW
111	2	2	24	131075	Bearing, Flange 2 Bolt, F2B-SXR-115, 1-15/16" Bore	NEW
112	2	2	23	131197	Bearing, Take-Up, NSTU-SXTV-107, 1-7/16" Bore	NEW
113	2	2	23	102-2930-001	Bearing Cover	NEW

114	4	4	23	804-0071-002	Bearing Cone	NEW
115	4	4	23	804-0071-001	Bearing Cup	NEW
116	2	2	23	817-0004-054	Bearing Locknut	NEW
117	2	2	24	817-0003-014	Bearing Lockwasher	NEW
118	2	2	24	102-1697-002	Bearing Spacer	NEW
119	4	4	24	102-1697-003	Bearing Spacer	NEW
120	2	2	24	102-1697-004	Bearing Spacer	NEW
121	2	2	24	102-1697-005	Bearing Spacer	NEW
122	1	1	50	103-2237-090	Belt, B Turn Assy/BG33/90Deg/LHLI Drive/DSG	NEW
123	1	1	48	103-2633-090	Belt, B Turn Assy/BG33/90Deg/RHRI Drive/DSG	NEW
124	1	1	48	103-5037-090	Belt, C Turn Assy/BG37/90Deg/DSG (C.C.C.)	NEW
125	1	1	47	103-5037-045	Belt, C Turn Assy/BG37/45Deg/DSG (Ultra Turn)	NEW
126	1	1	50	828-0001-033	Belt, Incline Assy. C5036-Spiral 90Deg/RHRI Drive/DSG/3' (Portec)	NEW
127	1	1	50	282-0001-030	Belt, Incline Assy. C5036-Spiral 90Deg/RHRI Drive/DSG/3' (Portec)	NEW
128	1	1	50	828-0001-032	Belt, Incline Assy. C5036-Spiral 90Deg/LHLI Drive/DSG/3' (Portec)	NEW
129	2	2	Wall	A-46	Belt, V,Hi-Power 1/2" x 48"	NEW
130	2	2	Wall	A-48	Belt, V, Hi-Power 1/2" x 50"	NEW
131	2	2	Wall	A-78	Belt, V, Hi-Power 1/2" x 80"	NEW
132	20	20	50	819-0003-030	Belting 30" Wide x 1/32 Cover x Bare	NEW
133	20	20	50	819-0002-034	Belting 34" Wide Bare x Bare	NEW
134	20	20	48	819-0006-034	Belting 34" Wide Rough Top x Bare	NEW
135	1pr	1pr	24	803-0099-017	Bushing, Tapered - Size TDT1 x 1-/16"	NEW
136	1pr	1pr	24	803-0099-018	Bushing, Tapered - Size TDT1 x 1-7/16"	NEW
137	25	25	25	102-0000-004	Chain, Main	NEW
138	10	10	25	810-0001-000	Chain, Roller #50 Riveted	NEW
139	10	10	25	810-0001-002	Chain, Roller #60 Riveted	NEW
140	10	10	25	810-0001-003	Chain, Roller #80 Riveted	NEW
141	1	1	55	812-0001-029	Clutch/Brake	NEW
142	1	1	21	595-A02	Contact, Auxiliary 1 N.O., Size 0	NEW
143	3	3	22	FNQ1	Fuse (Midget) 500 Volt 1 Amp	NEW
144	3	3	22	FNQ1-1/2	Fuse (Midget) 500 Volt 1-1/2Amp	NEW
145	3	3	22	FNQ4	Fuse (Midget) 500 Volt 4 Amp	NEW
146	3	3	22	FNQ5	Fuse (Midget) 500 Volt 5 Amp	NEW
147	3	3	22	FNQ10	Fuse (Midget) 500 Volt 10 Amp	NEW
148	3	3	22	FNQ15	Fuse (Midget) 500 Volt 15 Amp	NEW
149	3	3	22	FNSR-60	Fuse 600 Volt 60 Amp	NEW
150	50ft	50ft	52	102-0000-039	Guard, Finger	NEW
151	0	0	xx	xxxxx	xxxxxxxxxxx	/
152	0	0	xx	xxxxx	xxxxxxxxxxx	/
153	3	3	22	W39	Heater, Overload	NEW
154	3	3	22	W42	Heater, Overload	NEW
155	0	0	xx	xxxxx	xxxxxxxxxxx	/
156	3	3	22	W48	Heater, Overload	NEW
157	3	3	22	W53	Heater, Overload	NEW
158	1	1	21	800T-PST16A	Light, Small Pilot, XFMR, 120VAC, Amber Lens	NEW
159	1	1	21	800T-PST16B	Light, Small Pilot, XFMR, 120VAC, Blue Lens	NEW
160	1	1	21	800T-PST16G	Light, Small Pilot, XFMR, 120VAC, Green Lens	NEW
161	1	1	21	800T-PST16R	Light, Small Pilot, XFMR, 120VAC, Red	NEW

					Lens	
162	1	1	55	802-0001-008	Motor 2 HP/145TC/VM3558T	NEW
163	1	1	55	802-0001-010	Motor 3 HP/182TC/C-Face/VM3611T	NEW
164	1	1	55	802-0002-006	Motor, Brake 2 HP	NEW
165	1	1	55	802-0002-007	Motor, Brake 3 HP	NEW
166	1	1	55	802-0002-008	Motor, Brake 5 HP	NEW
167	1	1	55	802-0004-002	Motor 1 HP/145T/M3546T	NEW
168	1	1	55	802-0004-005	Motor 1.5 HP	NEW
169	5	5	Floor	102-4380-001	Pallet	NEW
170	5	5	46	102-0000-002	Pallet Support	NEW
171	1	1	49	000-2720-003	Pulley, End 6" x 32" x 2012/TL/CF/BG33	NEW
172	1	1	49	000-2720-015	Pulley, End 6" x 36" x 2012/TL/CF/BG37	NEW
173	1	1	49	806-4067-136	Pulley, Drive 6-3/4" x 36" x 1-7/16/VL/BG37	NEW
174	1	1	49	806-4087-232	Pulley, Drive 8-3/4" x 32" x 1-11/16/VL/BG33	NEW
175	1	1	49	806-4087-236	Pulley, Drive 8-3/4" x 36" x 1-11/16/VL/BG37	NEW
176	1	1	49	806-4107-336	Pulley, Drive 10-3/4" x 36" x 1-15/16/VL/BG37	NEW
177	1	1	49	000-1478-003	Pulley, Snub 4" Dia. X 32" Long, Shaft Size 1-7/16 Dia. X 37-1/2"	NEW
178	1	1	49	000-1478-007	Pulley, Snub 4" Dia. X 36" Long, Shaft Size 1-7/16 Dia. X 41-1/2"	NEW
179	1	1	49	000-2720-006	Pulley, Take-Up 6" x 32 x 2012/TL/CF/BG33	NEW
180	1	1	49	000-2720-009	Pulley, Take-Up 6" x 32 x 2012/TL/CF/BG37	NEW
181	1	1	21	800T-A2A2	Push Button, Flush Head, 2 N.O. - Black	NEW
182	1	1	21	800T-FXP16RA1	Push Button, Illuminated Push-Pull, XFMR	NEW
183	1	1	21	800T-PB16A	Push Button, Illuminated, XFMR, 120 VAC, Amber Lens	NEW
184	1	1	50	803-0020-029	Reducer, SM-Cyclo #HC3115/184TC/29:1	NEW
185	1	1	50	803-0020-039	Reducer, SM-Cyclo #HC3115/145TC/29:1	NEW
186	1	1	54	803-0021-005	Reducer, Torque Arm #TXT115T	NEW
187	1	1	21	700-P200A1	Relay, Control, 115-120 VAC, 60 Hz., 2 N.O., 0 N.C.	NEW
188	1	1	21	700-P400A1	Relay, Control, 115-120 VAC, 60 Hz., 4 N.O., 0 N.C.	NEW
189	1	1	21	8-590	Relay, EM S.P.D.T.	NEW
190	1	1	21	700-PT200A1	Relay, Pneumatic Timing, Type P, 120 VAC Coil	NEW
191	1	1	21	700-P200A24	Relay, Pneumatic Timing, Type P, 24 VAC Coil	NEW
192	2	2	49	000-1047-003	Roller, Idler 2-1/2" Dia. X 29", Spring Loaded 11/16" Hex Shaft x 33"	NEW
193	2	2	49	000-1047-011	Roller, Idler 2-1/2" Dia. X 339", Spring Loaded 11/16" Hex Shaft x 35-3/4"	NEW
194	2	2	28	102-1692-001	Shaft,Idler	NEW
195	1	1	27	805-0002-001	Sproket, #50BTB15, #50 Chain, 15 Teeth, #1210 Bushing	NEW
196	1	1	27	805-0002-003	Sproket, #50BTL17, #50 Chain, 17 Teeth, #1610 Bushing	NEW
197	1	1	27	805-0004-001	Sproket, #60BTL15H, #60 Chain, 15 Teeth, #1610 Bushing	NEW
198	1	1	27	805-0004-002	Sproket, #60BTL16, #60 Chain, 16 Teeth, #1610 Bushing	NEW
199	1	1	27	805-0004-003	Sproket, #60BTL17H, #60 Chain, 17 Teeth, #1610 Bushing	NEW
200	1	1	27	805-0004-004	Sproket, #60BTL18H, #60 Chain, 18 Teeth, #1610 Bushing	NEW
201	1	1	27	805-0004-006	Sproket, #60BTB20, #60 Chain, 20 Teeth, #2012 Bushing	NEW
202	1	1	27	805-0004-008	Sproket, #60BTL22H, #60 Chain, 22 Teeth, #2012 Bushing	NEW
203	1	1	27	805-0004-012	Sproket, #60BTL26, #60 Chain, 26 Teeth,	NEW

