

**METROPOLITAN WASHINGTON AIRPORT AUTHORITY**

# **Design-Build Statement of Work**

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## **Relocation Of Airfield Transformer Vault 900**

**Ronald Reagan Washington National Airport**

**11/26/2018**

Prepared by: Design Engineering

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**Appendix A: Preliminary Design Report for Relocation of Transformer Vault (TV-900) at Ronald Reagan Washington National Airport**

**Appendix B: Authority Division 00 and Division 01 Specifications to be edited and included with the Construction Documents**

# I. Design-Build Requirements

## 1. OVERVIEW

### A. BACKGROUND

The existing Airfield Transformer Vault 900 (TV-900) building houses the runway and taxiway regulator rooms, Airfield Lighting Control System and associated equipment along with an FAA room, maintenance and support spaces.

The existing Airfield TV-900 is to be relocated to allow for south airfield modifications needed to enhance airfield safety, address non-standard geometry and to improve the Runway 1 Hold Apron spacing.

### B. SCOPE OF WORK

The Scope of Work associated with the relocation of Airfield TV-900 will include the evaluation of the existing facility, survey of proposed site, associated utilities, meeting with Authority and FAA personnel, production of Contract Documents and Construction of a new TV-900 Facility to include but not limited to site work, utilities, foundations, building, systems and demolition and site restoration of the existing facility.

The work associated will include the following as described in Appendix A:

- Verify the survey provided in the Appendix A, identify and mark/stake the site in survey feet for both horizontal and vertical measurements.
- Identify and plot existing utilities running through and in the proximity to the proposed site.
- Provide a finalized TV-900 site layout depicting TV-900 building, standby Diesel generator, electrical switchgear, vehicle parking, utilities and connections consistent with Appendix A.
- Provide a TV-900 interior building layouts to include two (2) regulator rooms, work room, work/storage room, FAA room, office room, unisex rest room, mechanical and electrical rooms consistent with Appendix A.
- Provide a finalized TV-900 building rendering for the building layouts described above and consistent with the Appendix A.
- Perform finalized building code analysis for the finalized building.
- Provide electrical power to TV-900 and FAA facilities as noted in Appendix A.
- Provide communication circuits and raceway to TV-900 and FAA facilities.
- Provide a new Airfield Lighting Control System head end and reconnect for existing operations,
- Provide for the Construction of the new TV-900 Facility and Demolition of the existing TV-900 Facility to include all required Utility connections, FAA facilities and reconnection of the Airfield lighting circuits to the new facility and removal of all above grade facilities, no longer required underground circuit cabling, site cleared with gravel finish, etc.

- Determine which FAA facilities are electrically powered, controlled or otherwise interfaced with and/or dependent on the TV-900 relocation and provide suitable new power and control circuits.
- Provide an FAA facilities turnover steps and milestone schedule.
- Provide all Construction Document packages for a complete and functioning facility to replace the existing TV-900 facility.
- Provide all Construction Document packages for the demolition and site restoration of the existing TV-900 facility and site.
- Utilizing the produced Construction Document packages construct a complete and functioning TV-900 facility and site.
- Utilizing the produced Construction Document package demolish and restore the existing TV-900 facility and site following the commissioning of the new TV-900 facility and site.

### C. OBJECTIVES

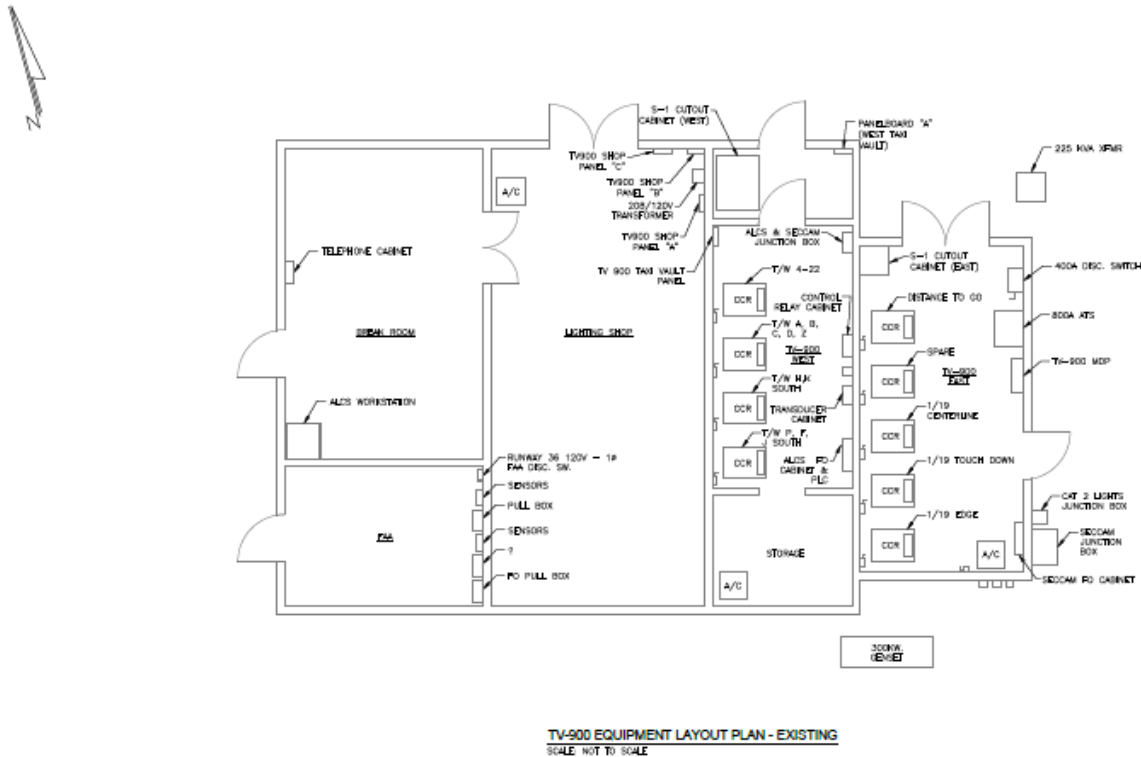
The objective of this solicitation is to obtain a fully functional, operational and easily maintainable facility that conforms to the basic dimensions and configurations presented in the SOW and Appendix A related concept drawings. Additionally the objective includes the demolition of the existing Airfield TV-900 facility following commissioning of the new TV-900 facility. The Contractor shall coordinate between all professional disciplines and construction trades to fulfill the requirements of this contract and to provide a complete, integrated, and functional design. All project design, construction documents and construction shall comply with this SOW and the Authority Design Manual including all related drawings, specifications, appendices and requirements. Design and technical criteria contained and cited in this SOW and the Authority Design Manual establish minimum standards for design and construction quality. The Contractor shall comply with all applicable design and construction criteria using industry standard best practices and materials. The materials selected shall be high quality, durable and easily maintained. Adjustments and enhancements to the SOW floor and site plans are permitted to accommodate actual design and construction conditions, however no deviations from the criteria shall be permitted without prior written approval from the Contracting Officer. All questions or problems encountered by the Contractor in following criteria shall be promptly submitted with recommendations to the Contracting Officer for review. The SOW documents do not present or solve any building code or life safety issues. The Design Professionals of Record have full responsibility to design and direct construction to comply with the Virginia Uniform Statewide Building Code (VUSBC) and life safety codes. Architectural detail, materials and finishes are paramount to the success of this project. Specify and provide exterior products, materials and finishes that are as identical to those of the other Airport facilities as practicable.

## 2. REFERENCES

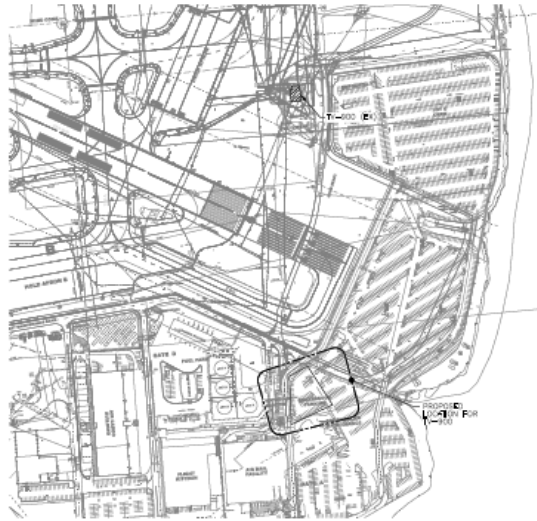
### A. Airfield TV-900 Building (Existing Conditions)

The existing Airfield TV-900 is a single story concrete block building with a structure footprint totaling approximately 2400 square feet that includes runway and taxiway regulator rooms, FAA room, lighting shop, storage area, break room and an exterior located standby generator and transformer.

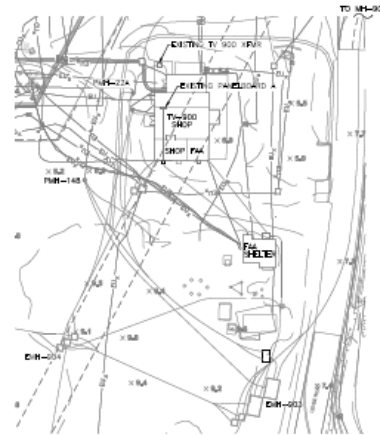
Exhibit #1 and #2 show the existing TV-900 building plan and location.



**Exhibit 1: Existing Floorplan**



TV-900 SITE PLAN - EXISTING AND NEW LOCATIONS  
SCALE: NOT TO SCALE



PARTIAL SITE PLAN - EXISTING TV-900  
SCALE: 1" = 30'-0"

GRAPHIC SCALE

## ***Exhibit 2: Existing Site Location***

The runway regulator room (TV-900 east) houses three (3) 30kW, 20A; one (1) 30kW, 6.6A; and one (1) 20kW, 6.6A constant current regulators (CCRs); cutout cabinet, associated equipment and wiring. Four of the regulators in runway regulator room are oil cooled and one is dry type. The taxiway regulator room (TV-900 west) has four (4) 20kW, 6.6A constant current regulators. All regulators in the taxiway regulator room are oil cooled. One of the 5 CCRs in runway regulators room is a spare unit.

### **B. Mechanical System**

The runway and taxiway regulator rooms; and the lighting shop are provided with dedicated unit type air conditioners. The remainder of the facility are provided with ventilation fans.

### **C. Electrical Distribution System**

The facility receives electrical service at 480V via a local pad-mounted transformer. An existing pad mounted switch in the vicinity of TV-900 provides radial 4160 volt feeder to the transformer. A 300kW diesel generator provides standby power to the TV-900 facility. The transformer and the generator are located outdoors. The automatic transfer switch and main distribution panel are located in room TV-900 west. The runway CCRs receive electrical power from the 480V main distribution panel. The shop panels A, B and C located in the lighting shop, provide electrical power to the test bench, compressor and other equipment loads in the maintenance area, general lighting and receptacle circuits. The taxiway regulators are serviced by the 480V taxi vault regulator panel, located close to room TV-900 west. Exhibit #3 shows the existing TV-

900 single line diagram. The main distribution panel in TV-900 also serves few loads not associated with TV-900, namely the South Boathouse, Gate A Guardhouse, beacon, cameras and TV-800. Since TV-900 building is planned to be demolished, these loads will have to be reconnected to other sources.

