

**ATTACHMENT A**  
**EAST AIRCRAFT PARKING HARDSTAND PROJECT DESIGN-BUILD CONTRACTOR**  
**SCOPE OF SERVICES**  
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**ATTACHMENT A – PROJECT LOCATION MAP**

**ATTACHMENT B – PROPOSED HARDSTAND LAYOUT**

**EAST AIRCRAFT PARKING HARDSTAND  
DESIGN-BUILD CONTRACTOR SCOPE OF SERVICES**

**SECTION 1 - GENERAL**

1.01 INTRODUCTION

- A. The Houston Airport System (HAS) has identified a significant need for the development of additional facilities at George Bush Intercontinental Airport (IAH) to handle aircraft, passengers, and cargo departing to and arriving from, domestic and international destinations on scheduled and chartered flights.
- B. To support the airlines’ growth plans in Houston, HAS and airlines will complete a major Capital Improvement Program (CIP), known as the IAH Terminal Redevelopment Program (ITRP) and hereinafter referred as the “Program”, that will include constructing a new 11-gate concourse (New Terminal C North currently under construction) undertaken by United Airlines (UA) and reconstructing and integrating the existing Terminal C North and Terminal D into a new single common-use international facility – the Mickey Leland International Terminal (MLIT), undertaken by HAS.
- C. This Scope of Services is focused on the design and construction of a new remote East Aircraft Parking Hardstand and taxiway connection to support the airline passenger experience and aircraft maintenance operations during construction of the new MLIT.
- D. Capitalized terms used, but not otherwise defined, in this Exhibit shall have the same meaning as the terms defined in the body of this Contract unless indicated otherwise.

1.02 PROJECT INTENT

- A. Key to this Project’s success is to support the Houston Airport System’s Vision Statement to establish Houston as a five-star global air service gateway where the magic of flight is celebrated. The Design-Build Contractor (DB) will embrace the following HAS core values as they relate to the Project planning, design, and construction:

<b>Relationships</b>	<b>Service</b>
<ul style="list-style-type: none"> <li>▪ We work together with integrity; treat every individual with courtesy and respect.</li> </ul>	<ul style="list-style-type: none"> <li>▪ We WOW our customers through a “can do” attitude and respond quickly to meet and exceed their expectations.</li> </ul>
<ul style="list-style-type: none"> <li>▪ We honor our commitments and behave in a manner that earns trust.</li> </ul>	<ul style="list-style-type: none"> <li>▪ We find ways to bring fun and joy into our work and bring customers along for the ride.</li> </ul>
<ul style="list-style-type: none"> <li>▪ We promote collaboration and teamwork across the organization.</li> </ul>	<ul style="list-style-type: none"> <li>▪ We respond promptly and effectively.</li> </ul>

<b>Relationships</b>	<b>Service</b>
<ul style="list-style-type: none"> <li>▪ We are reliable and trustworthy; we honor our promises and commitments.</li> </ul>	<ul style="list-style-type: none"> <li>▪ We show respect, compassion and let people know we care.</li> </ul>
<ul style="list-style-type: none"> <li>▪ We are open, positive and constructive in our feedback.</li> </ul>	<ul style="list-style-type: none"> <li>▪ We willingly provide the necessary time and effort to meet the customer's needs.</li> </ul>
<ul style="list-style-type: none"> <li>▪ We treat people like they want to be treated.</li> </ul>	<ul style="list-style-type: none"> <li>▪ We are flexible and adaptive in a dynamically changing business environment.</li> </ul>
<ul style="list-style-type: none"> <li>▪ We take responsibility for our actions.</li> </ul>	<ul style="list-style-type: none"> <li>▪ We display enthusiasm and passion for our work.</li> </ul>
<ul style="list-style-type: none"> <li>▪ We lead by example.</li> </ul>	
<b>Innovation</b>	<b>Excellence</b>
<ul style="list-style-type: none"> <li>▪ We have the courage and willingness to consider new and unconventional ways of thinking.</li> </ul>	<ul style="list-style-type: none"> <li>▪ We strive for quality and skillful execution without compromise.</li> </ul>
<ul style="list-style-type: none"> <li>▪ We assume responsibility for learning new things.</li> </ul>	<ul style="list-style-type: none"> <li>▪ We use the power of total employee involvement to achieve our organizational goals.</li> </ul>
<ul style="list-style-type: none"> <li>▪ We embrace new ideas.</li> </ul>	<ul style="list-style-type: none"> <li>▪ We foster a culture of shared values that gets things done.</li> </ul>
<ul style="list-style-type: none"> <li>▪ We listen with an open mind.</li> </ul>	<ul style="list-style-type: none"> <li>▪ We take calculated risks needed to achieve results.</li> </ul>
<ul style="list-style-type: none"> <li>▪ We are future-focused; "I've always done it this way" does not exist in our vocabulary.</li> </ul>	<ul style="list-style-type: none"> <li>▪ We look for new and more effective ways to do business.</li> </ul>
<ul style="list-style-type: none"> <li>▪ We recognize change as an opportunity.</li> </ul>	<ul style="list-style-type: none"> <li>▪ We encourage continuous improvement.</li> </ul>