					#2012 Bushing	
204	1	1	27	805-0006-002	Sproket, #80BTL16H, #80 Chain, 16 Teeth, #2012 Bushing	NEW
205	1	1	27	805-0006-010	Sproket, #80BTL24H, #80 Chain, 24 Teeth, #2517 Bushing	NEW
206	1	1	27	805-0006-011	Sproket, #80BTL25H, #80 Chain, 25 Teeth, #2517 Bushing	NEW
207	2	2	28	805-0006-014	Sproket, #80BTB28, #80 Chain, 28 Teeth, #2517 Bushing	NEW
208	1	1	27	805-0015-003	Sproket, #120B17, #120 Chain, 17 Teeth, 1-3/4" Bore	NEW
209	2	2	28	102-1704-001	Sproket, #120B25, #120 Chain, 25 Teeth, 2-7/16" Bore	NEW
210	1	1	21	509-AOD	Starter, Full Voltage, 3 Phase, Size 0, Coil Voltage 115-120 VAC	NEW
211	1	1	21	509-BOD	Starter, Full Voltage, 3 Phase, Size 1, Coil Voltage 115-120 VAC	NEW
212	1	1	20	505-BOD	Starter, Full Voltage,Reversing, 3 Phase, Size 1, Coil 115 VAC	NEW
213	50	50	24	102-0000-038	Strap	NEW
214	1	1	20	1494R-N30	Switch, Disconnect, Rod Operated, 30 Amp	NEW
215	1	1	20	1494R-N60	Switch, Disconnect, Rod Operated, 30 Amp	NEW
216	1	1	21	802T-AP	Switch, Limit	NEW
217	10	10	24	820-0001-003	Tip, Cane	NEW
218	1	1	21	TA-2-81214	Transformer, Control, Pri. Volts 240x480, Sec. 120. VA 350, Phase 1	NEW
219	1	1	21	TA-2-81215	Transformer, Control, Pri. Volts 240x480, Sec. 120. VA 350, Phase 1	NEW
220	50	50	26	102-1780-001	Wheel, W/Bearings	NEW
221	1	1	18	108-1745-001	York Assembly	NEW
222						
223						
224						
225						

Attachment D

Groundwater Extraction Well Rehabilitation Protocol
Western Boundary Area Mitigation System
Runway 8-26 Development Project
Division of Aviation, Philadelphia PA

1. **Assessment of Well Performance**

Complete evaluation checklist for each on-line extraction well a minimum of once per year (p. 631: Driscoll. 1986):

- What is the static water level in the production well?
- What is the pumping rate after a specified period of continuous pumping?
- What is the pumping water level after a specified period of continuous pumping?
- What is the specific capacity after a specified period of continuous pumping?
- What is the total depth of the well?
- What is the efficiency of the well?
- What is the normal pumping rate and how many hours per day does it operate?
- What has been the general trend in water levels in wells in the area?

Initiate the rehabilitation process using the following procedure if the specific capacity of any pumping extraction well declines by greater than 25% or well assessment data indicate a need (p. 631: Driscoll. 1986).
Remove and inspect well pump and motor for inspection a minimum of once per year using procedures shown in Item #3.
Conduct Well Recovery Test on each of the online extraction wells a minimum of once per year and on any well requiring rehabilitation.

- Complete a recovery test using the following procedures:

  Measure operating water level and pumpdischarge rate prior to shutting off the system.
  - After shutdown, measure well recovery water level continuously for a minimum of 100 minutes.
  -
  - Allow well to recover overnight.
  - Conduct a step-tst in accordance with the procedures found in Driscoll (p. 555-559,1986) prior to rehabilitation.

2. **Well House Preparation**

- Unhinge the roof fixtures from the interior of the well house. Open roof 180 degrees from original position; Support roof with horses or other stable propping device(s) that are the same height as the roof hinge line.
- Disconnect main electrical service for the specific pump house; lock out electrical service on the box outside the well house.
- Extract the AMETEK sensor, coil and secure, cover with plastic bag; wrap sensor control box with plastic to minimize contact with moisture; mark TOC with tape (if not done already).
- Cover heater, transformer and pump control box with plastic to protect instrumentation from water damage during rehabilitation.
- Download and extract the TROLL data logger from the stilling well installed within the well proper.

3. **Pump Retrieval**

- Disconnect electrical service to the submersible pump at the control box.
- Retrieve the pump in a vertical manner using a crane, a pump hoist truck, or drilling rig sand line or Kelly; care must be taken not to damage the electric cable.
- Inspect the pump while suspended; check the pump intake for potential obstruction.
- Disconnect the pump from the discharge pipe after the electrical wire has been unstrapped.
- Unstrap the stilling well assembly and inspect for any obstructions.
- Inspect the discharge piping interior and exterior surfaces for corrosion or other physical damage. Assess need for rehabilitation of the pump.
-

4. **Brush-Cleaning of Screen**

- Clean the interior of the well screen and the well casing with a wire or plastic bristle-brush. The wire brush can either be a single subassembly or part of a double-acting surge block. Work the entire screen section for a 1 to 2 hour period.Purge the well sump of scale and sediment prior to addition of chemicals to the well screen proper; Removal of the build-up materials from the screen and sump should allow the chemicals to react with the remainder of the scale on the screen and within the aquifer rather than on the extraneous debris.

5. **Cleaning of Discharge Lines and Totalizer Meter**

- Clean the submersible discharge pipe, the stilling well, and the in-line totalizer meter and associated piping.

- Clean and flush all subassemblies prior to reassembly.

6. **Polyphosphate Treatment and Chlorination**

Treat the well with a polyphosphate salt, such as Sodium Hexametaphosphate.
Calgon, or an approved equivalent, and Sodium Hypochlorite.

- The polyphosphate salt should partially-dissolve the encrusting scale and act as a dispersing agent to facilitate removal of scale from the well. The hypochlorite solution should disinfect the well, thereby killing the iron bacteria and similar slime forming organisms present in the well and adjacent aquifer.

- Chemical Preparation:

- Calculate the volume of water in the water column, measure the salt and hypochlorite, and put into solution for dispersal of the well screen. The addition of sodium hypochlorite to the solution should generate some warmth to completely dissolve the polyphosphate salt.
- Sodium Hexametaphosphate: thirty (30) pounds of salt to one hundred (100) gallons of water in the water column.
- Sodium Hypochlorite: three (3) to five (5) pounds of hypochlorite concentrate per well shall be used along with the polyphosphate salt.

7. **Chemical Plcement**

- Transfer the chemical solutions through a plastic or black iron conductor pipe (DO NOT USE GALVANIZED FITTINGS).
- Place the conductor pipe within the bottom five (5) feet of screen.
- Fill the bottom five feet of the well with sufficient chemical by pouring through the conductor pipe.
- Raise the conductor pipe five feet and repeat the emplacement of the treatment solution. Continue until the entire well volume has been displaced with the treatment solution.
-