#### D. FAA Room

The Design Build contractor will participate in meetings to be arranged with FAA personnel to determine existing FAA equipment and associated circuits in TV-900 to be relocated / reconnected; and new additional equipment/connections required to be provided in the new relocated TV-900.

### 3. REQUIREMENTS

#### 3.1 Civil (with Site Survey Information):

The project site was surveyed over several days during the weeks of February 27 and March 6, 2017.

The Design Build contractor shall perform **ALL** required Civil Engineering services **including but are not limited to,** demolition and remediation, utility investigation, site drainage, parking lots, sidewalk, curb & gutter, perimeter and internal fencing, site survey, topography, exterior and interior walls, new building foundations, exterior and interior drainage, geotechnical information including foundation and pavement design recommendations, final site plan, landscaping, all work associated with obtaining the required building and EPA permits and if required, all environmental work including hazardous material handling, containment requirements, site evaluation, testing, clean-up and specifications for soil remediation. The Design Build contractor shall provide as-built drawings based on marked-up plans, landscaping, relocation of existing utilities, rerouting and reconnection of existing utilities, and lighting for the parking lots and exterior of the building.

#### A. Utility Investigation

The horizontal location of utility lines, not limited to the following are to be verified and marked on the project site:

- Electric Power Lines
- Storm Lines
- Sanitary Lines
- Communications and Telecommunications Lines
- Runway and Taxiway Lighting Airfield Electrical Lines,

No domestic water lines are located on the project site. Domestic water supply shall be located and brought to the site for domestic and fire protection water sources.

**B. Site Survey Control**

Horizontal and vertical control was established for the project area as referenced to the Virginia Coordinate System – North NAD 83/93 and vertically to NAVD 88 as reference to MWAA survey control monuments.

**C. Topographic Data Collection:**

The topographic survey includes location of the existing physical at grade features within the site limits, including fences, sidewalks, utility poles, headwalls, walls, break lines, roadways, buildings, curbs and gutters, utility designating; gravity utility systems with inverts, visible at grade utilities, and parking.

**D. Site Civil**

The civil team used elevation points provided by the surveyor along with top of grate elevations to establish the existing site grading. The site appears to slope from a high point elevation of approximately 11 feet at the southeast corner of the site to a low point elevation of approximately 7 feet in the northwest corner. While the proposed location for TV-900 is on the higher side of the site, some additional grading will be required to divert water away from the building. The elevated building is to have the two main entrances at the high side of the site. Doors leading into the mechanical room will be at site grade of 10 feet, requiring minimal grading. The main entrance closest to the parking spaces to have a first floor elevation of 10 feet, approximately one foot above the existing site elevation. The building will require steps into the building and, to maintain handicap accessibility, an ADA-compliant ramp. Entrance to the site to utilize the existing driveway ramp off Levee Road.

The site to have a loading zone and a loading dock. The loading ramp to be ramped up to 10 feet elevation in the work areas of the building. The loading zone ramp is to have a landing at the end leading into the building and a guardrail at each side. The loading dock is to enter into the areas of the building housing the electrical equipment, airfield lighting constant current regulators (CCRs), and telecom and FAA equipment rooms. These areas of the building are to be elevated at 12 feet to keep the equipment above the 500-year flood elevation and to utilize existing grading to achieve proper elevation of loading dock landing. All other points of ingress and egress are to have stairs and ramps from site to building.

The site is to have five parking spaces with one space being handicap van accessible. The spaces are to be laid out at 10 foot width and 20 foot length. The handicap space is to be located closest to the door and accompanied by an 8 foot wide strip.

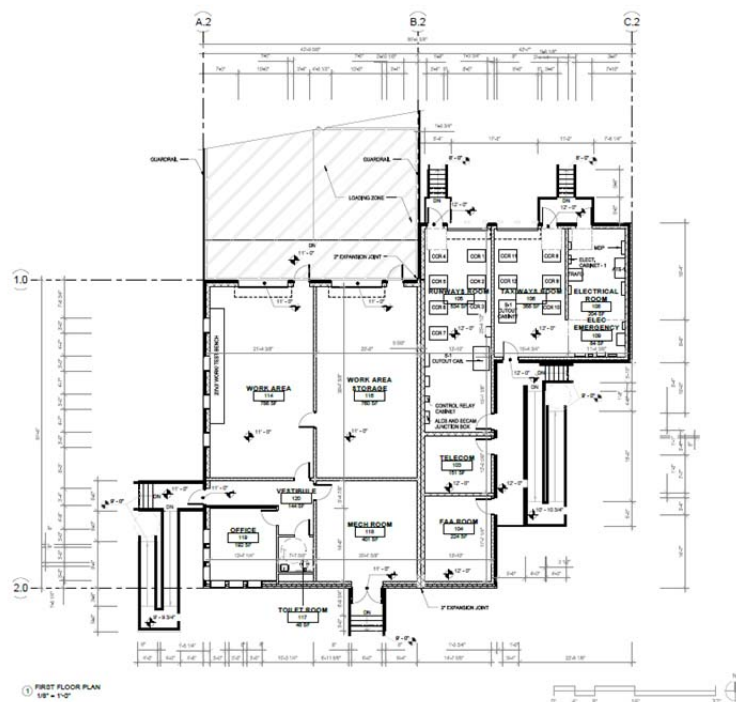
**3.2 Architecture****A. Codes and References:**



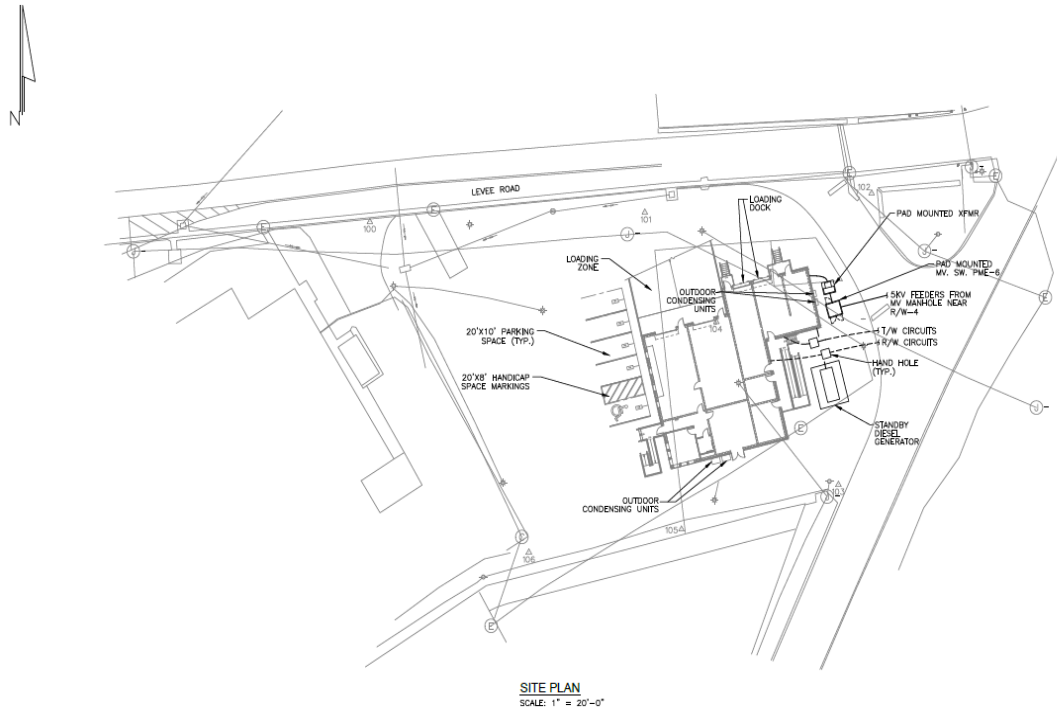
Design and Construction shall comply with the most current applicable state, federal and local codes to include the Virginia Statewide Uniform Building Code (VUSBC).

B. Design Concept - is indicated below in the following exhibits:

- Load Bearing CMU
- Exhibit #4, #5 and #6 shows the proposed building floor plan, perspective, isometric views and site plan.
- Structurally, the building is to be load bearing CMU.
- The load bearing 8" CMU blocks is to be reinforced as required to support the roof framing and have a 4" CMU decorative block veneer with rigid insulation in the wall cavity.



**Exhibit 4: Concept Floorplan**



**Exhibit 5: Concept Site Plan**



**Exhibit 6: Concept Elevation**

### C. Exterior

- 1) Exterior Walls - the massing, fenestration and materials of the building use the same materials found on the site. The predominant wall construction of the building are to be as indicated below:

Decorative CMU split face block are the predominant material with punched openings for storefront windows and hollow metal doors / frames an metal overhead doors. Sunshades are to be added to the windows to reduce glare in the work areas and office.

- 2) Storefront - The punched storefront windows are to be 32" wide x 48" high set at 3'-4" above finish floor and are to be glazed with transparent high performance double glazed insulated glass.
- 3) Sunshade - The sunshade element as illustrated on the south façade of the concept documents are to provide reduced glare in the work areas and office.
- 4) Masonry Walls - The 4" CMU veneer supported on 8" CMU back up. The air cavity between the CMU blocks is to be filled with rigid insulation providing an R value as required by ASHRE 90.1. Insulation is to be provided to ensure maximum building envelope energy efficiency.
- 5) Roof - The roofing system on the building is to be a single ply white membrane installed on rigid roof insulation. Thickness of insulation is to be calculated to provide maximum building envelope energy efficiency per ASHRE 90.1.
- 6) Exterior Doors:
  - a. Door hardware: Authority Design Manual Section III.7.12
  - b. Keying: Authority Design Manual Section III.7.12
- 7) Windows: The punched storefront windows are 32" wide x 48" high set at 3'-4" above finish floor and will be glazed with transparent high performance double glazed insulated glass.

### D. Interior

- 1) Floor Finishes - The office, unisex toilet and vestibule areas are to be VCT w/ rubber base. All other areas in the building are to be exposed sealed concrete.
- 2) Wall Finishes - In the office area, the wall finish is to consist of painted gypsum wallboard.

FRP wall panels are to be installed for the unisex toilet room walls.

### 3) Interior Doors:

- a. Door Hardware: Authority Design Manual Section III.7.12
- b. Keying: Authority Design Manual Section III.7.12

### E. Toilet Room Specialties

- 1) Wall mounted Lavatory with wall mounted hand soap pumps to drip directly into the lavatory.
- 2) All miscellaneous toilet accessories to be #4 finish stainless steel.
- 3) Lavatory mirror to be individual panel to facilitate replacement, should mirrors be damaged.
- 4) Toilet stalls partitions to be overhead hung solid surface material to facilitate cleaning.

### F. Ceiling Finishes

- 1) Ceiling finishes in all office, vestibule and unisex toilet room to be lay-in acoustical panels to facilitate maintenance of utilities above the ceiling.
- 2) Specification of this material is to respond to acoustical requirements for each individual space and/or overall building standard.

### G. Color Selections

The Design Build contractor is to work closely with the MWAA stakeholders to develop color schemes for the various areas that convey a comfortable, high quality working environment.

## **3.3 Structural**

The new transformer vault (TV-900) located at Reagan National Airport will be designed to meet the standards of the Virginia Uniform State Building Code (VUSBC), which references the 2012 International Building Code (2012 IBC). In addition, specific design load criteria will be taken from the Metropolitan Washington Airport Authority's (MWAA) Design Load Criteria.