- B. To support the HAS mission and core values, the Project design will adhere to the following overarching themes, as applicable the specific project requirements:
1. **Operational Safety**, functional, and intuitive system design for the Project and operational areas;
  2. **Flexible** design to safeguard for innovation and changes to technology, operations, and security;
  3. **Technology-enabled** for automated processing and customer convenience;
  4. **Modular** features that enable off-site construction in controlled environments with on-site assembly to expedite construction, reduce material waste, control quality, and enable easier interior updates; and
  5. **Maintainable** facilities and systems that consider whole-life cycle costing.
  6. **Sustainable** and energy efficient.

- C. The Project must be designed at its core for constructability, flexibility of aircraft movement plus airline, airport operational efficiencies.

## **SECTION 2 - PROJECT DESCRIPTION**

### **2.01 PROJECT PLANNING OBJECTIVES**

- A. The Project Design Criteria Package dated September 18, 2015, outlines the program background, existing conditions, project requirements, development plan, conceptual design criteria and project phasing to be validated by the DB. During the program definition process, the HAS planning team generated guidelines and objectives through several sources, including interviews with HAS staff, workshops, and discussions with airport stakeholders. These sources guided the planning and subsequent design efforts for the DB work.
- B. The Project design shall include, but is not limited to, the following key planning objectives:
  - 1. To facilitate passenger enplaning, passenger deplaning, and parking of aircraft that may be displaced by construction of the proposed Mickey Leland International Terminal, a new hardstand facility will be constructed south of Taxiway November Bravo (NB) and East Cargo, slightly west of Lee Road.
  - 2. The hardstand aprons, Phase 1 (Site B) and Phase 2 (Site Q), each covers approximately 23 acres and will each accommodate up to eight (8) wide-body aircraft positions. This Project scope will develop Site B only. Refer to Attachment A – Project Location Map.
  - 3. Taxiway NB must be extended to service the new hardstand as part of this Project Scope.
  - 4. Additionally, a passenger boarding facility (pod) will be designed in this Project to permit passengers bussed from the main terminal to utilize three of the remote aircraft boarding positions. The remaining parking positions will be utilized for overnight aircraft parking positions, irregular operations including diversion accommodations, and departure queuing.
  - 5. The Project will provide gate support services, including but not limited to:
    - a. Hydrant fueling;
    - b. Ground power;
    - c. Pre-conditioned air;
    - d. Potable water to aircraft using any of the parking positions and
    - e. Visual Docking Guidance System (VDGS).

## 2.02 CLARIFICATIONS TO DESIGN CRITERIA PACKAGE

- A. The original Design Criteria Package, dated September 18, 2015, was based on fully developing the Project site with a total of 8 hardstands with the four western positions being serviced by two pods.
- B. The Project requirements, as identified in the Design Criteria Package (to be issued at a later date) will be modified as follows:
  - 1. The design shall include the full set of eight (8) remote parking positions identified in the Design Criteria Package and design of the two remote pods.
  - 2. Design of the proposed pods will provide service for the three western-most aircraft positions rather than the two positions shown in the Attachment B graphic. Construction of the pods is not part of this Project scope, but may be added at a later date.
  - 3. The DB shall construct only the northern six (6) remote parking positions and make provisions in the design and constructed Work for future construction of the remaining parking positions and pods, as a separate contract. See Attachment B for the proposed Work to be constructed under this Project.
  - 4. The DB shall design and implement protective measures for the designated wetlands located in the area of the remaining two stands at the southern end of the Project site.
  - 5. Provisions shall be made in the design and construction of the hardstand apron for utilities to service the pod(s), when installed.
- C. The DB shall obtain CLOMR/LOMR approval and associated City of Houston (Code Enforcement and Public Works) construction permits.