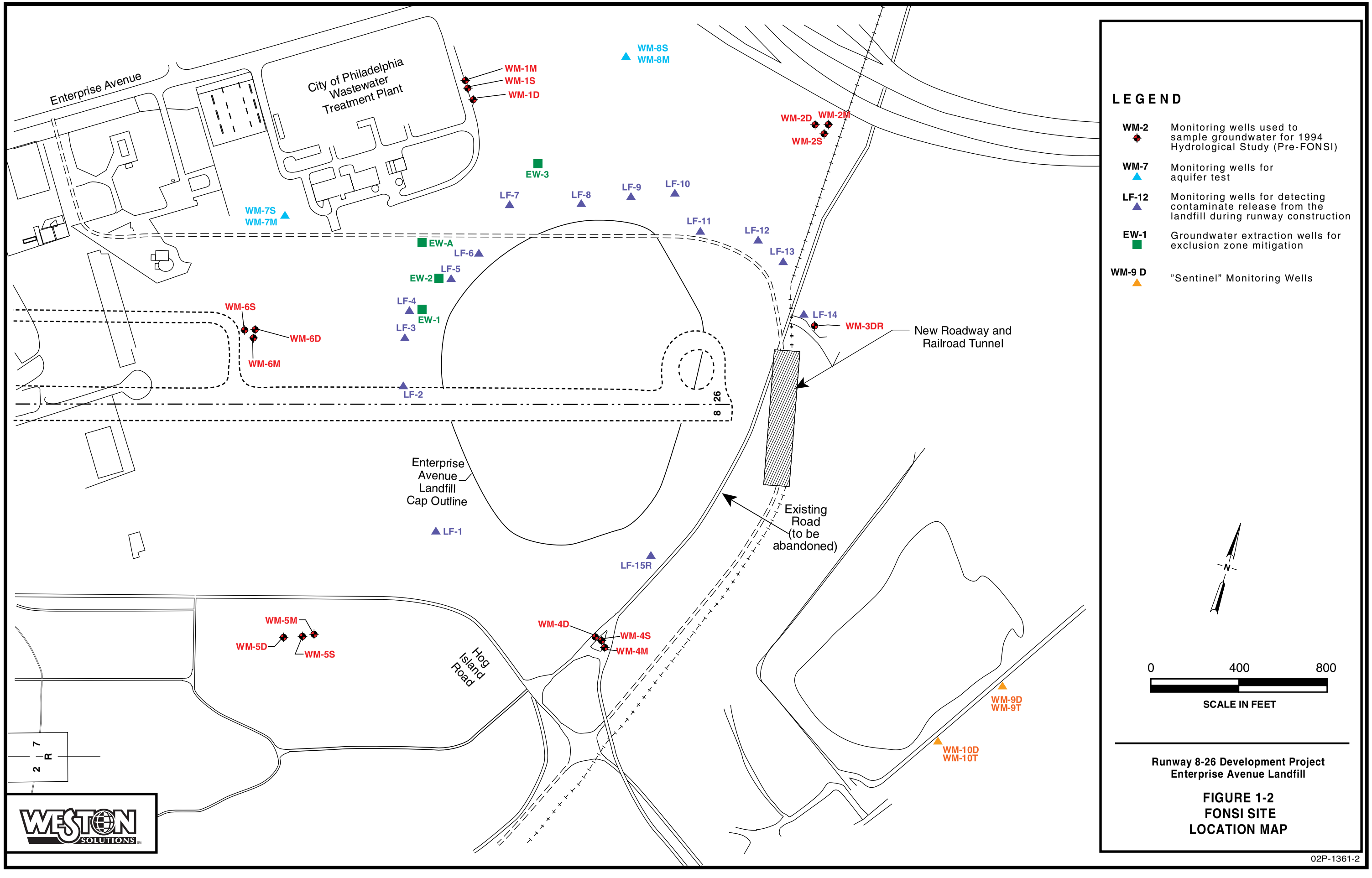
8. **Agitation and Cleaning**

- Agitate the chemicals as soon as possible with a surge block.
- Continue agitation of chemicals for about two (2) hours per each five-foot section of the well screen without the use of air.
- Commence agitation from the bottom five-foot section of the well screen and move upwards in increments of five (5) feet until the uppermost section of screen has been agitated. This method will force the chemicals into the well filter pack and adjacent aquifer materials.

- Purge the well by introducing air into the surge block. Initiate purging from the bottom five-foot section of the well screen. Purge this section of the screen for about two (2) hours then move upward to the next five-foot section of screen. Repeat process until the entire screen has been surged with air.
- Consider the well to sufficiently rehabilitated if the ground water is clear and free of loosened encrustation and virtually colorless.

9. **Auxiliary Chemical Treatment**
   - Appraise the effectiveness of the chemical treatment on the basis of clarify and color of the purge water, i.e., virtually colorless water that is devoid of scale and filter pack.
     Repeat chemical treatment if the groundwater has not cleared.

10. **Pump Installation**
    - Inspect the totalizer meter and discharge
      piping interior and exterior surfaces for corrosion or other physical damage.
    - Inspect the pump for potential obstruction prior to
    - coupling the pump to the discharge pipe.
      Connect the pump to the discharge pipe. Make sure that the pump does not touch the ground to minimize the potential for foreign matter to enter the pump intake.



LEGEND

WM-2	Monitoring wells used to sample groundwater for 1994 Hydrological Study (Pre-FONSI)
WM-7	Monitoring wells for aquifer test
LF-12	Monitoring wells for detecting contaminate release from the landfill during runway construction
EW-1	Groundwater extraction wells for exclusion zone mitigation
WM-9 D	"Sentinel" Monitoring Wells

WESTON SOLUTIONS

Runway 8-26 Development Project
Enterprise Avenue Landfill

FIGURE 1-2
FONSI SITE
LOCATION MAP

02P-1361-2

Attachment E
Philadelphia International Airport
Facility Maintenance
Fire Alarm Equipment List

Area	Address	Sector	Panel Type	Pull Station	Smoke Det.	Heat Det.	Duct Det.	Flow Switch	Tamper Switch	Low Air Switch	Pressure Switch	Pre-Act Panel	Tenant Alarm	Misc. Inputs	Relay	Total
"D" Concourse	**2**	**46**	**TFX-800**	37	108	14	38	3	12	1	1	3	6	0	29	**252**
"D" Terminal	**3**	**45**	**TFX-500**	18	2	19	20	7	2	0	0	1	2	2	2	**75**
"D" Baggage	**4**	**42**	**TFX-500**	18	0	7	37	1	4	1	1	0	0	0	11	**80**
"D" Garage	**5**	**41**	**TFX-500**	45	21	10	0	0	0	0	0	0	0	0	4	**80**
"E" Concourse	**7**	**56**	**TFX-800**	29	181	7	25	0	0	0	0	0	3	0	4	**249**
"E" Terminal	**8**	**55**	**TFX-500**	24	5	30	32	7	12	1	1	2	3		11	**128**
"E" Baggage	**9**	**51**	**TFX-800**	24	6	6	43	1	2	2	1	2	0	0	11	**98**
"B" Terminal 1	**11**	**13**	**TFX-500**	19	0	8	18	7	10	2	3	24	0	3	11	**105**
"B" Terminal 2	**12**	**13**	**TFX-500**	8	7	2	16	6	36	0	0	0	7	0	7	**89**
"B" Terminal 3	**13**	**13**	**TFX-500**	12	4	7	50	5	5	0	0	0	0	0	27	**110**
"B" Concourse	**14**	**14**	**TFX-800**	58	190	41	65	3	3	0	0	0	12	0	36	**408**
C.U.B.	**15**	**21**	**TFX-500**	device information available upon award												**49**
"C" Baggage	**16**	**32**	**TFX-500**	13	3	0	47	1	1	1	1	0	0	0	25	**92**
"C" Garage	**17**	**31**	**TFX-500**	45	23	10	0	0	0	0	0	0	0	0	4	**82**
"B" Baggage	**18**	**11**	**TFX-800**	23	8	95	43	1	10	3	5	0	0	13	30	**231**
"C" Concourse	**19**	**35**	**TFX-800**	55	129	45	64	4	4	1	0	2	10	0	36	**350**
"C" Terminal 1	**20**	**34**	**TFX-500**	24	2	7	35	8	8	1	1	9	0	0	20	**115**
"A" Baggage	**23**	**1**	**TFX-800**	19	43	1	14	2	8	3	1	3	0	0	16	**110**
Lighting Vault #4	**24**	**28**	**TFX-500**	device information available upon award												**5**
"F" Concourse	**26**	**67**	**TFX-800**	23	29	10	41	3	5	0	0	0	0	36	44	**191**
"F" Terminal	**27**	**66**	**TFX-800**	18	33	8	12	5	10	0	0	0	0	7	23	**116**
"Term-1" Terminal East	**28**	**71**	**TFX-800**	35	102	102	2	9	31	4	3	0	0	14	22	**324**
"Term-1" Terminal Mezzanine	**29**	**73**	**TFX-800**	18	268	66	25	15	25	0	0	0	0	0	31	**448**
"Term-1" Terminal West	**30**	**72**	**TFX-800**	34	248	81	4	10	28	4	4	0	0	10	20	**443**
"Term-1" Concourse(Flrs 2&3)	**31**	**74**	**TFX-800**	16	223	2	3	6	13	0	0	0	0	14	0	**277**
"Term-1" Football #1	**32**	**75**	**TFX-800**	32	196	12	1	6	4	0	0	0	0	4	8	**263**
"Term-1" Football #2	**33**	**75**	**TFX-800**	6	204	5	0	0	0	0	0	0	0	5	2	**222**
Ramp Control Tower	**34**	**7**	**TFX-500**	device information available upon award												**105**
"Term-1" Concourse(Flr 1)	**36**	**74**	**TFX-800**	52	58	118	26	11	15	0	0	0	0	12	22	**314**
Runway 8-26 Tunnel	**37**	**60**	**TFX-500**	device information available upon award												**24**
ARFF Training Facility	**38**	**59**	**TFX-500**	device information available upon award												**29**
Garage Terminal "1"	**39**	**70**	**TFX-500**	device information available upon award												**77**
Garage E/F	**40**	**50**	**TFX-800**	device information available upon award												**198**
Deicing Facility	**41**	**41**	**TFX-500**	device information available upon award												**20**
USAir Express Hanger	**42**	**62**	**TFX-400**	device information available upon award												**50**
"Term-1" USAir Club- Mezz. #2	**44**	**73**	**TFX-800**	6	58	0	0	0	0	0	0	0	0	0	0	**64**
Carpenter's Shop	**45**	**63**	**TFX-800**	device information available upon award												**13**
TOTAL																**6,174**

Attention Bidder:

This bid document may not contain all of the documents that you will need to complete the bid submission. On occasion, it is not possible to include the following:

Exhibits
Drawings
Attached specifications
Attached documents

If you have not received a corresponding attachment, drawing or exhibit that is referenced in the bid document you may obtain it by contacting the Public Information Unit at 215-686-4720.