### A. Design Loads:

The equipment within TV-900 provides the power for the airport's runways and taxiways; consequently, TV-900 has been deemed an "essential facility" by MWAA and, thus, is to be considered Risk Category IV per 2012 IBC, Section 1604.5.

Dead loads shall be allocated per the associated design material.

<b>Dead Load Unit</b>	<b>Weights</b>
Concrete	150 pcf
Earth	125 pcf
Steel	490 pcf
Masonry (8" CMU, solid)	88 psf
Masonry (4" veneer, solid)	40 psf
Other Materials	per ASCE 7

Live loads shall be allocated per the governing design load on the floor. Equipment live load shown below is considered distributed and includes the weight of 4" thick normal-weight concrete pads to be placed beneath the equipment. All equipment, including electrical equipment, is to be isolated against vibrations (either internally or externally).

<b>Live Loads</b>	
Office and Toilet Rooms	100 psf
Heavy Storage	250
Regulator Rooms	250 psf or equipment weight
Electrical and Mechanical Rooms	250 psf or equipment weight
Roof	30 psf

Snow loading with drifting could potentially govern the live load design of the roof structure depending upon the specific roof configuration. The members are to be analyzed for drift where appropriate and if parapets should be added to the structure. There will be no access to the roof.

<b>Snow Loads (MWAA Design Criteria and ASCE 7)</b>	
Ground Snow Load (pg)	30 psf
Snow Exposure Factor (Ce)	0.9
Snow Thermal Factor Importance Factor (Ct)	1.0
Flat Roof Snow Load (pf)	24 psf

The building shall be analyzed for wind loading using the Main Wind-Force Resisting System Method of ASCE 7-10, Chapter 27.

<b>Wind Load (ASCE7)</b>	
Ultimate Wind speed ( $V_{ult}$ )	120 mph
Risk Category	IV
Exposure Category	D
Directionality Factor ( $K_d$ )	0.85
Velocity Pressure (q)	33 psf

The building is to be analyzed for seismic loading using the Equivalent Lateral Force Method of ASCE 7-10, Section 12.8. In addition, since the building is Seismic Design Category C (see table below), all nonstructural components, such as hangers and equipment support, shall be designed and detailed for seismic resistance.

<b>Seismic Loads (MWAA Design Criteria and ASCE 7)</b>	
Site Class (to be confirmed by GeoTech)	D
Mapped Short Period Acceleration (Ss)	0.160

Mapped 1 – Second Period Acceleration (S1)	0.053
Site Coefficient (Fa)	1.6
Site Coefficient (Fv)	2.4
Design Short Period Acceleration (Spi)	0.171
Design 1-Second Period Acceleration (Sp1)	0.085
Seismic Design Category	C
Importance Factor (Ie)	1.5
<b>Structural System-Bearing Wall Systems, Ordinary Reinforced Masonry Shear Walls</b>	
Response Modification Factor (R)	2
Deflection Amplification Factor (Cd)	1.75

Earth pressure coefficients, allowable foundation pressures, and deep foundation capacities are to be based on recommendations of a geotechnical report. In addition, the site is located within a Special Flood Hazards Area, as identified by the Federal Emergency Management Agency (FEMA). Thus, additional flood loads will be present on the foundations of the building. The building superstructure is to be located with a design flood elevation (DFE) above the 100-year flood level, and the electrical and regulator equipment are to be located with an elevation above the 500-year flood level, within the building.

## B. Materials

The following materials are to be used unless special design requirements necessitate individual consideration of other materials:

### 1.) Cast-in-Place Concrete

- Minimum 28-day compressive strength of 4500 psi for concrete subject to freeze-thaw in a moist condition, 5000 psi for concrete subject to chloride exposure from de-icing chemicals, salt, salt water, brackish water, or spray from these sources, and 4000 psi elsewhere.

### 2.) Reinforcement

- Grade 60 deformed bars conforming to ASTM A 615
- Uses of epoxy or galvanized reinforcing are to be reviewed for areas subject to more severe exposures.

### 3.) Structural Steel

- W shapes – ASTM A992 Grade 50
- Plates and bars for main connections – ASTM A572 Grade 50
- Hollow Structural Sections – ASTM A500 Grade B

- Miscellaneous steel plates, bars, connection angles, and channels ASTM A36
- All exterior exposed steel to be hot-dip galvanized or high performance coated
- Interior exposed steel to be shop primed
- Roof deck to be galvanized (G-90) wide rib ASTM A653 steel roof deck.
- Open web KCS steel joists meeting SJI requirements.

#### 4.) Steel Fasteners

- High strength bolts meeting the requirements of ASTM A325 or A490
- Anchor rods meeting the requirements of ASTM F1554.
- Hot-dip galvanized at galvanized steel locations

#### 5.) Welding

- Low hydrogen electrodes – E70XX for steel, E60XX for cold formed metal framing.

#### 6.) Concrete Masonry Units

- ASTM C 90 normal weight block with 3000 psi grout meeting ASTM C476 in reinforced cells
- ASTM C207 mortar – Type M below grade and Type S above Grade

#### 7.) Foundations

The site is located in the alluvial fan but is most likely comprised of fill material; this assumption to be confirmed by the Design Build contractor through a geotechnical investigation. Based upon this assumption, the building is likely be founded on piles with grade beams spanning between column footings, under CMU bearing walls, and at intermediate locations as needed. A reinforced concrete structural floor slab is then to span between these grade beams. Exterior reinforced concrete equipment pads are also required.

All footings must extend a minimum of 24” below grade to extend beyond the frost line.

#### 8.) Structure Options

A Flood Insurance Rate Map (FIRM) shows the building site 100-year base flood elevation (BFE) at 10 feet. Per ASCE 24, the main work area shall be considered Flood Design Class 2, requiring a top of slab elevation of 11 feet (BFE + 1 foot); the runway and electrical rooms, however, are considered Flood Design Class 4 and



shall therefore be located at a top of slab elevation of 12 feet (BFE + 2 feet). A double CMU wall is to separate the two areas of the building in order to maintain separate structural systems.

The building is to be a one-story structure founded on reinforced concrete retaining walls. The walls are to be backfilled beneath a structural slab spanning between reinforced concrete beams. The floor beams and slab are to be tied in to the top of the foundation walls, so they will only be retaining during construction. A geotechnical report will be required to determine whether the walls are to be founded on piles, soil, or bedrock; however, a pile system will likely be necessary in order to minimize the effects of differential settlement.

The building shall be one-story with grouted and reinforced 8" CMU shear walls. The roof framing will be comprised of open web steel constant shear joists to allow for flexibility in hanging any mechanical or electrical equipment. The joists are to bear on the shear walls and support a flat, galvanized steel roof deck. The cladding can be a masonry veneer tied to the bearing/shear wall CMU backup with masonry ties, or ground face (or similarly prepared) CMU bearing/shear walls.

Exterior equipment pads shall be reinforced with epoxy-coated reinforcement and shall have a minimum top of slab elevation of 12 feet. Whether these pads will have a turndown edge or will need to bear on piles shall be determined from the geotechnical report.

### **3.4 Fire Protection:**

Fire suppression and alarm systems are to be provided to meet all applicable codes and standards. Incoming fire suppression service and risers are to be located in the mechanical room on first floor. Fire alarm control panel can be located in entry vestibule.

### **3.5 Mechanical and Plumbing**

#### **A. Codes and Standards**

- International Building Code (IBC) 2012, Virginia Edition
- International Plumbing Code (IPC) 2012, Virginia Edition
- International Mechanical Code (IMC) 2012, Virginia Edition
- International Energy Conservative Code

#### **B. Mechanical Systems**

The Heating, Ventilation, and Air-Conditioning (HVAC) system specified in this document shall be considered the basis-of-design to establish a level of quality,

efficiency, occupant comfort level, and system controllability. Other HVAC systems can be proposed as an alternative and shall include the same level of quality, occupant comfort level, and system controllability.

The scope of work for the design of HVAC systems include, but are not limited to, the following:

- Air Conditioning Systems
- Heating Systems
- Ventilation Systems

### C. Design Weather Conditions

Outdoor weather conditions used for a design and selection of building mechanical systems shall be as stated in the ASHRAE Fundamentals Handbook 2013 Edition.

Location:	Arlington, Virginia – Ronald Reagan Washington National Airport
Latitude:	38.9°
Longitude:	77.0°
Elevation:	Approximately 15 feet above sea level
Summer Design Temperature:	92.5°F DB and 76°F WB (Based on 1% ASHRAE Fundamentals Handbook 2013)
Winter Design Temperature:	20°F (Based on 99% ASHRAE Fundamentals Handbook 2013)

### D. Indoor Design Temperature, Humidity, and Ventilation

The temperatures listed below are set point temperatures. Outside air shall be supplied to the continuously occupied areas in accordance with ASHRAE Standard 62.1-2013 and the International Mechanical Code. When specific space types are not addressed in ASHRAE Standard 62.1-2013, standard industry exhaust practices shall be used.

### E. Air Handling Units

Two new indoor DX split-system air handling units sized for a cooling load of approximately 6.5 and 10.0 tons shall be provided to condition the Airfield Vault. One unit will be designated to serve the office area, lobby/vestibule entrance, telecommunications and electrical rooms. The other unit is to serve the work and work

storage areas. The outdoor units to be mounted on the side of the building adjacent to the mechanical room and high enough off the ground to avoid any potential flooding. Size of new units shall be confirmed by the Design Build contractor during design.

#### F. Regulator Rooms

The Taxiway and Runway regulator rooms shall be equipped with an approximately 2-ton split system air conditioning unit, an exhaust fan, and through the wall louver to keep air circulating through each room. The outdoor unit for the Taxiway and Regulator room split system units shall be mounted on the side of the building. It is estimated that each regulator runs at approximately 90% efficiency which results in 3 kilowatts of heat lost per regulator. Every kilowatt of heat lost equates to approximately 100 CFM of exhaust air. Under these criteria the Taxiway and Runway regulator rooms would each need to be capable of exhausting 1500 CFM as the worst case if all the regulators in each room were running simultaneously.

Sizes of new units and airflow values shall be confirmed by the Design Build contractor during design.

#### G. Restroom and Mechanical Room

The restroom and mechanical room each shall have a designated exhaust fan rated for approximately 150 CFM of exhaust air, based on calculated load or per building code, whichever is greater.

### **3.6 Plumbing**

#### A. Water Supply System

A complete cold water system shall be provided from the point of connection to a domestic water line adjacent to the vault.

Hot water to the lavatory shall be fed from an electric instantaneous hot water heater mounted beneath the fixture.

Water hammer arrestors shall be provided throughout the restroom piping system on quick closing valves to prevent water hammer. Electronic sensor faucets and flush valves are to be considered quick-closing valves.

All risers, mains, and branches shall be provided with isolation valves and drain valves. All piping internal to the new building shall be copper Type K for distribution supply mains and copper Type L for take-off branches and fixture supplies. Joints for the domestic water system will be soldered and or brazed. Mechanical joints for copper piping shall not be permitted.

#### B. Sanitary, Waste, and Vent System

- 1) A complete sanitary, waste, and vent system from plumbing fixtures are to be arranged for gravity flow to a 4" underground main adjacent to the vault location.
- 2) Vent piping from the fixtures and stacks shall terminate above the roof. Branch vents from plumbing fixtures will be combined within the building and along with vent stacks shall terminate above the roof.
- 3) All sanitary and waste piping shall be installed with a minimum slope of 1/8" per foot.
- 4) Velocity of gravity and forced flow lines shall be 2 fps minimum or 10 fps maximum.