## 2.03 HARDSTAND DESIGN REQUIREMENTS

- A. The DB shall be responsible for the complete design and construction of extending the east end of taxiway November-Bravo and the crossing of taxiway November-Bravo over Drainage Ditch G.
- B. The apron pavement must be designed to support the weight of the design aircraft, an Airbus A380-800, with a design life of 30 years.
- C. The DB shall be responsible for design and construction of the hydrant fuelling system. Two fuel pits per aircraft parking position will be required via new fuel tie-in to existing fuel lines, which are in proximity of the proposed apron location. The DB will be responsible for providing design and procurement of ground support equipment, including: 400 Hz Ground Power Units and Pre-Conditioned Air (PCA) units, capable of supporting ADG VI aircraft.
- D. Design and construct storm water detention, as required.
- E. This Project will fall under US Department of Transportation Federal Aviation Administration (FAA) Airport Design and Construction Requirements.

- F. Refer to FAA Standards Advisory Circulars and all updated advisory circulars.
- G. Project Documentation and procedures shall follow FAA guidelines and standards as well as HAS Design Criteria Manual.

#### 2.04 FACILITY DESIGN AND OPERATION REQUIREMENTS

- A. The building concept for the remote hardstand boarding facility or “pod” is to provide shelter for a ramp system and elevator by which passengers would reach elevated passenger loading bridges to board the aircraft.
- B. Pre-fabricated or modular units are the preferred construction method in order to expedite the building process and facilitate ease of deconstruction at the anticipated end of use period.
- C. One pod is proposed to service the three western positions of the proposed hardstand. A Boeing 777-300 aircraft shall be the aircraft design standard for the pod design.
- D. The pod must be designed such that PCA and 400 Hz power will not be impacted by ultimate removal of the pod.
- E. Loading bridges are required on both the northern and southern sides of the proposed pod to service the west side parking positions.
- F. Interior finishes of the pod shall be similar to a boarding bridge.
- G. In addition to basic building code requirements, the climate and typical weather patterns of the area shall be given strong consideration in order to design for optimum passenger life safety and comfort.
- H. Accessibility features shall adhere to the Texas Accessibility Standards.
- I. An exterior canopied area shall be required to provide shelter as passengers enter and exit buses. There’s an existing sanitary sewer line along Lee Road for connection from pod.
- J. The Hardstand and pod layout must consider busing as the operational concept proposed for moving passengers from Terminal D to the pod(s).
- K. No requirement for Flight information Displays is included in the design; however, provisioning for data communications at the pods is required.

### **SECTION 3 - RELATED PROJECTS**

#### 3.01 GENERAL

- A. The DB shall collaborate with the PMT, airline representatives, project stakeholders, other tenants and contractors executing concurrent capital improvement and tenant improvement projects with respect to all aspects of this Project. The following projects are either in construction or are planned to be awarded under separate procurement packages for separate project delivery.

- B. The DB will be required to collaborate with the PMT and other projects being performed at IAH to facilitate applicable linkages with this Project.
- C. The DB is responsible to collaborate with other projects to ensure that required operation of the airport is able to be maintained across applicable project sites.

### 3.02 UNITED NEW TERMINAL C NORTH (NCN) PIER

- A. This project's design and construction is being managed separately by United Airlines (UA) with expected final completion by second quarter 2017. The project will construct a new concourse pier on the north ramp in between the existing Terminal B North gates and the existing Terminal C North Pier. At completion of the NCN project, UA will vacate the existing Terminal C North pier and relocate operations to the NCN. This will allow demolition to begin on the existing Terminal C North pier, which is required for the construction of the Project.
  - 1. NCN Apron and Utilities: NCN apron and utilities consist of all the supporting apron and underground utilities associated with the NCN pier concourse. Utilities include the high voltage system, sanitary sewer, storm sewer, domestic water, fire protection, natural gas, and jet fuel. Design and construction of these facilities are the responsibility of UA. The jet fuel main line system which is in conflict with the NCN project site will be demolished and rerouted to the north around the NCN and extended along the north side of the project and capped with a new vault for future connection to the MLIT under the MLIT Apron and Taxilane project. A new hydrant loop system will be installed around the entire NCN, tapping off the new lines and connecting to the existing system near the east end of the B-D Connector.