TERMS AND CONDITIONS OF BIDDING AND CONTRACT

1. **PREPARATION AND SUBMISSION OF BID**. All bids must be written in ink or typewritten and made on the forms issued and signed in ink by a person with legal authority to bind the bidder. This Invitation and Bid and any contract awarded hereunder shall include, without limitation, the Invitation and Bid, all addenda thereto issued by the Procurement Department and these Terms and Conditions of Bidding. It is the sole responsibility of the bidder to ensure that it has received any and all addenda and the Procurement Commissioner may in his/her sole discretion reject any bid for which all addenda have not been executed and returned in accordance with the instructions provided therein. No bid may be considered if received after the date and time for the opening of bids established by this Invitation and Bid, nor may any bid be modified after that date and time. The time of bid opening shall be the time displayed on the City's official bid clock. In the event of any discrepancy between actual time and the City's official bid clock, the latter shall determine the time of bid opening.

2. **SPECIFICATIONS**. When a formal, numbered, specification is referred to in this Invitation and Bid, no deviation therefrom will be permitted and the bidder will be required to furnish articles and/or services in conformity with that specification. When catalogues, model numbers, trade names, or cuts are listed in this Invitation and Bid, they are, unless otherwise specified, included for the purposes of furnishing bidders with information concerning the style, type or kind of article and /or service desired. A bidder may offer an article and/or service which he/she certifies to be equal or better in quality, performance and other essential characteristics. If submitting an alternate the bidder must specify the alternate (e.g., make and model #) in the bid and submit with the bid a complete description of the article (including any technical literature) and/or service proposed to be furnished. Failure to do so, will require the bidder to furnish the article and/or service specified in the Invitation and Bid. The Procurement Commissioner reserves the sole right to determine whether alternates offered are equal or better. Unless otherwise provided in the bid specifications, all items offered by the bidder must be new. A “new” item is one which will be used first by the City. This clause shall not be construed to prohibit bidders from offering goods, supplies, equipment or materials containing recycled materials or printing with recycled content; bidders intending to provide goods made with recycled materials should notify the Procurement Department.

3. **PAYMENT FOR EQUIPMENT**. Unless otherwise provided in the bid specifications, when equipment involves installation, (which shall also be interpreted to mean erection and/or setting up or placing in position for service or use) and/or testing, and where such installation or testing is delayed, payment may be made on the basis of 50% of the price bid when such equipment is delivered on site. A further allowance of 25% may be made when the equipment is installed and ready for test. The balance shall be paid only after the equipment is tested and found to be satisfactory by the City. If the equipment must be tested, but installation is not required to be made by the supplier or if the equipment must be installed but testing is not required, payment may be made on the basis of 75% at the time of delivery and the balance shall be paid after satisfactory testing and/or installation as required.

4. **TYPES OF BIDDER RESTRICTED**. Bidders must not be a party to more than one bid for the same article or service. A violation of this condition may, in the sole discretion of the Procurement Commissioner, result in rejection of any or all such bids in which the bidder is interested.

5. **QUANTITIES AWARDED**. For requirements contracts only, the articles and quantities of such articles as set forth in the Invitation and Bid are estimates and the Procurement Commissioner, in his/her sole discretion, may make an award for all or some of the articles bid and in such quantities as the Procurement Commissioner shall deem appropriate. For firm limit contracts, it is the City's intent to award based upon the quantities set forth in the Invitation and Bid, but the City reserves the right to award more or less.

6. **TAX EXEMPTION**. The City of Philadelphia is exempt from the payment of any federal excise or transportation taxes and any Pennsylvania Sales Tax. The price bid must be net, exclusive of taxes. However, when under established trade practice any federal excise tax is included in list prices, bidder may quote the list price and shall show separately the amount of the federal tax, either as a flat sum or as a percentage of the list price, which shall be deducted by the City. In the event bidder pays any sales or use tax, bidder hereby assigns to City, or City's agent, all of its rights, title and interest in any sales or use tax which may be refunded as a result of the purchase of any articles furnished in connection with the contract and bidder, unless directed by the City, shall not file a claim for any sales or use tax refund subject to this assignment. Bidder authorizes the City, in City's name or the name of bidder, to file a claim for refund of any sales or use tax subject to this assignment.

7. **PRICE INCREASES AND DISCOUNTS.** All articles must be delivered at the price(s) bid, FOB Destination Point. Bids containing reservations of the right to increase the price(s) bid , including, but not limited to, late payment charges, will not be considered, except where the Procurement Commissioner, in his/her sole discretion, finds it in the City’s best interest to do so. Discounts offered for payment may be a factor in the awarding of bids only in the event of tie bids. (In the event of an absolute tie the award decision will be made in the best interest of the City as determined by the Procurement Commissioner in his/her sole discretion.) Discounts must be for a period of at least 15 days to be so considered. Discounts offered shall be assumed to be from gross price unless otherwise indicated.

8. **BID SECURITY**. Unless the bidder is properly covered under the City's Annual Master Bid Security Program or an individual bid bond is required in the Invitation and Bid, all bids must be accompanied by a Certified Check, Treasurer's Check, Cashier's Check, Bank Money Order or United States Postal Money Order made payable to the order of "The City of Philadelphia" in the proper amount as shown below:

AMOUNT OF BID OR EST. CONTRACT	AMOUNT OF CERTIFIED CHECK
$ 25,000.00 or less	No Check Required
$ 25,000.01- $ 99,999.99	$ 500.00
$ 100,000.00 - $ 249,999.99	$ 2,000.00
$ 250,000.00- $ 499,999.99	$ 4,000.00
$ 500,000.00 or more	$ 6,000.00

When computing amount of Bid for Certified Check purposes, do NOT deduct for trade-ins.

Any bid in excess of $500,000 is not covered by the Annual Master Bid Security Program and bidder must submit a Certified Check, Treasurer's Check, Cashier's Check, Bank Money Order or United States Postal Money Order made payable to the order of "The City of Philadelphia" in the required amount.

Once the lowest responsive and responsible bidder has been determined, the Procurement Department shall refund, with the exception of the fee paid for participation in the City's Annual Master Bid Security program, the bid security except the bid security of the lowest responsive and responsible bidder. Upon return of the duly executed contract documents, required fees and the furnishing of any required bonds or other performance security by the lowest responsive and responsible bidder, its bid security will be refunded.

9. **PERFORMANCE SECURITY**. The City of Philadelphia requires performance security for contracts greater than $25,000. If the amount of the contract to be awarded is greater than $25,000 but less than or equal to $500,000, the successful bidder is required to participate in the City's Master Performance Security Program by paying to the City a non-refundable fee of $5.00 per thousand dollars of the contract amount for firm limit contracts and $4.00 per thousand dollars of the contract amount for requirements contracts, or as otherwise specified. If the amount of the contract to be awarded is in excess of $500,000 the successful bidder is required to furnish an individual performance bond, issued by a surety approved by the City on a form prepared by the City's Law Department and in the amount specified in the notice of contract award. The successful bidder is also required to pay a bond preparation fee to the City's Law Department in an amount prescribed by Chapter 17-700 of The Philadelphia Code; a schedule of such fees may be obtained from the Procurement Department's Public Information Office.

10. **CANCELLATION AND AWARD.** The Procurement Commissioner, in his/her sole discretion, may cancel any Invitation and Bid prior to bid opening. After bid opening, the Procurement Commissioner, in his/her sole discretion, may reject all bids, if deemed in the best interest of the City. In all cases where a contract award is made by the Procurement Department, the bidder is bound by the terms and conditions of the Invitation and Bid upon the submission of its bid. All bids are valid for a period of not less than 60 days, or as otherwise specified in the Invitation and Bid. If the bid has not been awarded within the specified period of time, the bid shall be valid for subsequent award only upon the express consent of the bidder, with no change to the submitted bid. All contract awards shall be made by the Procurement Department upon written notice to the bidder that is determined by the Procurement Department to be the lowest responsive and responsible bidder.