#### C. Plumbing Fixtures

- 1) Plumbing fixtures shall be provided to meet accessibility and usage permits. All plumbing fixtures shall be wall-mounted and constructed of impervious materials such as vitreous china.
- 2) All plumbing fixtures will have hardwired electronic flush valves and faucets equipped with manual overrides for courtesy operations.
- 3) Individual mixing valves are to be provided for the lavatory fixtures.
- 4) Plumbing fixtures will be of the high-efficiency type as follows: Water closets, 1.28 GPF; Lavatories, 0.5 GPM.
- 5) Refer to the Design Manual for preferred plumbing fixtures manufacturer.

#### D. Plumbing Notes

- 1) No wet piping will be permitted above or through Electrical Rooms and CCR rooms except that which is for fire protection systems serving the rooms.
- 2) All ball valves 2 inches and under will be of the full port type. Valves 2-1/2 inches and larger shall be flanged butterfly type.
- 3) All piping installed above sensitive equipment areas will be provided with drip pans and leak detectors.
- 4) Seismic protection of all equipment and piping for plumbing systems shall be provided and shall comply with applicable codes.

### 3.7 Electrical

#### A. Codes and Standards

- International Building Code (IBC) 2012, Virginia Edition
- National Electrical Code (NEC) 2011
- MWAA Design Manual 2014 and all associated Volumes

#### B. Electrical Distribution System

The proposed electrical distribution system for new TV-900 shall provide adequate power distribution required for all new regulator room equipment, work rooms, FAA room, office, HVAC systems, general and egress lighting; receptacles and miscellaneous loads for normal and standby operations. TV-900 to be serviced by existing 4160V feeders in manhole closest to the proposed site. Exhibit #7 shows TV-900 single line diagram - New Work. The electrical distribution system may consist of:

- 4160V Outdoor pad mounted dead front selector switch
- 300kVA, 4160 - 480/277V Outdoor pad mounted liquid filled transformer
- 300kW, 480V standby diesel generator (in outdoor non-walk in enclosure)
- 800A, 480V, 3 phase, 4 wire Switchboard (indoor)
- 300A, 480V, 3 pole automatic transfer switch (ATS) (indoor)
- 30A, 480V, 3 pole automatic transfer switch (ATS) (indoor)
- 480V, 3 phase, 4 wire, normal, emergency and standby power electrical panels
- 208V, 3 phase, 4 wire, normal, emergency and standby power electrical Panels

The Design Build contractor shall verify all electrical equipment and loads through calculations.

The 800A switchboard, 300A ATS, normal and standby power panels shall be located in the dedicated electrical room. The emergency power panels and ATS for serving life safety loads will be located in one of the regulator rooms.

The outdoor switchgear, transformer and generator shall be located on elevated platform, at a level above the 500-year flood elevation, per FEMA flood hazard maps for the area.

#### C. Lighting – Building Interior

All interior lighting will be provided using energy efficient, long life LED fixtures. The lighting fixtures shall be controlled via local switches and/or occupancy sensors.

#### D. Lighting – Building Exterior

Wall mounted light fixtures shall be provided at the parking areas and loading zones. These fixtures will be energy efficient and dark sky compliant. The lighting fixtures will be controlled by photo sensors and/or time clock. Existing pole mounted lighting fixtures will be relocated as required to allow space for the new building.

#### E. Power Distribution

The constant current regulators shall be serviced by dedicated circuits from the 480V switchboard. General receptacle circuits will be provided throughout the facility to meet MWAA and NEC requirements. Dedicated electrical circuits shall be provided to serve the mechanical loads and equipment at test/work bench areas.

#### F. Constant Current Regulators

New constant current regulators (CCRs) shall be provided for runway and taxiway lighting. The CCRs will be provided in dedicated rooms similar to existing. The runway regulator room will house three (3) 30kW, 20A; two (2) 30kW, 6.6A; and two (2) 20kW, 6.6A constant current regulators; cutout cabinet, associated equipment and wiring. One CCR of each rating identified above shall be standby. The taxiway regulator room will be provided with four (4) 20kW, 6.6A regulators, one (1) standby 20kW, 6.6A regulator, cutout cabinet, associated equipment and wiring. Mineral oil filled CCRs shall be provided. The Design Build contractor shall finalize CCR control system during the design phase with MWAA.

#### G. Site Work

Existing runway and taxiway lighting circuits shall be extended from existing TV-900 to the new TV-900 building via new underground ductbank as required.

#### H. Circuits associated with FAA

Existing FAA equipment, FAA circuits and control tower circuits are to be relocated from existing TV-900. Equipment/circuits are to be provided new in the proposed TV-900 building and will be finalized by the Design Build contractor during the design phase with input from MWAA and FAA.

#### I. Existing loads to be reconnected

The loads currently connected to the main distribution panel in existing TV-900, to include but not necessarily limited to, the South Boathouse, Gate A Guardhouse, beacon, cameras, TV-800, etc., shall be reconnected to other sources as determined/finalized by the Design Build contractor during the design phase with input from MWAA and FAA.

## 4. PROGRESS AND COMPLIANCE

### A. Meetings

The Design Build Contractor shall prepare agendas and conduct meetings with the Airports Authority and others as required for completing the work. Minutes will be prepared and distributed by the Design Build Contractor within five days of the meeting. Interviews with Authority offices will be held for the purpose of establishing requirements, reviewing progress and resolving issues affecting the completion of the project. These meetings will be held at the offices of the Airports Authority.

The meetings include but are not limited to the following, will be held at Ronald Reagan Washington National Airport (DCA) and will require attendance and participation by the Design Build Contractor and any applicable sub-consultants as identified by the Design Build Contractor:

Kick-off meeting with the Airports Authority and Design Build Contractor  
On-site review meetings with Authority offices including Building Codes, Airport Operations, Engineering & Maintenance Division and the FAA to determine finalized requirements.

- 60% Design Documents review meeting
- 90% Design Documents review meeting
- 100% Final Design Documents presentation meeting
- Additional meetings as required by the COTR

In addition to regular working meetings with the Authority offices and user groups, the Design Build Contractor shall anticipate providing a complete presentation for requirements and documents that will be used in procuring work to meet Authority needs and requirements.

The Design Build contractor will be responsible for the preparation of all documents, estimates, schedules, reports, calculations and construction in accordance with the requirements of the current edition of the Metropolitan Washington Airports Authority's Design Manual, its appendixes, and all applicable Codes and the 2012 Virginia Statewide Uniform Building Code. If a new edition of the Design Manual is issued during the design of the project, the Design Build Contractor shall be responsible for incorporating the requirements of the new manual up to the 60% design submission.

### B. Cost Proposal

Design Build Contractor cost proposals, with subtotals for labor and expenses shall clearly identify work elements required for the project and the level of effort and the cost associated with completing each element of design and construction. Proposals should be formatted using Excel spreadsheets beginning with a rollup sheet that summarizes costs by phase and discipline, supported by supplemental sheets as needed to



establish the basis for the proposed fees. Unit costs may include cents; however, line totals should be rounded to the nearest dollar:

- The form of the proposal shall be a lump sum amount for all professional services and related expenses required to perform the construction work.
- Payment of overtime and premiums; The Design Build Contractor shall not be entitled to any premium costs for overtime worked without prior approval of the Contracting Officer.

#### C. Required Services / Deliverables

The Design Build Contractor shall provide all conceptual, technical, and project design services for including all required professional disciplines. The Design Build Contractor shall provide a Statement of Understanding of the efforts necessary to successfully complete all the tasks described in the Statement of Work.

The Design Build Contractor shall indicate their technical methodology and expected levels of effort to satisfy the Statement of Work. It is anticipated that there will be multiple Contract Document packages to complete the Project Scope of Work in an expedite manner. The Contract Document packages are anticipated to include, but not limited to, Site and Foundations, Utilities, Facility and Equipment, Commissioning, Existing Facility Demolition and Site work, etc., with the final packaging numbers, scheduling the responsibility of the Design Build Contractor.

#### D. Drawings

The Design Build Contractor shall prepare all construction drawings as necessary to thoroughly define all project requirements. Drawings shall be prepared on CADD to the uniform standard policies and procedures for design and drafting work as established in the latest version of the Authority CADD Design Manual. Standard Authority title blocks and cover sheets shall be used. Drawing size shall be 22"X 34". Drawings which are not fully legible when reduced to half size will not be accepted.

#### E. Specifications

The Design Build Contractor shall prepare construction specifications that include all project requirements. The Design Build Contractor shall utilize Authority Standard Division 00 and Division 01 Specifications, Appendix B, edited to the requirements of the Contract Document package.

#### F. Deliverables for each Contract Document Package

The Authority will assume full and complete ownership of all deliverables produced under this contract, including drawings, reports and all final documents



Deliverables	60% Submittal	90% Submittal	Final Submittal	Remarks for Final Documents
Drawing - Half Size	12	12	3	Sign & Seal Final
Mylar-Full Size Title Sheet	n/a	n/a	1	Sign & Seal Final
Specifications	8	8	3	Sign & Seal Final
Design Report	12	12	2	Sign & Seal Final
Construction Schedules	4	4	2	Sign & Seal Final
Long Lead Items	2	4	2	Sign & Seal Final
Calculations	2	2	2	Structural
CD's	4	4	2	Native & PD Formats
Building Code Compliance and A/E Certification	n/a	n/a	Authority Design Manual Section II, 2.5.7	Sign & Seal Final (2)

**Notes:**

1. All drawings are to be fully legible when reduced to half size.
2. The Design Build Contractor shall be required to submit (3) sets of sign/sealed full size drawings; sign/sealed letters or forms related to Code Compliance for Construction Permit, in compliance with Authority Building Codes Manual.
3. The Design Build Contractor shall deliver 3 half-size Drawing sets and Specifications within 10 calendar days following the 90% Design Review Meeting with said comments incorporated for final quality control of the incorporated 90% review comments prior to finalizing the Contract Documents.

**G. Environmental**

The Design Build contractor shall maintain the necessary health and safety requirements for all personnel in accordance with OSHA regulations to work in these conditions. Contractor air monitoring activities and employee protection and monitoring is part of this Contract. No additional payment will be made for demolition or renovation work that disturbs lead based painted surfaces.

**H. Unifier**

The Metropolitan Washington Airports Authority has implemented Oracle Primavera Unifier (*Unifier*) as the Project Management/ Electronic Document Management System for Design Department Projects/Task Orders. *Unifier* will be used to ensure proper handling of incoming/outgoing documentation and sequential logging of

incoming/outgoing correspondence to Design Consultants. Also, *Unifier* will be used for document review, project reporting, and ultimately, as the project archive. The process shall be from start (NTP) to the completion of the Design Build Contract.

It is mandatory that any design coordination and the transmittal of 'in progress' drawings and specifications be controlled, recorded, and monitored utilizing *Unifier* software. The Project Team will have the facility to issue and receive documentation electronically.

However, it must be noted that copies of certain documentation shall be issued, and signed, in hardcopy original form as described in the Scope of Work and Authority Design Manual. The contractor is to allow within the Proposal technicians and document controllers to adequately manage electronic and hardcopy document management for the duration of the Task Order.

#### I. Commissioning

The Design Build Contractor shall provide a third-party commissioning service to ensure a measure of quality assurance in the new building systems. The commissioning service shall consist of validation and documentation of the performance of the new building systems in order to meet the design intent and requirements of the Authority. Commissioning service provider shall provide a comprehensive commissioning plan outlining the process of validation, acceptance and documentation of the new building systems to be reviewed by the Authority. In addition, the Design Builder Contractor shall coordinate commissioning service efforts to be executed in timely manner in accordance to the construction schedule to minimize any disturbance to the affected occupants/parties.

#### J. Project Schedule

The Design Build Contractor shall provide a finalized Construction Document packaging and Schedule within 30 calendar days of Notice to Proceed (NTP).

Typical Design Build Construction Documents package duration/schedule from NTP with concurrent Contract Document package production:

Submittal of 60% Construction Documents	60 calendar days
Authority Document review	15 calendar days
Submittal of 90% Construction Documents	45 calendar days
Authority Document review	15 calendar days
Submittal of Final Construction Documents	20 <u>calendar days</u>
Subtotal	175 calendar days
Construction / Installation	320 calendar days
Total Project Duration	480 calendar days

It is estimated that the design packages for the construction of the new TV-900 facility and demolition of the existing TV-900 facility, from the issuance of a NTP until the final contract documents, will take approximately nine (9) months. Construction duration is estimated to be sixteen (16) months from the time notice to proceed is issued to the Contractor.

## **5.0 Supplemental Information**

- .1 The Project Name to appear on all contract documents is: TV-900 Relocation
- .2 The Project Drawing Number: TBD
- .3 Signature block information:

Accepted by: Larry Chandler, Design Project Manager

Submitted by: Moe M. Wadda, Manager of Design

Approved by: Roger Natsuhara, Vice President for Engineering

## II. DESIGN FOLLOWING AWARD

GENERAL: Design-Build services under this contract include verification of all provided information, sufficient field investigation to ensure design and construction accuracy, and Design Development and all Construction Documents (CDs) necessary for construction.

### 1. ADMINISTRATION:

#### A. General

The Contracting Officer (CO) is responsible for administration of this contract with day to day administration performed by Contracting Officer's Technical Representative (COTR).

#### B. CONTRACTOR RESPONSIBILITY

SOW Becomes Contractor Responsibility: Upon contract award Contractor assumes full responsibility for both design and construction. Assume all existing conditions included in this SOW are incomplete and unverified. Therefore determine actual existing conditions by research of available documents and performing necessary site investigations. Produced Contract Documents shall incorporate all SOW requirements, and necessary verifications and corrections to the design and existing conditions. The Contractor assumes sole responsibility for design or construction deficiencies arising from SOW incompleteness or inaccuracy and at no cost to the Authority shall correct same deficiencies, regardless of when they are discovered.

Review Comments: During each review, the Authority will be make comments on the design submittals that will modify the drawings and specifications. The Authority will make no additional payments to Contractor for the incorporation of comments. Review comments are considered part of the Design-Build process.

Contractor Still Responsible after Authority Review: The Authority review or approval of all or part of design or construction submittals shall neither obviate nor diminish the whole or any part of the responsibility of the Contractor. Authority disapprovals of design related submittals during either design or construction phases shall be reviewed and resubmitted by the Contractor. Contractor remains fully responsible for all aspects of both design and construction.

Design and Construction Differentiated:

1) All Contractor design responsibilities outlined in the SOW, whether stated or implied, shall be performed by Design Professionals of Record, i.e. Architect(s) or Engineer(s) licensed to practice in the Commonwealth of Virginia. All final design drawings shall bear the Seal and Signature of the Design Professional who prepared it.

- 2) The Design Professionals of Record shall seal, sign and date each design drawing under their responsible discipline for the Final submittal.
- 3) The Contractor shall provide for approval the names and experience of all Design Professionals intended for use on the Project, to include names, qualifications, and functions of key personnel.
- 4) Full construction administration services shall be provided by appropriate DPs including review and (if acceptable) approval of submittals, bi-monthly construction progress site visits and reports, physical attendance at not less than two construction progress meetings per month and development of clarification drawings as necessary or requested by the Authority.
- 5) Personnel within the construction part of Contractor entity are not qualified to be Design Professionals under this Contract, even if licensure requirements have been met. Likewise, Design Professionals may not directly participate in any construction part of Contractor entity.

Design: Design Professionals (DPs) are responsible for the professional quality, code compliance, technical accuracy, and coordination of all designs, drawings, specifications, and other Construction Documents. Contractor shall use design and construction practices, materials and equipment accepted within the construction industry and in compliance with this SOW. All DP work shall be done according to the SOW and standard best practices by their respective professions. DPs shall according to their best professional judgment be guided by the Standards & References (S&R) in Design Development and creating Construction Documents (CDs). CDs include construction drawings, specifications, submittals, and design analyses as required in this SOW. All specified materials shall be new, of high quality, durable and easily maintained.

SOW Criteria: Design and construction shall comply with the letter and intent of requirements, specifications, drawings, in this Statement of Work (SOW) including amendments, attachments, and documents referenced herein. This SOW is intended to prescribe fully functional, operational and maintainable facilities. Normal design development and CD creation shall accommodate actual design and construction conditions and additional Authority input during design reviews. Do not deviate from these criteria without obtaining prior written approval from the CO. Promptly submit questions or problems with the SOW along with recommended solutions to the CO at design reviews.

Codes and S&R Compliance: Code reviews and life safety analyses in this SOW are preliminary. Contractor and DPs shall comply with all applicable codes, standards and references for design and construction.

Technical Specifications: DPs shall develop technical specifications as defined in the Authority's Design Manual.

### **C. Points of Contact (POC)**

1. Unless otherwise noted, Contractor shall direct all requests for information to the CO and COTR. Contractor shall maintain close liaison with the CO and COTR to assure proper coordination of work.
2. Design Project Manager (DPM): Contractor shall appoint a DP as the DPM to be the POC between Contractor and the Authority. The DPM is responsible for coordination of all design work including field visits, design submittals and record drawings. Within fourteen (14) calendar days of Award, Contractor shall submit in writing the name of its DPM to the CO.
3. Construction Project Manager (CPM): Contractor shall appoint a CPM to be the POC between Contractor and the Authority. The CPM is responsible for coordination of all construction including construction progress meetings, design submittals and record drawings. Within fourteen (14) calendar days of Award, Contractor shall submit in writing the name of its CPM to the CO.
4. Contract Officer Technical Representative (COTR): The CO will appoint a COTR who will provide technical support to the Contracting Officer and Contractor and will serve as POC for the DPM on all technical matters of the work. All DP efforts will be coordinated with the COTR.

## **2. FIELD INVESTIGATION:**

- A. Site Investigation: Prior to commencing design, Contractor Design Professionals (DP) shall within forty-five (45) calendar days of Award of Contract complete site visits and all field work necessary to determine existing conditions. The DPs shall verify and thoroughly document all actual field conditions including materials, systems and dimensions. Contractor shall be responsible for subsequent construction problems arising from inadequate field investigation. Visiting Contractor personnel must report to the COTR upon each day's arrival and again at their departure to discuss field work progress.
- B. Site Visits: Provide the CO a written record of each site visit within seven (7) calendar days. The record shall include the visit date, visitor names, phone numbers and email addresses, purpose(s) of visit, observations, Contractor shall make the following minimum number of visits to the project site(s):
  1. Pre-Bid: perform field investigation, measure and photo (in non-restricted areas) relevant existing conditions and meet with COTR to clarify design intent and scope of work.

2. Submittals (60% & 90%): discuss Authority comments and necessary revisions.
3. Contractor DPs shall make all necessary additional visits for complete and accurate accomplishment of the work, at no additional cost to the Authority.

### 3. DESIGN CRITERIA

- A. Design Qualification: Contractor shall be directed by the professional judgment of DPs including licensed Architects, and licensed Structural, Mechanical, Plumbing, Electrical, and Civil Engineers and Surveyors. Throughout design and construction, Contractor must fully comply with both letter and intent of the requirements set forth in documents including: the Contract, the SOW, and all applicable Authority requirements, building codes and governing authorities including the S&R identified herein. Contractor DPs shall produce and affix their professional seal on all CDs for this project.
- B. SOW, CDs and Added Value: This SOW includes the following requirements: Design-Build, Authority Furnished Design (AFD) less than 35% Concept Drawings, CD-ROM, Design-After-Award, Administration of Construction, Quality, Safety Health and Environmental Protection, Construction, Inspection and Testing.

AFD is conceptual: Contractor is expected to add extensive value to the AFD and SOW by incorporating additional COTR design review requirements and through CDs that ensure quality construction and provide the Authority with direct and simple verification thereof.

### 4. DESIGN SUBMITTALS

**Design Submittal Schedule:** Within fourteen (14) calendar days after issue of Notice-to-Proceed the Contractor shall submit a schedule of design submittals (with review dates) to the COTR and CO. Upon approval, the schedule will not be revised except for written declaration of hardship approved in advance by the CO. Design progress payments will not be made without an approved schedule of design submittals. If a design submittal will be late, the Contractor shall notify the CO in writing at least seven (7) calendar days before the scheduled submittal date. If such notice is not provided, not less than seven (7) calendar days will be added to the Authority review time. More Authority review time may be added as determined by the CO. If the Authority is late in reviewing a submittal, the CO may allow an appropriate time extension at the end of the project.

**Authority Review:** The Contractor shall provide not less than two (2) design submittals for COTR review and comment. The Authority will evaluate each for conformance with the SOW and if previous Authority comments are incorporated. The COTR will transfer



Authority Review Comments directly onto a separate list. The first Submittal is the 60%. Each remaining submittal shall embody increased articulation of letter, intent and design consequences of the SOW and COTR comments through CDs which are 90% complete. Unless otherwise noted, the Authority will complete review and comment for 60% and 90% design submittals in fifteen (15) calendar days.

**Submittal Review Meeting:** Review meetings for each design submittal will occur as soon as possible following comment submittal to the Design Build Contractor. Design Professionals will be present in person (not teleconferenced, etc.). The Review Comments will be used as an outline agenda. Each profession shall be represented at these meetings by no less than two DPs: first, the person who did the actual work (i.e. worked the most hours on the CDs); and second, their supervisor. DPs shall incorporate into the CDs any additional comments, suggestions or requirements stated in the Review Meeting. Contractor shall take and distribute meeting minutes within seven (7) calendar days.

**Review Comments:** After a Design Review Meeting, the COTR will forward review comments in an MS Word or Excel file to the Contractor. Contractor shall add responses to the file and email the revised file to the COTR. Review Comments not incorporated into a subsequent submittal render that submittal incomplete. If for any reason a submittal's completion percentage is unsatisfactory to the COTR, the submittal will be returned for Contractor to complete and resubmit. Contractor or DP disagreement with any Authority review comments shall be submitted in writing within seven (7) days of receipt of COTR comments. If a comment exceeds the contracted Scope of Work, then do not comply but immediately notify the COTR in writing.

### **Design Submittal Requirements:**

#### **A. 60% Design Submittal:**

Drawings shall manifest all design intent, requirements of the Authority Design Manual, embody all Document Requirements herein, and present sufficient detail to permit adequate review as satisfactory to the COTR. Show existing site conditions and demolition work in complete detail and separate from new work drawings. The following are required:

Construction Drawings not less than 60% complete fully manifesting design intent. Drawings shall include but not limited to the following:

- 1) Provide an index of drawings.
- 2) Floor plans with layout of all spaces, including corridors, exits, and utility spaces. Indicate floor and roof framing and loading. Show doors, door types and provide door schedule. Show equipment layouts to ensure design functionality.