11. **RESPONSIVENESS.** Subject to the right of the Procurement Commissioner to waive nonresponsiveness as set forth below in this Section, these Terms and Conditions of Bidding and the specifications and requirements included in this Invitation and Bid are mandatory and must be strictly followed by all bidders in the preparation and submission of its bids. After bids are opened, the Procurement Department, and other City departments or agencies where appropriate or specified, shall review all bids for responsiveness to these Terms and Conditions of Bidding and the specifications and requirements included in this Invitation and Bid.

Any bid which is incomplete, obscure, conditional, or unbalanced, which contains additions not called for, or irregularities of any kind, including alterations or erasures, or which fails to conform in any respect to these Terms and Conditions of Bidding and the specifications and requirements included in this Invitation and Bid is nonresponsive and shall be rejected, except where the Procurement Commissioner, in his/her sole discretion, determines that the nonresponsiveness is not material to the Invitation and Bid or that a waiver of the nonresponsiveness is otherwise permitted by this Invitation and Bid, by these Terms and Conditions of Bidding or by law. The Procurement Department's determination of nonresponsiveness shall be final and any bid rejected as nonresponsive shall not be eligible for contract award.

12. **RESPONSIBILITY.** Unless otherwise specified, after bids are opened the Procurement Department, and other City departments or agencies where appropriate or specified, shall review and may investigate the responsibility, including, but not limited to, the qualifications, references, capacity and ability to perform the contract resulting from this Invitation and Bid in accordance with its terms, and integrity, of the lowest responsive bidder. All determinations of bidder responsibility shall be vested in the sound discretion of the Procurement Commissioner and other City officials. Any bidder who is deemed not responsible shall be ineligible for award of the contract.

Bidders deemed not responsible will be notified of such determination and the reasons therefore in writing by the Procurement Department, and shall have the right to contest the determination by submitting to the Procurement Department, within forty-eight (48) hours after receipt of its written determination, a written request for reconsideration that includes information relating to the bidder's

qualifications and responsibility and demonstrating the insufficiency of the reasons stated in the written determination for finding the bidder not responsible. Any further determination of a contesting bidder's responsibility shall be vested in the sound discretion of the Procurement Commissioner and other City officials.

13. **CONTRACTS**. Awards of contracts in amounts less than or equal to $25,000 shall become contracts binding upon the City upon written notice of award by the Procurement Commissioner. Awards of contracts in amounts greater than $25,000 shall not become contracts binding upon the City until after written notice of award is made and until after all of the following conditions have been satisfied:

a. Successful bidder posts sufficient Performance Security, as required in the Invitation and Bid, within the time specified in the written notice of award;
b. Successful bidder posts a Labor and Materials Bond, if and as required by the Invitation and Bid, within the time specified in the written notice of award;
c. Approval of the contract as to form by the City's Law Department;
d. Certification by the Director of Finance and City Controller as to the availability of funds; and
e. Execution of the contract by the Procurement Commissioner.

The Procurement Commissioner may, in his/her sole discretion, cancel any contract award if any of the above conditions (a-e) are not satisfied, or if the Procurement Commissioner, in his/her sole discretion, determines cancellation to be in the best interests of the City. The bidder agrees that in the event of such cancellation, it shall not have any claim against the City, including any claim for breach of contract or of any other legal duty, or for lost profits, costs, damages, or expenses of any kind.

14. **INSURANCE.** Unless otherwise specified, the successful bidder (referred to in this Section as "contractor") shall, at its sole cost and expense, procure and maintain in full force and effect, during the entire period of the contract (including any applicable warranty and/or renewal periods) the minimum types of insurance specified below. All insurance shall be procured from reputable insurers authorized to do business in the Commonwealth of Pennsylvania and shall be acceptable to the City. All insurance required herein shall be written on an "occurrence" basis and not a "claims-made" basis. The City of Philadelphia, its officers, employees and agents are to be named as additional insureds on all policies required hereunder, except the Workers' Compensation and Employers' Liability. Also, an endorsement is required stating that the coverage afforded these parties as additional insureds will be primary to any other coverage available to them. The City's coverage as an additional insured shall be primary coverage. The insurance shall provide for at least thirty (30) days prior written notice to be given to the City in the event coverage is materially changed, canceled or non-renewed. Certificates of insurance evidencing the required coverages shall be submitted to the City within fifteen (15) days of notice of contract award.

The City reserves the right to require the contractor to furnish certified copies of the original policies of all insurance required hereunder at any time upon fifteen (15) days prior written notice. The insurance requirements set forth herein are not intended and shall not be construed to modify, limit, or reduce the indemnifications made in this contract by the contractor to the City or to limit the contractor's liability under this contract to the limits of the policies of insurance required to be maintained by the contractor hereunder.

(a) WORKERS COMPENSATION AND EMPLOYERS LIABILITY:
- (1) Workers' Compensation -Statutory limits.
- (2) Employers Liability - $100,000 Each Accident - Bodily Injury by Accident; $100,000 Each Employee - Bodily Injury by Disease; $500,000 Policy Limit -Bodily Injury by disease
- (3) All states endorsement

(b) GENERAL LIABILITY INSURANCE
- (1)Limit of Liability: $1,000,000 per occurrence combined single limit for bodily injury (including death) and property damage liability.
- (2) Coverage: Premises operation; Blanket contractual liability; Personal injury liability (employee exclusion deleted); Products and completed operations; Independent Contractors; Employees as additional insured; Cross liability; Broad form property damage (including loss of use) liability; Asbestos abatement liability coverage (Note: Required for asbestos abatement projects only).

(c) AUTOMOBILE LIABILITY
- (1) Limit of Liability: $1,000,000 per occurrence combined single limit for bodily injury (including death) and property damage liability.
- (2) Coverage: owned, non-owned and hired vehicles.

15. **FAILURE TO EXECUTE CONTRACT**. Any bidder not lawfully released from its bid, who refuses to execute a contract in accordance with its bid or who fails, refuses or is unable to furnish any required bonds, performance security or insurance, as may be required by the Invitation and Bid and/or these Terms and Conditions of Bidding, shall be liable for the entire amount of its bid security, as liquidated damages to the City; or if bid security is furnished under the Annual Master Bid Security Program, for 10% of the amount of its bid, as liquidated damages to the City; or where the damages are readily ascertainable by the City, for the actual loss, cost or damage incurred by the City as a result of its failure to execute the contract or to furnish such bonds, performance security or insurance.

16. **DEFAULT**. All work performed and goods and services rendered by a successful bidder (referred to in this Section as "contractor") under any contract resulting from this Invitation and Bid shall strictly conform to these Terms and Conditions of Bidding and the specifications and requirements contained in this Invitation and Bid. The successful bidder shall comply with all federal state and local laws, statutes and ordinances and the regulations of all governmental departments, boards, agencies and commissions. The following shall constitute

events of default under any contract resulting from this Invitation and Bid:

a. Failure by contractor to comply with any provision or Section of the contract, including the bid specifications contained in this Invitation and Bid and these Terms and Conditions of Bidding and/or failure by contractor to comply with any federal state and local law, statute, ordinance or regulation of any governmental department, board, agency and commission.
b. Falseness of any representation or warranty made in the contract or other document(s) submitted to the City by contractor in connection with this Invitation and Bid.
c. Failure by contractor to pay its suppliers or subcontractors, misappropriation of any funds provided under the contract or failure to notify City upon discovery of any misappropriation.
d. A violation of law by contractor which results in its making a guilty plea, a plea of nolo contendere, or conviction of a criminal offense by contractor, its directors, employees, or agents or indictment or issuance of charges against contractor, its directors, employees or agents for any criminal offense or other violation of law (whether or not the offense or violation of law is ultimately adjudged to have occurred), where such criminal offense, violation, indictment or charges, in the sole judgment of the Procurement Commissioner, adversely affect the performance of the contract.
e. Failure by contractor to comply with the Mayoral Executive Order establishing the City's antidiscrimination policy relating to the participation of minority, woman and disabled owned disadvantaged business enterprises.
f. The Procurement Department's determination that the contractor is not a responsible bidder on this Invitation and Bid, where such determination is made, and is based upon, information received after award of the contract and/or after execution of the contract by the Procurement Commissioner and/or after satisfaction of any or all other conditions of a binding contract set forth in Section 13 above.
g. Any other act or omission identified in these Terms and Conditions of Bidding or elsewhere in the Invitation and Bid as an event or condition constituting default.