- 3) Site or plot plans showing critical existing and new contours, drainage requirements, and relation of building exits to existing site elements including sidewalks, streets, driveways, parking, access roads, service areas, and utilities. Locate areas affected by construction.
- 4) A reflected ceiling plan showing all items of equipment which will be in the ceiling after completion of work, as well as the ceiling elevations above finished floor(s).
- 5) Utility layouts (i.e. electrical, water, sanitary, communications, etc.) showing systems and connection locations.
- 6) Interior Elevations and Partial Exterior Elevations showing floor heights, windows, doors, building materials, and finished grades. Show cabinets and kitchen and bathroom fixtures on Interior Elevations as appropriate.
- 7) Heating, Air Conditioning, Ventilation, Refrigeration and Plumbing: Locate and show space requirements for all mechanical equipment. Show single line diagrams of pipes and equipment and their locations, with sizes and capacities. Provide schedules, plan views, side views, and sections necessary for adequate review.
- 8) Electrical including lights, power, communication, fire alarm and detection, and security systems: Show exterior and interior lighting layouts, proposed fixture types, fixture schedules, foot-candle levels, emergency and exit lights. Locate and annotate power devices and loads, metering, cables, raceways, distribution panels, transformers, generators, UPS equipment, switches, etc. Show communication outlets, equipment, raceways, panels, rooms, and cable runs. Show plans, sections, and details for lightning protection systems and other special grounding. Show layout of fire alarm, detection, and notification devices and systems. Use diagrams for power, lighting, fire alarm and security systems, and communication. Note significant short-circuit values and settings for adjustable protective devices.
- 9) Plans and Sections of structures, including framing, major details, etc.
- 10) Wall, roof and partition sections including facing materials, thicknesses and attachment methods.
- 11) In addition to the Preliminary Drawings, the 60% Submittal shall include:
  - a. Specifications that include all and only materials and systems to be used.
  - b. Design Report

B. 90% Design Submittal: As required by the Authority Design Manual and the following are required:

1. All items required in the 60% Submittal, revised and corrected as necessary to 100% complete.
2. Specifications edited to include ONLY necessary sections.
3. Design Report

C. Final Design Submittal: As required by the Design Manual and noted in the I. Design Build Requirements.

End of Design Following Award

### III. ADMINISTRATION of CONSTRUCTION

#### 1. PERFORMANCE CAPABILITIES

A. Contractor shall keep *project exclusive* management and technical support personnel at an Airport Authority office throughout construction. One week prior to the start of work under this contract, Contractor shall submit in writing to the COTR for approval the names and credentials of Contractor Project Manager, Contractor Site Superintendent, Quality Control Manager and all design subcontractors intended for use on this project. Subsequent proposed changes of approved personnel shall be submitted in writing to and receive prior approval from the COTR before working on the project. Each of these personnel may upon COTR approval hold additional onsite duties which shall not diminish their required performance. Contractor must demonstrate to the Authority's satisfaction that proposed personnel exceed education, technical and experience levels of personnel described in this Contract including the following:

- 1) Contractor Project Manager (CPM) - Provide management of the prime contract to include subcontract purchasing and administration, review of material submittals and shop drawings. CPM shall have full authority to develop cost proposals, negotiate with the Authority and subcontractors, sign awards and modifications, supervise project superintendents, attend weekly COTR Contractor status meetings as well as pre-performance site visits, pre-final and final inspections. The CPM must have a minimum of 5 years previous experience as primary contract manager or equivalent experience as a primary estimator and negotiator with a contracting firm engaged in similar multi-discipline commercial construction projects. CPM must also have not less than 5 years' experience managing subcontractors.
- 2) Contractor Site Superintendent (CSS) - Provide on-site construction superintendent(s) to oversee all work under this contract. Site supervision shall be daily (constant throughout each day) and includes submission of detailed weekly progress reports, scheduling and coordination of subcontractors and material suppliers, and attendance at all construction progress meetings, COTR site visits, and pre-final and final inspections. Superintendents shall have a minimum of 5 years previous experience as a project superintendent (exclusive of time employed as a tradesman or working foreman) for a general contracting firm overseeing one or more multi-discipline commercial construction projects. The superintendent shall be available within 15 minutes during all normal working hours, except for such incidental errands as required by his duties. The superintendent shall be responsible for the proper coordination and timeliness of the work, and for the proper workmanship of all trades; therefore, his absence from the project site without a suitable substitute Contractor representative shall be considered as damaging to the Authority.

- 3) Quality Control Manager (QCM) - Provide quality control management for the project. QCM shall **be constant throughout each day** to ensure full compliance with all safety requirements, verification that work and materials in place and stored on site are in accordance with the approved construction documents, shop drawings and material submittals. QCM shall submit daily status reports recording activities at each project site, prepare and coordinate material submittal sheets and shop drawing submittals, schedule and coordinate testing procedures, prepare quality control reports for construction progress and other required meetings, and attend all pre-final and final inspections. QCM shall have a minimum of five years' experience in Quality Control Management of multidiscipline construction projects.

B. Contractor shall have additional personnel including management, technical, service, labor or subcontractor, available as necessary to fulfill all construction contract requirements. The Authority may restrict employment under this contract of any personnel identified as a potential threat to the health, safety, security, well-being, or operational mission of the Authority and its population.

C. Contractor shall be available by telephone 24-hours a day, 7-days a week and upon 15 minutes' notice during normal duty hours and 30 minutes' notice during non-duty hours shall meet the COTR at a COTR designated location.

## 2. COMMENCEMENT, PROSECUTION & COMPLETION

A. Contractor shall start design and various construction phases at times specified by CO issued Notices to Proceed (NTP), prosecute the work, and complete the entire work within the Period of Performance.

B. Contractor shall provide a Submittal Log (Schedule of Material Submittals), Progress Schedules, Progress Reports, Status Reports and Barricade Plan.

- 1) **Submittal Log:** See Material Submittals and Shop Drawings below.
- 2) **Progress Schedule:** Submit weekly. Subdivide total schedule into individual work items. Show completed work percentages at the end of each reporting period. Submit first progress schedule to the COTR within 7 days after Notice to Proceed (NTP) for construction.
- 3) **Progress Reports:** Submit Project Progress reports to the COTR once a week on the first working day of each month. Describe the percentage of work completed during the report period. If behind schedule, report in writing what actions will be taken to regain the schedule. If the COTR agrees to add days to the contract performance period, Contractor shall provide an amended schedule.
- 4) **Barricade Plan:** Submit to the COTR for approval before starting any staging or work.

C. Period of Performance: Is the period between the Design NTP and the time all construction is complete, including all punch list items, and final inspection is approved by the Authority. A multi-stage Period of Performance will be used to separate the different areas of construction outlined in the Summary.

D. Contract Completion: At contract conclusion, vacate all work areas, including: Contractor offices, storage and staging areas, and individual work sites. Restore these areas to their condition prior to Contractor occupancy not more than 14 days from the earlier of: approved final inspection or COTR notification.

E. Coordination and Project Conditions: Schedule and manage submittals, materials, products, equipment, manpower, etc. to control all parts of the work efficiently and orderly. Verify compatibility of existing building utilities with new operating equipment. Coordinate required space, supports, and mechanical and electrical work shown (even if via diagrams) on Drawings. Follow routing shown for pipes, ducts, and conduit; place runs parallel with building lines. Maximize accessibility for maintenance and repair to other systems. Where possible, conceal wiring behind finish surfaces and co-locate fixtures and outlets with finish elements. Coordinate pre-Substantial Completion clean-up in separate areas.

F. Cutting and Patching: Only employ skilled and experienced workers to cut and patch. Report in writing to the COTR wherever cutting and patching might degrade: safety; appearance, structure, weatherproofing, O&M, or separate Contractor or Authority construction. Prevent damage to existing or new construction and provide proper surfaces to receive patching and finishing. Match new finishes to existing adjacent surfaces unless noted otherwise. Maintain integrity of existing walls, ceilings, or floors; completely seal voids. Refinish entire assemblies and continuous surfaces to nearest intersection. Cut, drill, fit, seal, patch, etc. per CDs e.g.: mechanical and electrical penetrations; integration of new components with one another or with existing construction; removal and replacement of defective and non-conforming elements; remove samples for testing.

G. Special Procedures: Employ skilled and experienced tradespersons to perform alteration work. Remove debris from open work areas and concealed spaces. Remove, cut, and patch to minimize damage and provide means of restoring products and finishes to original or specified condition. If a change of plane of 1/4 inch or more is discovered, submit recommendation to the COTR for providing a smooth transition. Patch or replace portions of existing surfaces which are damaged or showing other imperfections. Finish surfaces as specified.

H. Welding Permits: No cutting or welding shall be permitted without first obtaining a permit issued by the Fire Marshall. All fire and safety regulations are to be followed stringently. Contractor's failure to obtain a cutting or welding permit may not be reason for extending the contract performance period. Any damages incurred while welding work is done without a permit are the responsibility of Contractor.

### 3. SCHEDULING

A. Contractor shall coordinate all work schedules and manage progress of work with the COTR prior to start of work. Weekly progress meetings will be conducted with the COTR and Contractor's team which may require corporate management representation at Authority discretion.

B. Contractor shall schedule all work. Performance periods shall not be established or extended to accommodate insufficient personnel resources. Contractor will not move crews on and off the project while making minimal progress on concurrent projects as this shall be construed as having an inadequate work force to fulfill the contract requirements. Contractor's CPM and CSS shall not change more than two (2) times during project construction as this would demonstrate an inadequate management force to fulfill contract requirements.

C. Before construction begins, Contractor shall agree with COTR on a sequence of procedures; means of access to premises and buildings; materials and equipment storage space; delivery of materials and use of approaches, corridors, and stairways. Contractor may be required to revise the CD work-phasing schedule.

D. Interference and inconvenience to Authority operations and personnel caused by project work including use and delivery of materials, tools and equipment shall be kept to a minimum.

E. The Authority may require that work, so far as practicable, be done in separate phases. Each phase may relate to a different occupied or unoccupied area, in which work in one area shall be completed before work in another area shall begin. Phased work areas shall be clearly delineated and annotated in the CDs.

F. Hours of Work: Normal work hours shall be Monday through Friday from 6:30am to 3:00pm except as modified by the COTR.

G. Construction Schedule: Submit preliminary schedule to the COTR at the Preconstruction Meeting, but not later than twenty-one (21) days after issuance of Notice to Proceed. After Authority review and comment, revise and resubmit schedule within fourteen (14) days. Upon approval by the COTR, the schedule becomes the official Construction Progress Schedule. Keep a copy available at Contractor (field) Office. This schedule will only be changed with prior approval of the COTR.

H. Construction Progress Schedule: Accurate and current bar chart having a separate horizontal line for each major activity of subcontractors, manufacturers, and suppliers. Vertical lines identify each week's first work day. Show entire construction sequence by activity, identifying separate work stages and other logically grouped activities. Indicate early and late start, early and late finish, float dates, and duration of each activity. Revise chart weekly, or as directed by COTR, to accurately identify progress made, percentage completion, and projected completion date for each activity. Show

activities modified and scope changes. Submit written report to identify problems, anticipated delays, corrective actions, and affected completion dates. Provide additional progress schedule information as requested by the COTR. Construction progress schedule update forms will be provided at the preconstruction conference. Submit Progress Schedule with each Payment Application and as requested by COTR.

#### **4. MANAGING**

A. Preconstruction Conference: at the Authority will be scheduled by the COTR before issuing the NTP. Required attendees include the CO, COTR, Contractor, Contractor Project Manager (CPM), CEPM, and Contractor Site Superintendent (CSS). Contractor shall record meeting minutes and within seven (7) days after the meeting distribute two (2) copies to all participants and to all others affected by decisions made at the meeting. The meeting Agenda will be issued in advance by the COTR and will include one or more of the following:

- 1) Execution of Authority-Contractor Agreement.
- 2) Submission of executed bonds and insurance certificates.
- 3) Distribution of Contract Documents.
- 4) Submission of Subcontractors list, products list, schedule of values, and progress schedule.
- 5) Designation of personnel representing the parties in Contract.
- 6) Discuss procedures for processing field orders, submittals, substitutions, payment applications, proposal requests, Change Orders, and Contract closeout.
- 7) Construction Schedule

B. Site Mobilization Meeting: Prior to Contractor project site(s) occupancy, the COTR will schedule a meeting at which required attendants include the COTR, Contractor, Contractor's Project Manager (CPM), Contractor's Site Superintendent (CSS), and major Subcontractors. Contractor shall record meeting minutes and within seven (7) days after the meeting distribute two (2) copies to all participants, and to all others affected by decisions made at the meeting. The Agenda for this meeting will include:

- 1) Authority and Contractor Use of Premises.
- 2) Authority Requirements.
- 3) Construction facilities and controls provided by Authority.
- 4) Temporary utilities provided by Authority.
- 5) Security and Housekeeping Procedures.
- 6) Construction Schedules.
- 7) Application for Payment Procedures.
- 8) Testing Procedures.
- 9) Record Documents Maintenance Procedures.

C. Weekly Progress Meetings: with the COTR will occur throughout construction duration. Required attendants include the COTR, Contractor, the CPM, and the CSS. Contractor shall record meeting minutes and within seven (7) days after the meeting



distribute two (2) copies to all participants, and to all others affected by decisions made at the meeting. The agenda for these meetings will include the following:

- 1) Review previous week's work progress. Review minutes of previous meetings.
- 2) Evaluate work quality and safety. Review field observations, problems, and decisions.
- 3) Construction Schedule update. Corrective measures planned to regain projected schedules.
- 4) Evaluate construction progress. Identification of problems which impede planned progress.
- 5) Work progress planned for the next two weeks. Effect of proposed changes on construction schedule
- 6) Submittals: review status and schedule. Review of off-site fabrication and delivery schedules.
- 7) Other business Safety, Health, Environmental, Quality and work standards maintenance

## 5. MATERIAL SUBMITTALS and SHOP DRAWINGS

- A. Definitions: A **submittal** is a package of project information, samples, drawings, schedules, certifications, product data, shop drawings, etc., delivered to the COTR for Authority review. A **deviation** is a submittal wherein Contractor identifies an item that agrees with the intent of the CDs, but does not precisely conform to those documents and Contractor requests either substitution or change for the purpose of increasing the quality of the final product. A Submittal or Deviation of a system shall be considered as an integrated collection of component parts.
- B. Purpose: Submittals formalize Authority review of Contractor choices in complying with the CDs and providing Minimum Installer Qualifications. They also formalize Contractor's proposed Deviations, color choices, shop drawings, etc. early enough in the contract time when changes will have less impact on the ordering of materials and products.
- C. Accountability: Contractor is wholly responsible for the contents of a submittal. Contractor and Design Professional of record by act of submittal certify that all items listed or implied, fully meet the intent, materiality and requirements of the design, quality, and functionality of the CDs. Neither Contractor furnishing nor Authority approval of a submittal shall either suspend or waive Contractor responsibility for full compliance with the CDs.
- D. Basic Compliance: Comply with all "Material Submittals and Shop Drawings" requirements of the SOW. Bulk Submittal: Deliver as many submittals as possible to the COTR within twenty-one (21) days of 100% Design approval. Submittals not included in the Bulk Submittal period may be delivered later, but must provide adequate time for Authority Review. Submittals shall be accurate, legible, with all detail necessary for a thorough review. Every copy of Product data shall clearly



identify proposed models, options, and relevant design data including physical, functional, and utility connection requirements. Where practicable, render manufacturer data specific to this Project.

Contractor shall review, approval stamp and sign **every** submittal before delivery to the COTR. DPs shall review, approval stamp and sign all submittals **relevant to their profession** including shop drawings and multi-discipline coordination. Each submittal package and shop drawing sheet shall bear appropriate stamps and approval signatures before delivery to the COTR. One copy of each reviewed submittal will be returned marked to indicate approval or disapproval.

- E. Authority Review: Contractor shall deliver four (4) copies of each submittal. Contractor shall allow thirty-five (35) calendar days for Authority review of Bulk Submittal excluding delivery time from and to Contractor. If any submittal needs to be returned by the COTR before the thirty-five (35) calendar days, Contractor shall so indicate in the Submittal Log. Submittals delivered after the Bulk Submittal period will be returned in fifteen (15) calendar days excluding delivery time from and to Contractor.
- F. Allow additional time if coordination with subsequent submittals is required. The COTR will advise the Contractor when a submittal must be delayed for coordination. Additionally allow forty-five (45) calendar days for submittals related to fire-detection systems and fire-protection systems.
- G. Submittal Log: Contractor shall during the design phase of the project log all construction submittals required by completing a "Schedule of Material Submittals". The form shall include all submittals necessary to insure the project is built to the satisfaction of the Authority including shop drawings, manufacturer's literature, product data, certificates of compliance, material samples, finish samples, extensions to the design, guarantees, test results, etc. Contractor shall complete and submit "Schedule of Material Submittals" in MS-Excel electronic format and in hardcopy format to the COTR for review and approval within fourteen (14) calendar days upon issuance of the NTP.
- H. Proposed Products and Qualified Installers List: Within twenty-eight (28) calendar days after Notice to Proceed is issued, submit list of major products proposed for use to the COTR, with manufacturer name, trade name, model or catalog number designation, and reference standards (for products specified only by reference standards) of each product.
- I. Product Data: Submit to COTR for review and approval. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' data with information specific to this Project. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets service of functional equipment and appliances. After COTR review and approval, provide record documents copies.

- J. Re-Submittals: Resubmittals forms shall bear the original "submission number" with an alphabetic suffix (sequenced for multiple re-submittals). Identify all changes made since the previous submission. Allow fourteen (14) calendar days for Authority review excluding delivery time from and to Contractor.
- K. Manufacturers Information: For each manufactured product provided in this Project, submit three copies of all manufacturers printed instructions for delivery, storage, assembly, installation, adjusting, finishing, and usage to the Authority. Submit three copies to the COTR of any manufacturer's field report within thirty (30) calendar days of manufacturer's field visit and observations.

## **6. PRE-FINAL and FINAL INSPECTION**

- A. Contractor may request a pre-final inspection purposed to obtain Authority assistance in identifying potential problems prior to final inspection. However, any discrepancies identified at the pre-final inspection must be completed before the final inspection.
- B. Contractor shall schedule final inspection NOT LATER than the contract completion date unless precluded by Authority scheduling problems. Before requesting final inspection, Contractor shall submit to the COTR project close-out documents including: hard-copy and CD-ROM as-built drawings, all test and recycling reports, O&M manuals, and a quality control (QC) report signed by his QCM listing any discrepancies. Contractor shall submit a written request for final inspection to the COTR a minimum of thirty-six (36) hours prior to the requested inspection date. The request shall include certification that Work is complete according to the CDs and ready for COTR review. If the COTR approves the request, Submit final Payment Application identifying total adjusted Contract Sum, previous payments and payment remaining due.
- C. The QCM, Contractor's superintendent and COTR will conduct the final inspection. Contractor and subcontractors shall correct discrepancies and punch-list items within the time limit specified by the COTR. In undertaking a final inspection, if the Authority determines the project unsuitable for final inspection, the COTR will end the inspection and not less than twenty-four (24) hours shall pass before the final is rescheduled. If, due to one or more such terminations, the actual final inspection date is later than the contract completion date, Liquidated Damages (LDs) may be assessed before the rescheduled "final" inspection. Contractor shall submit each request for rescheduled final inspection in writing to the COTR.
- D. The CMI and COTR are the designated representatives of the CO for the purpose of technical surveillance of workmanship and inspection of materials for work performed under this contract. This designation in no way authorizes anyone other than the CO to obligate the Authority to changes in the terms of the contract. All field changes must be approved by the CO prior to accomplishment. Authority

inspections or related comments shall neither constitute QC nor in any way either substitute or supplement Contractor's QCM responsibility. CMI shall conduct inspections, but only the CO may authorize final acceptance.

## 7. WARRANTY

- A. Minimum Installer Qualifications: Prerequisite to all warranty and required on every aspect of this project are demonstrated Minimum Installer Qualifications including: Proof of at least three years of membership or trade-related organization, Documented five years of experience and five jobs of similar size, complexity and cost, Proof of manufacturer certification that the installer is qualified to perform the work specified, and Letter from a DP (not directly involved in the project) that they are familiar with the installers work and the installer has demonstrated the necessary skill and workmanship to work on this project.
- B. Standard Warranty: Provide a materials and workmanship warranty for all work for not less than one year from time of project acceptance by the Authority. Roofing shall have a no-dollar-limit joint subcontractor& manufacturer full-system warranty for water-tightness for not less than twenty (20) years.
- C. Exceptions to Standard Warranty: Where this SOW requires longer warranties for one or more products or systems, the extended warranties shall supersede the Standard Warranty, but in no case shall any item in the project be warranted for less than the Standard Warranty. Whenever products or systems offer a warranty greater than the Standard Warranty, Contractor shall pass the greater warranty in full to the Authority.
- D. Equipment Data:
  - 1) Major Equipment: Provide a list of all equipment furnished and installed under this contract. This list shall include each piece of equipment having a serial number. Each listing shall positively identify the piece of property by including all the following information as applicable: date installed/replaced, warranty/guarantee expiration date, item installed, type, model, serial number, style, voltage, cycles, horsepower, size, quantity, frame, item cost, item replacement cost, and location of item/equipment. This list shall be furnished to the COTR as one (1) reproducible and three (3) copies at the COTR's request any time during the contract.
  - 2) Major equipment includes air conditioners, air handlers, transformers, and electric motors, compressors, condensing units, chillers, exhaust fans, generators and transfer switches. Contractor shall place an Equipment Warranty sticker on all equipment furnished and installed under this contract.

- 3) This is not meant to include: light switches, fixtures, relays, valves, and such material items as: piping, insulation, and minor component parts of larger assemblies
- E. Contractor and Subcontractors shall perform any warranty related work according to all manufacturer specifications and recommendations so as not to reduce or void any warranty. Contractor shall transfer all manufacturer warranties to the Authority prior to project closeout.
- F. Emergency Repair: Failure of any mission essential work under warranty constitutes an emergency and Contractor shall complete repair work not less than forty-eight (48) hours from notification by the COTR. Contractor must complete corrective repair(s) not later than a date to be established by the COTR. If not responsive in a timely manner, Contractor may be charged for Authority to complete repairs.
- G. Non-Emergency Repair: Contractor shall respond within forty-eight (48) hours and affect corrective action in such timely manner as to minimize down-time and mediate inconvenience to any Authority employees. COTR's determination of appropriate time to complete repair(s) shall govern.
- H. Contractor Non-Responsiveness: If Contractor fails to respond to notifications, the COTR will find repair methods and seek restitution through legal means including through Contractor bonding agents.