Upon the occurrence of an event of default, the Procurement Commissioner, in his/her sole discretion, may require contractor to cure the default within a period of time to be determined by the Procurement Commissioner, or terminate the contract in whole or in part and exercise any one or more of the following remedies (which remedies may be concurrent and shall be in addition to and not in lieu of the remedies available to the City at law, in equity, under any bond(s) filed in connection with the contract or under other sections of these Terms and Conditions of Bidding and contract):

a. purchase goods and/or services from others in substitution of goods or services that were not furnished or performed by contractor or that were defective or otherwise in violation of any provision of the contract; the cost of such substituted goods and services shall be the sole responsibility of contractor and contractor agrees to pay immediately, upon receipt of the City's invoice, the difference between the contract price and the substituted product or service cost, plus any other loss, cost or damages incurred by the City.

b. appropriate to the payment of the difference between the contract price and the cost of such substitute goods or services, and the amount of any other loss, cost or damage incurred by the City as a result of the default, any monies which may then be due and payable to contractor under this contract or any other contract that contractor then has with the City.

The City shall notify contractor in writing of such termination, which shall be effective as of the date specified in the notice of termination (the "Termination Date"). The Procurement Commissioner may, in his/her sole discretion, require contractor to continue to furnish all goods and perform all services required under the contract until the Termination Date, in which case, subject to the remedies enumerated above, the successful bidder shall be paid in accordance with the contract therefor. If the City requires contractor to cure the event(s) of default, or to continue to furnish goods or services until the Termination Date, and contractor refuses or fails to do so, then such failure shall itself be deemed an event of default under this Section, for which the City may exercise any of its rights hereunder.

17. **BID PROCESSING FEE**. In addition to bid security and any other fee or monies required to be submitted with the bid, the bid shall be accompanied by a non-refundable processing fee in the form of a separate Standard Check, Bank Money Order or United States Postal Money Order made payable to the order of "City of Philadelphia" in an amount based on the gross amount of the bid in accordance with the formula below. Cash is not acceptable.

AMOUNT OF BID OR ESTIMATED CONTRACT	AMOUNT OF PROCESSING FEE
$ 25, 000.00 or less	No Check Required
$ 25,000.01 to $ 100,000.00	$ 10.00
$ 100,000.01 to $ 300,000.00	$ 30.00
$ 300,000.01 to $ 500,000.00	$ 50.00
$ 500,000.01 to $ 1,000,000.00	$ 100.00
$ 1,000,000.01 to $ 2,000,000.00	$ 200.00
$ 2,000,000.01 to $ 3,000,000.00	$ 300.00
$ 3,000,000.01 to $ 4,000,000.00	$ 400.00
$ 4,000,000.01 to $ 5,000,000.00	$ 500.00
$ 5,000,000.01 or more	$ 600.00

Failure to submit the Bid Processing Fee may result in rejection of the bidder's bid. In addition, if a contract award is made pursuant to this Invitation and Bid, any unpaid bid processing fees owed by the successful bidder to the City must be paid prior to the City's release of any payments under the resulting contract.

18. **NONDISCRIMINATION**.
a. Any contract awarded pursuant to this Invitation and Bid is entered into under the terms of the Philadelphia Home Rule Charter and in its performance, bidder shall not discriminate nor permit discrimination against any person because of race, color, religion, national origin or sex. Such discrimination shall constitute an event of default under this contract entitling City to terminate this contract forthwith. This right of termination shall be in addition to any other rights or remedies as provided herein in Section 16 or otherwise available to the City at law or in equity.
b. In accordance with Chapter 17-400 of The Philadelphia Code, bidder agrees that its payment or reimbursement of membership fees or other expenses associated with participation by its employees in an exclusionary private organization, insofar as such participation confers an employment advantage or constitutes or results in discrimination with regard to hiring, tenure of employment, promotions, terms, privileges or conditions of employment, on the basis of race, color, sex, sexual orientation, religion, national origin or ancestry, shall constitute an event of default under this contract and shall entitle the City to all rights and remedies as provided herein in Section 16 or otherwise available to the City at law or in equity. Bidder agrees to include the immediately preceding sentence, with appropriate adjustments for the identity of the parties, in all subcontracts which are entered into pursuant to this contract. Bidder further agrees to cooperate with the Commission on Human Relations of the City of Philadelphia in any manner which the said Commission deems reasonable and necessary for the Commission to carry out its responsibilities under Chapter 17-400 of The Philadelphia Code. Failure to so cooperate shall constitute an event of default under this contract entitling the City to all rights and remedies as provided herein in Section 16 or otherwise available to the City at law or in equity.

19. **ETHICS REQUIREMENTS**. To preserve the integrity of City employees and maintain public confidence in the competitive bidding system, the City intends to vigorously enforce the various ethics laws as they relate to City employees in the bidding and execution of City contracts. Such laws are in three categories:

a. Gifts. Executive Order No. 16-92 prohibits City employees from soliciting or accepting anything of value from any person or entity seeking to initiate or maintain a business relationship with the City of Philadelphia, its departments, boards, commissions and agencies. All City employees presented with gifts or gratuities as indicated in Executive Order 16-92 have been instructed to report these actions to the appropriate authorities. All bidders, agents or intermediaries who are solicited for gifts or gratuities by City employees are urged to report these incidents to the Inspector General, Aramark Tower, Third Floor, 1101 Market Street, Philadelphia, PA 19107.
b. City employee interest in City contracts. In accordance with Section 10-102 of The Philadelphia Home Rule Charter, no bid shall be accepted from, or contract awarded to, any City employee or official, or any firm in which a City employee or official has a direct or indirect financial interest. All bidders are required to disclose any current City employees or officials who are employees or officials of the bidder's firm, or who otherwise would have a financial interest in the contract.
c. Conflict of Interest. Both the State Ethics Act and the City Ethics Code prohibit a public employee from using his/her public office or any confidential information gained thereby to obtain financial gain for himself/herself, a member of his/her immediate family, or a business with which he/she or a member of his/her immediate family is associated. "Use of public office" is avoided by the employee or official publicly disclosing the conflict and disqualifying himself/herself from official action in the matter, as provided in The Philadelphia Code §20-608.

20. **PATENTS**. The successful bidder shall be solely responsible for all royalties and charges that may be due to any patent holder for or on account of the use of any patented appliance, product or processes. Evidence of such payment shall be submitted upon request of the Procurement Commissioner and failure to submit such evidence may, in the sole discretion of the Procurement Commissioner, result in rejection of the bid or constitute an event of default, entitling the City to all rights and remedies as provided herein in Section 15 and/or Section 16..

21. **INDEMNIFICATION**. All bidders shall indemnify, defend and hold harmless the City, its officers, employees and agents from and against any and all losses, costs (including, but not limited to, litigation and settlement costs and counsel fees), claims, suits, actions, damages, liabilities and expenses, occasioned wholly or in part by the bidder's act or omission or fault or negligence or the act or omission or fault or negligence of bidder's agents, subcontractors (including suppliers), employees or servants in connection with the contract, including, but not limited to, those acts or omissions or faults or negligence in connection with loss of life, bodily injury, personal injury, damage to property, contamination or adverse effects on the environment, the bidder's default under the contract, losses incurred by the City's Master Performance Security Program, failure to pay subcontractors and suppliers and any infringement or violation of any proprietary right (including, but not limited to, patent, copyright, trademark, service mark and trade secret). This obligation to indemnify, defend and hold harmless the City, its officers, employees and agents shall survive the termination of the contract resulting from this Invitation and Bid.

22. **TAX REQUIREMENTS**. Any contractor, or vendor of goods, wares and merchandise, or purveyor of services, who bids on and is awarded a contract by the City and/or School District of Philadelphia, is subject to Philadelphia's business tax and Ordinances and regulations. The City Solicitor has ruled that anyone who is awarded a contract by the City

and/or School District pursuant to a bid has entered into a contract within the City, and the subsequent delivery of goods into the City or performance of services within the City constitutes "doing business" in the City and subjects the successful bidder, including but not limited to, one or more of the following taxes:

a. Business Privilege Tax
b. Net Profits Tax
c. City Wage Tax

The successful bidder, if not already paying the aforesaid taxes, is required to apply to the Department of Revenue, 1401 John F. Kennedy Blvd., Public Service Concourse, Municipal Services Building, Philadelphia, PA 19102, for a tax identification number and to file appropriate business tax returns as provided by law. Questions should be directed to the Business and Earnings Tax Unit at (215) 686-6600.

23. **TAX INDEBTEDNESS**. The City of Philadelphia does not wish to do business with tax delinquents or other businesses indebted to the City. In furtherance of this policy, the following certifications have been developed and shall form a part of any contract resulting from this Invitation and Bid. The successful bidder, or other entity contracting with the City is referred to below as the "contractor".

a. Contractor's Certification of Non-Indebtedness - Contractor hereby certifies and represents that contractor and contractor's parent company(ies) and subsidiary(ies) are not currently indebted to the City of Philadelphia (the "City"), and will not at any time during the term of this contract (including any extensions or renewals thereof) be indebted to the City, for or on account of any delinquent taxes (including, but not limited to, taxes collected by the City on behalf of the School District), liens, judgments, fees or other debts for which no written agreement or payment plan satisfactory to the City has been established. In addition to any other rights or remedies available to the City at law or in equity, contractor acknowledges that any breach or failure to conform to this certification may, at the option of the City, result in the withholding of payments otherwise due to contractor and, if such breach or failure is not resolved to the City's satisfaction within a reasonable time frame specified by the City in writing, may result in the offset of any such indebtedness against said payments and/or the termination of this contract for default (in which case Contractor shall be liable for all costs, losses and other damages resulting from the termination).

b. Subcontractor's Certification of Non-Indebtedness - Contractor shall require all subcontractors performing work in connection with this contract ("subcontractor" shall also include suppliers providing goods or materials) to be bound by the following provision and contractor shall cooperate fully with the City in exercising the rights and remedies described below or otherwise available at law or in equity:

"Subcontractor hereby certifies and represents that subcontractor and subcontractor's parent company(ies) and subsidiary(ies) are not currently indebted to the City of Philadelphia ("City"), and will not at any time during the term of contractor's contract with the City (the "contract"), including any extensions or renewals thereof, be indebted to the City, for or on account of any delinquent taxes (including, but not limited to, taxes collected by the City on behalf of the School District of Philadelphia), liens, judgments, fees or other debts for which no written agreement or payment plan satisfactory to the City has been established. In addition to any other rights or remedies available at law or in equity, subcontractor acknowledges that any breach of or failure to conform to this certification may, at the option of the City, result in the withholding of payments otherwise due to subcontractor for services rendered in connection with the contract and, if such breach or failure is not resolved to the City's satisfaction within a reasonable time frame specified by the City in writing, may result in the offset of any such indebtedness against said payments otherwise due to subcontractor and/or the termination of subcontractor for default (in which case subcontractor shall be liable for all costs, losses and other damages resulting from the termination)."

24. **ASSIGNMENT**. The successful bidder shall not assign the contract resulting from this Invitation and Bid, or any part of the contract, or any right to any monies to be paid under the contract, or delegate performance of the contract, without obtaining the prior written consent of the Procurement Commissioner. The decision whether to consent to an assignment is within the Procurement Commissioner's sole discretion. In no case shall the Procurement Commissioner's consent to the assignment of any monies to be paid under the contract relieve the bidder from faithful performance of any of its obligations under the contract or change any of the terms and conditions of the contract. Any purported assignment in violation of this provision shall be of no effect.

25. **MACBRIDE PRINCIPLES CERTIFICATION**. Section 17-104(2)(b) of The Philadelphia Code prohibits the City from accepting bids from companies that do business in Northern Ireland, unless that business has implemented the fair employment principles embodied in the Macbride Principles. In furtherance of this Ordinance, bidder makes the following certification and representations:

a. In accordance with Section 17-104 of the Philadelphia Code, bidder by execution of its bid certifies and represents that (i) bidder (including any parent company, subsidiary, exclusive distributor, or company affiliated with Bidder) does not have, and will not have at any time during the term of any contract resulting from this bid (including any extensions thereof), any investments, licenses, franchises, management agreements or operations in Northern Ireland and (ii) no product to be provided to the City under any resulting contract will originate in Northern Ireland, unless Bidder has implemented the fair employment principles embodied in the MacBride Principles.

b. In the performance of any contract resulting from this bid, Bidder agrees that it will not utilize any suppliers or subcontractors at any tier (i) who have (or whose parent subsidiary, exclusive distributor of company affiliate have)

any investments, licenses, franchises, management agreements or operations in Northern Ireland or (ii) who will provide products originating in Northern Ireland unless said supplier or subcontractor has implemented the fair employment principles embodied in the MacBride Principles. Bidder further agrees to include provisions with this subparagraph (b), with appropriate adjustments for the identity of the parties, in all subcontracts and supply agreements which are entered into in connection with the performance of any resulting contract.

c. Bidder agrees to cooperate with the City's Director of Finance in any manner which the said Director deems reasonable and necessary to carry out the Director's responsibilities under Section 17-104 of The Philadelphia Code. Bidder expressly understands and agrees that any false certification or representation in connection with this subparagraph (c) and/or any failure to comply with the provisions of this subparagraph (c) shall constitute a substantial breach of any contract resulting from this Invitation and Bid entitling the City to all rights and remedies provided in this bid or otherwise available in law (including, but not limited to Section 17-104 of the Philadelphia Code) or at equity. In addition, it is understood that false certification or representation is subject to prosecution under 18 Pa.C.S. Section 4904.

BIDDER MUST SIGN BID on Page 8 of 8 of Conditions of Bidding

SIGNING OF BIDS

This contract consists of the Invitation and Bid (including exhibits and attachments), any addenda thereto issued by the City and the foregoing Terms and Conditions of Bidding (collectively, the "contract") and contains all the terms, conditions and requirements agreed upon by the parties. The terms "contract" and "agreement," whether capitalized or uncapitalized, shall have the foregoing meaning wherever they are used in the Invitation and Bid, addenda thereto, the Terms and Conditions of Bidding, and this page. No other contract or agreement, oral or otherwise, regarding the subject matter of the contract shall be deemed to exist or to bind any party hereto or to vary any of the terms contained in the contract.

This contract may not be changed, amended or renewed, in whole or in part, except by a written amendment signed by the parties. No waiver by the City of any breach or noncompliance by the undersigned with any provision of this contract shall relieve the undersigned of any of its obligations or representations made under this contract.

This contract and all disputes arising under this contract shall be governed, construed and decided in accordance with the laws of the Commonwealth of Pennsylvania. The parties agree that any lawsuit, action, claim or legal proceeding involving, directly or indirectly, any matter arising out of or related to this contract or the relationship created or evidenced thereby, shall be brought exclusively in the United States District Court for the Eastern District of Pennsylvania or the Court of Common Pleas of Philadelphia County. It is the express intent of the parties that jurisdiction over any lawsuit, action, claim, or legal proceeding shall lie exclusively in either of these two forums. The parties further agree not to raise any objection to any lawsuit, action, claim or legal proceeding which is brought in either of these two forums and the parties expressly consent to the jurisdiction and venue of these two forums. The parties further agree that service of original process in any such lawsuit, action, claim or legal proceeding may be duly effected by mailing a copy thereof, by certified mail, postage prepaid to the addresses specified in the Invitation and Bid and/or this page.

NOTE: ANY BID THAT IS NOT EXECUTED IN ACCORDANCE WITH THE INSTRUCTIONS PROVIDED BELOW OR THAT DOES NOT INCLUDE STREET ADDRESS, CITY, STATE AND PHONE NUMBER, MAY, IN THE SOLE DISCRETION OF THE PROCUREMENT COMMISSIONER, BE REJECTED.

SIGNING OF BIDS:
If bid is by an INDIVIDUAL or a PARTNERSHIP, or if the bid does not exceed $25,000, date and sign the bid here, with original signatures, in ink.

This _____day of_____200____

_____ _____
(Signature of Owner, Partner) **(Type or Print Name and Title)**

_____
(Business Name of Bidder)

_____ _____
(Address, including Zip Code) **(Telephone Number, including Area Code)**

If bid is by a CORPORATION, date and sign the bid here with original signatures, in ink, by (a) President or Vice-President of the corporation AND (b) Secretary, Assistant Secretary, Treasurer or Assistant Treasurer of the corporation; and (c) affix the seal of the corporation. If the form is not signed by the President or a Vice-President and Secretary, Assistant Secretary, Treasurer or Assistant Treasurer, attach a duly certified corporate resolution authorizing the person signing in place of such officers to execute this bid for the corporation.

This_____day of _____200____

CORPORATE SEAL

_____
(Corporate or Business Name of Bidder)

_____ _____
(Address, including Zip Code) **(Telephone Number, including Area Code)**

_____ _____
(Signature of President or a Vice-President) **(Signature of Secy., Asst.Secy., Treas. or Asst.Treas.)**

_____ _____
(Type or Print Name and Title) **(Type or Print Name and Title)**

APPROVED AS TO FORM CONTRACT EXECUTION

_____ _____
(Asst. City Solicitor) **(Procurement Commissioner)**

CITY OF PHILADELPHIA

INSTRUCTIONS FOR GETTING PAID BY THE CITY OF PHILADELPHIA

The City attempts to process invoices in a timely manner. Delays can occur because of incomplete or inaccurate invoicing information. Please make sure that all your invoices contain the following information to help the City in paying you as quickly as possible.