## **8. CONTRACTOR OFFICE**

- A. Provide ready-for-occupancy Contractor Field Office within twenty-one (21) calendar days from Notice to Proceed.
- B. No Authority building will be available for Contractor who shall therefore provide a temporary office on Authority grounds. At the Pre-Construction Conference the COTR will designate a site for Contractor's installation of a temporary office on Authority grounds. Proposed improvements including extensions of utility lines into this area shall be approved by the COTR prior to installation. Contractor shall bear all expenses of these improvements and temporary office. Prior to contract completion, remove buildings, foundations, and utility services and restore all areas thereby affected to their original condition.
- C. Contractor's office shall be a weather tight standard manufactured structure, with floors raised above ground, securely fixed to foundations, with steps and landings (that are well lighted) at entrance doors, having a clean appearance and color (inside and outside) that are aesthetically acceptable to the COTR with no patches, broken windows, dirt, rust, etc. with trailers having skirts to grade. As necessary, fill and grade to drain site away from office. Contractor is responsible for and pays for all site work and setup

- D. Provide and maintain the office with services and equipment including working HVAC equipment to automatically maintain 68° heating and 76° cooling, electric lighting, electrical receptacles, fire extinguishers, and adequate lighting (50 fc at desk top height). Provide drawing display table and space for Project meetings with table and chairs to accommodate 6-8 people.
- E. Provide office with items including a facsimile machine, Email address, and telephone service (may be cell) so Contractor employees may be contacted at all times during normal duty hours. Provide COTR with an emergency phone number so Contractor can be reached at all other times. All installation, connection and operation costs of these items including utilities, phone, computer, and internet and office security shall be provided at Contractor's expense. All connections shall be coordinated and monitored by the COTR.
- F. Contractor shall furnish its own housekeeping and janitorial services for office space. At all times maintain in clean and orderly appearance the interior and exterior of Contractor office. Maintain approach walks and steps free from mud, water and snow.
- G. Contractor shall provide a commercially produced white painted metal job sign on the office bearing Contractor's name and project name in four-inch high black lettering.

## **9. CONSTRUCTION SITES**

- A. Temporary Power: Provide all necessary electrical connections including temporary transformers, utility poles, cable, weather-heads, panels, and any other electrical items needed for construction. Final electrical hookup shall be done after approval of the COTR, and with a minimum written twenty-one (21) calendar day notification of hookup. All electrical work shall conform to the latest editions of the National Electrical Code (NEC) and the National Electrical Safety Code (NESC). Any hookups to the exterior electrical system (anything outside the building demarcations) will be done by or under the inspection of the Authority.
- B. Neat and Orderly: Maintain construction sites neat, clean, and orderly. Clean site at each day's end from job site debris, waste, and rubbish (job-generated or blown-in), and dispose of properly and remove tools and equipment from passageways. Do not leave or enclose debris, waste or rubbish in pipe chases, plenums, attics, or other closed or remote spaces. Contain dust within project site (plastic barriers) and prevent it from moving into occupied areas. Broom and vacuum interior areas prior to start of surface finishing, and keep dust away from finishes. Contractor shall bear final clean-up costs. At end of project, return all construction-affected non-project elements to original condition (including accesses, grass, dirt, sprinkler systems, etc.). Prevent pests and insects from entering the building renovation areas. Keep all facilities, equipment, and vehicles fully serviced and usable. Daily remove from site rusted, broken, torn, bent, or otherwise objectionable elements, equipment,

material, dumpsters or vehicles. If the COTR determines the site is unsafe due to clutter or debris, the COTR may immediately halt construction and the site shall be cleaned by Contractor without delay to the project deadline.

- C. Noise Control: Contractor shall comply with all applicable state and local laws, ordinances, and regulations relative to noise control. The Authority may require that operations that generate excessive noise be scheduled at other than standard work hours.
- D. Site Storage: As approved by the COTR, locate an exterior area to store all equipment and supplies in a manner that precludes theft or damage of any kind (including mechanical, fire, and climatic). Provide ample fire extinguishers at the storage area(s). Provide environmental conditions necessary to protect materials and products from wind, rain, excessive heat or cold and contact with ground including: wrapped tarps or climate controlled storage shed(s). Keep stored materials sorted, separated and neatly stacked, and provide adequate space and light for maintenance and inspection of materials and products. Provide a new six-foot high chain-link security fence (and an optional top outrigger of three-strand barbed wire) with vehicular and pedestrian gate(s) with locks. Periodically clean, maintain, and inspect all storage areas and stored equipment products and materials. Keep approach walks free from mud, water and snow.
- E. Dumpsters: Trash, debris or other refuse within the work areas shall not be visible, but shall be fully placed into (never overflowing) approved dumpsters or other manufactured disposal receptacles. Place receptacles within work areas, inconspicuous from the main roads, as approved by the COTR. Refuse from the project shall not be dumped into Authority dumpsters. Before the end of project and prior to final inspection, the receptacles shall be removed by Contractor who shall restore exposed dumpster-covered surfaces to equal or exceed their original condition.
- F. Hauling Trash and Debris: Contractor shall dispose of all trash and debris via sanitary landfill or other approved method conforming to all local, state, and federal guidelines and regulations. All refuse removal trucks shall be covered and secured prior to leaving job sites. If any materials fall from the trucks, they shall be stopped and reloaded to prevent falling debris. Contractor shall bear all liability for any damage or injury resulting from falling debris. Certified dump tickets, including cost, for all waste disposals marked with the project number shall be submitted to the CO for all waste disposals.
- G. Access and Haul Routes: Propose and obtain prior COTR approval for hauling and site access thoroughfares and confine construction traffic to these routes. Off-site streets and parking lots soiled by mud, dirt, debris, foreign objects, or spills caused by Contractor shall be cleaned the same day. Keep parking aprons, taxi-ways and sidewalks used to access work or staging areas clean and clear of all foreign objects and debris at all times.



- H. Concrete Truck Cleaning: The Authority has no approved concrete truck clean-out sites. Washing-out of on-site concrete trucks may be done only into Contractor-owned dumpsters.
- I. Protecting Installed Construction: Protect installed work, especially where and how specified in the CDs, including: Provide temporary protection for installed products. Control activity in immediate work area to prevent damage. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings. Protect with durable sheet materials finished floors, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects. Restrict traffic or storage on waterproofed or roofed surfaces. Obtain and comply with all manufacturer recommendations for protection of installed equipment, products or materials.

## **10. CONSTRUCTION EQUIPMENT**

- A. All Contractor-supplied equipment is the sole responsibility of Contractor. The Authority is not liable for theft, vandalism, or damage to any Contractor supplies or equipment on Authority grounds. Secure and protect all materials and equipment from damage.
- B. Equipment and Vehicles: Those used shall be safe and in good operating condition. The COTR may at any time inspect and reject any equipment they consider unsafe, in poor operating condition, or inappropriate for work. Immediately notify the COTR of broken down Contractor equipment. Keep any construction equipment with metal wheels or tracks (i.e. roller, excavator etc.) off paved areas. All equipment shall be trailer hauled to and from construction sites. Prevent loading pavement beyond design capacity which is greater than or equal to the legal capacity of local roads.

## **11. AVAILABILITY of UTILITY SERVICES at JOB SITES**

- A. Water: Subject to available supply, the Authority, without charge to Contractor will from existing outlets and supplies furnish reasonable amounts of potable water. Conserve water. Provide temporary pipe insulation to prevent freezing. Contractor, at its own expense, shall install and maintain necessary temporary connections and distribution lines and shall remove the connections and lines prior to final acceptance of construction. Water services may not be available at or adjacent to Contractor's staging, storage or office areas, but may be obtained from an outlet as designated by the COTR.
- B. Electricity: The Authority exterior electrical system is privatized and is the property of the Authority. Designs that install, alter or connect to the system must incorporate the Authority Design Manual design standards. Electricity is available subject to approval from the COTR. The Authority must review and approve design submittals for any construction that requires an upgrade, connection to, or disconnection from the System. Contractor must allow fourteen (14) calendar days for this review. Request hookups not less than twenty-one (21) days in advance. All electrical work



shall conform to the latest editions of the National Electrical Code (NEC) and the National Electrical Safety Code (NESC).

- C. Sanitary Provisions: COTR will designate spaces near the building site for sanitary facilities provided the Contractor provides housekeeping and maintenance during construction. If the COTR is not satisfied with the condition of the restrooms, this permission will be rescinded. Existing facilities may not be used. Contractor shall at its expense provide and maintain temporary facilities and necessary appurtenances and shall remove same prior to final acceptance.

## **12. TEMPORARY UTILITIES**

- A. Temporary Electric Wiring: shall meet the requirements as established below and shall be installed, maintained, and removed by Contractor at no expense to the Authority. Skilled electrical tradesman shall accomplish work.
- B. Temporary Power and Lighting: Contractor shall provide construction power according to the safety requirements of the National Electric Code, NFPA 70. Enforce all electrical safety requirements for subcontractor work. All 15 and 20-Amp outlets not part of the permanent building or structure wiring, shall have ground fault circuit interrupters (GFI) for personnel protection. GFI shall be provided for extension cords and for all permanent receptacles that are not properly grounded. Provide and maintain construction lighting of not less than 2 watts/ft, exterior staging and storage lighting of not less than 1 fc, and after-dark interior lighting of not less than 0.25 fc.
- C. Heating Cooling & Ventilation: Provide and maintain heating and cooling devices needed to maintain construction operations. Provide these devices with regular preventative maintenance including new filters, lubrication, and parts replacement. Maintain a maximum ambient temperature of 80°F and a minimum ambient temperature of 55°F where construction is in progress. Ventilate enclosed areas to cure materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- D. Construction Tools and Equipment: Superseding other requirements, temporary wiring conductors installed for operation of construction tools and equipment shall be either Type TW or THW contained in metal raceways or shall be hard usage or extra hard usage multi-conductor cord. Temporary wiring shall be secured in a workmanlike manner above the ground or floor without obstructing movement of personnel or equipment. Open wiring may only be used outside of building and according to the provisions of the NEC.
- E. Removal Prior to Substantial Completion: Remove temporary utilities, equipment, facilities, and materials, prior to final inspection. Remove underground installations to a minimum depth of 2 feet. Grade site as required. Clean and repair damage

caused by installation or use of temporary work. Restore existing site and facilities to remain to original condition before construction.

### **13. CONSTRUCTION SECURITY**

Security Program: Protect Work including construction site, construction office and all construction material, tools and equipment from damage, theft, vandalism, and unauthorized entry until project is turned over complete to the Authority.

#### Airfield Requirements

- a. Contractor shall contact Airport Operations through the COTR for construction restrictions involving the flight line, taxiway and runway areas.

#### Contractor Restrictions

- a. Unauthorized Reconnaissance: Contractor access to areas outside of the immediate work area (excluding restrooms near the work site, public eating facilities, direct haul and access routes, COTR, and points of supply and storage) is prohibited. Persons engaged in unauthorized reconnaissance of other Contractor or Authority activity will be referred to the COTR for disposition.
- b. Toilet Facilities: Contractor personnel will not use building facilities.

End of Administration of Construction