1. **AFTER THE DELIVERY OR SERVICES HAS BEEN COMPLETED YOU MUST SUBMIT THREE (3) COPIES OF AN INVOICE FOR PAYMENT TO THE RECEIVING DEPARTMENT LISTED ON THE PURCHASE ORDER.**

2. **THE INVOICE MUST CORRECTLY REFERENCE THE PURCHASE ORDER NUMBER, THE VENDOR NAME, ADDRESS AND FEDERAL EMPLOYER IDENTIFICATION NUMBER.**

3. **CHECKS WILL ONLY BE MADE PAYABLE TO THE COMPANY NAME AS SHOWN ON THE PURCHASE ORDER; THE INVOICE MUST REFLECT THIS SAME COMPANY NAME AS THE "PAY TO".**

4. **THE INVOICE MUST SHOW THE QUANTITY AND TYPE OF ITEM OR SERVICE AND THE PRICE.**

5. **THE UNIT OF PURCHASE ON THE INVOICE MUST AGREE WITH THE UNIT CITED ON THE PURCHASE ORDER. REFERENCE TO THE SPECIFIC LINE ITEM IS HELPFUL.**

Paying vendors is the responsibility of the *receiving* City Department(s), not the Procurement Department. Vendors should bring any problems concerning payments to the attention of the appropriate City receiving department. The name and number of the contact person can generally be found on the purchase order. If all necessary paperwork has been submitted to the department and questions still remain, vendors should contact:

City of Philadelphia
Accounting Verification
Room 1340 Municipal Services Building
1401 J.F.K. Blvd.
Philadelphia, PA 19102
Tel. 215 686 6365

VENDORS INTERESTED IN RECEIVING PAYMENTS ELECTRONICALLY MUST COMPLETE AN ACH VENDOR ENROLLMENT AND CHANGE FORM. THIS FORM CAN BE DOWNLOADED FROM WWW.PHILA.GOV/BIDS.

BIDDERS GUIDELINES*

The following list will assist you in the preparation of your bid.

- Read the entire bid so that you fully understand all the requirements.
- All bids must be submitted to the City no later than the time and date stated as the bid opening.
- Note the City Anti-Discrimination Policy. If Minority Business Council Participation is required be sure to fill out all appropriate forms. If you have questions call MBEC at (215) 686-6232.
- Make sure you submit the appropriate Bid Security and Bid Submission Fee with your bid. Refer to Section 1 of the bid and the Conditions of Bidding sheet.
- Bidder must meet **all** qualifications.
- If an alternate to any item is being offered, you must follow the instructions in paragraph 2 of the Conditions of Bidding sheet.
- Does the bid require a site inspection, attendance at a Pre-Bid Meeting, samples, financial information or other data you must provide?
- Have you signed and returned all Addenda?
- If the bid is going to be awarded as a whole, you must bid on all items. See Section 3 of the bid: Bid Evaluation and Award.
- Bidders' attention is directed to the Conditions of Bidding sheet regarding the Master Performance Bond.
- Bids and pricing must be written in ink or typed. FAXed bids will not be accepted.
- **Do not** submit counter terms or conditions. **Your bid will be rejected**.
- Have you signed the Contract Page and affixed your Corporate Seal as required?
- **Do not** combine check amounts: All checks should be individual and specific.
- Please double check all mathematical calculations for errors.

If you have questions call Public Information at (215) 686-4720.

*This information is provided for guidance only and does not preclude your responsibility to read fully and respond to all portions of this bid.

CITY OF PHILADELPHIA

PROCUREMENT DEPARTMENT

Public Information Unit

ATTENTION VENDORS

If your company would like to receive the results of a particular bid, the Public Information Unit of the Procurement Department will forward this information to you after the contract has been fully executed, at a ***fee of $10.00*** for ***each*** bid number requested. Please be advised that bid tabulations ***are not available*** by telephone. If you have any questions, please call 215-686-4755 or 4756.

BID RESULTS REQUEST FORM

Please complete form below. Only one (1) request per form.

PLEASE NOTE INCREASED FEE Date of Request: _____

Bid Number Requested: _____ Opening Date: _____

Company Name: _____

Company Representative: _____

Address: _____

_____

Telephone No.: _____ Fax No.: _____

Mail this Request to the address below and enclose the following items:

- ☐ Check or Money Order payable to "**City of Philadelphia**";
- ☐ A self-addressed stamped envelope which is **at least 9 ½" x 12 ½" or larger** for each Bid requested.

Failure to send either of the above items, will void your request.

Mail Request To:

The Procurement Department Public Information Unit
Attention: Bid Results
1401 JFK Blvd.
Room 170B, MSB
Philadelphia, PA 19102-1685

Do Not Send Cash

Internal Use Only:	
Date Request Received:	Check Type:
Date Bid Result(s) Mailed:	Check Number:
Initials:	Check Amount $

Revised 10/01

C I T Y O F P H I L A D E L P H I A

Procurement Department
120 Municipal Services Building
Philadelphia, PA 19102-1685
(215) 686-4720
(215) 686-4716 Fax

William F. Gamble
Procurement Commissioner

Master Bid Security Program for Service, Supplies and Equipment Bids
Period of Coverage: July 1, 2006 – June 30, 2008

(Bids for Professional Consulting Services, Public Works, Construction and Demolition [wrecking and building removal] *are not* covered under the Master Bid Security Program)

Dear Vendor:

The Philadelphia City Charter requires that each bid submission over $25,000 be accompanied by a certified check in the amount specified in the bid invitation. This requirement can be met for most bids if the Bidder is covered under the City's Master Bid Security Program. This program provides bid security coverage for Service, Supply and Equipment bids that have a total dollar value of over $25,000 up to $500,000.

To file for coverage under the Bid Security Program, for the period **July 1, 2006 to June 30, 2008**, complete the enclosed application and return it with a check for **$175.00.** Make the check payable to "**City of Philadelphia**". It is **non-refundable.** To clarify the precise use of the check, enter the words "**Bid Security Program**" **2006 – 2008** on the face of the check.

If you do not become a participant in the program at this time, you may still submit bids. However, they must be accompanied by a certified check in the amount specified in the Terms and Conditions of Bidding.

For additional information or inquiries regarding this program, please contact: The Public Information Unit at (215) 686-4719, (215) 686-4720 or (215) 686-4721.

IF A RECEIPT IS REQUESTED, PLEASE ENCLOSE A SELF-ADDRESSED STAMPED ENVELOPE.

Forward Check with Application to
CITY OF PHILADELPHIA
MASTER BID SECURITY PROGRAM
170A Municipal Services Building
Philadelphia, PA 19102-1685

Company Name: _____

Fed EIN/SSN: _____

Street Address _____

City, State, Zip: _____

Contact Person: _____

Telephone No: (___)_____Fax No: (___)_____

☐ A. Check payable to the City of Philadelphia in the amount of $175.00 for 7/1/06 to 6/30/08
DO NOT SEND CASH

Internal Use Only

Rcvd. ___/___/___ Pymt. Type _____ Ck. Amt. $ _____ Ck.# _____

C I T Y O F P H I L A D E L P H I A

Office of the Director of Finance
Room 1330, Municipal Services Bldg.
1401 John F. Kennedy Boulevard
Philadelphia, PA 19102-1693

Vincent Jannetti
Director of Finance

The City of Philadelphia is pleased to announce a Vendor Information Payment System (VIPS) which will allow businesses such as yours to inquire about the status of invoices billed against purchase orders and professional services contracts. The only requirement is that your invoices utilize a unique number - either alpha, numeric or a combination of the two.

This system will be operational twenty four hours a day, seven days a week. All you have to do is dial **215-686-5968,** and follow the prompts to get an up to date status on your payments.

Enclosed for your convenience is an easy to use reference guide which provides a brief overview of what you can expect. I urge you to give it a try and see for yourself how easy it is to use. If you should happen to experience any problems, or if you would like to comment on this system, please call the Office of the Director of Finance at **215-686-6167**.

I believe that you will find this way of obtaining payment information convenient and easy to use.

Vendor Information Payment Reference Guide

- 1- Call 215-686-5968.
- 2- After the prompts,enter the 8 numeric characters that uniquely identifies your purchase order.
- 3- Select one of the three inquiry options:
  - a) by your purchase order.
  - b) by your company.
  - c) by your specific invoice number.
    - (Numeric invoice numbers only)

CITY OF PHILADELPHIA

OFFICE OF THE DIRECTOR OF FINANCE
Room 1330 Municipal Services Building
1401 John F. Kennedy Boulevard
Philadelphia, PA 19102-1693

Dear Valued Vendor,

The City of Philadelphia is pleased to announce a new online Vendor Invoice Information (VII) website which will allow businesses such as yours to inquire about the status of invoices billed against purchase orders and professional services contracts. The only requirement is that your invoices utilize a unique number - alpha, numeric or a combination of the two.

This system will be operational twenty four hours a day, seven days a week. All you have to do is log on to the City of Philadelphia's website: www.phila.gov, click on Vendor Invoice Information under the Help Me Section of the home page, enter your Federal Employer Identification Number (FEIN) and a valid active purchase order. Then, agree to a waiver statement and follow the prompts to get an up to date status on your payments.

I urge you to give it a try and see for yourself how easy it is to use. If you should happen to experience any problems, or if you would like to comment on this new system, please e-mail us using the question and comment field provided on the site.

I believe that you will find this new way of obtaining payment information convenient and easy to use.

Sincerely,

Vincent J. Jannetti
Acting Director of Finance