### 3.03 MLIT

- A. The new MLIT building and associated infrastructure will replace both the existing Terminal C North Pier and the entire Terminal D facility with a new single consolidated terminal building planned to occupy four levels. The south face of the new MLIT will be constructed to the north of the current building location to accommodate landside roadway improvements. The proposed new MLIT is planned for 15 wide-body gates including 4 gates for A380 aircraft, or up to 30 narrow-body aircraft in alternative configurations.
- B. The new MLIT replaces all of the terminal processing functions of existing Terminal D, while expanding capacity and providing the desired passenger amenities and experience found in a world class international terminal.

### 3.04 AIRPORT-WIDE SYSTEMS

- A. Airport-wide Systems projects are associated with, and needed to properly develop and operate the facilities developed in the ITRP. Not all are required to be completed before the MLIT design, including work contained in this Project is initiated. These projects range from additional off-site power distribution system improvements needed for service reliability, information technology backbone improvements, and inter-terminal train (ITT) system improvements.

### 3.05 HAS INFRASTRUCTURE

- A. Additional projects either planned or in construction at IAH are identified within the HAS Capital Improvement Plan (CIP) and include taxiway rehabilitation and additional airfield projects, plus several utility infrastructure projects.

### 3.06 PROGRAM MANAGEMENT OFFICE (PMO) BUILDING

- A. To improve program management efficiency and interaction between HAS staff, stakeholder representatives, the PMT, plus the multiple consultant and contractor organizations, HAS will be constructing a Program Management Office (PMO). The PMO will provide a centralized facility for all designated HAS staff members, designated stakeholder representatives, the PMT's key staff members, PMSS teams, principal consultant and contractor staff members, and other designated personnel. In addition, the PMO will provide conference and training facilities to support the ITRP and a consolidated location for all ITRP-related document control, records management, reproduction, and CAD/GIS functions. The PMO will be located at 115 Standifer Road.
- B. The DB may be required to house key management personnel during design and construction in this location to enhance collaboration with the Project Team. To facilitate work planning, HAS may provide laptop computers, monitors, and project management-related software for the DB's personnel based in the PMO. Worker parking and a transportation staging area is planned to be located in proximity to the PMO site for support of workers on the Project site.
- C. Prior to completion of the PMO, the HAS may provide alternate office space within or near IAH boundaries for the DB to perform Services, which is subject to availability.

### 3.07 FUTURE PROJECTS

- A. In addition to the above reference projects, the DB will be required to interface with projects defined in the future that may not yet be identified as part of the CIP.

### 3.08 HAS THIRD PARTY SUPPLIERS

- A. Third-party suppliers and installers may be contracted separately by HAS during the course of this project. The DB may be required to integrate those work packages into the course of its own construction during the Project.

## **SECTION 4 - PROJECT ADMINISTRATION**

### 4.01 GENERAL SERVICES

- A. The services provided by the DB are intended to be provided in a collaborative Project team environment. The DB is required to manage and execute the Project Design and Construction Document development process working with PMT. The DB shall

collaborate, advise, assist, estimate, schedule and provide recommendations to the PMT on the design and construction aspects of the Project.

- B. The DB shall be required to provide complete Preconstruction Services, which includes Design Services and perform all Construction Work associated with the Project, including furnishing of all, labor, materials and equipment, necessary and reasonable to complete the entire contemplated scope of Work in accordance with HAS requirements and the terms of the Contract. The Work includes, but is not limited to; Design Services, permitting, supervision, testing, inspection, integration, commissioning system components and interfacing with third-party commissioning services provider for integrated systems testing, information technology, systems integration and activation, regulatory requirements, project closeout, and all necessary general conditions that maybe reasonably inferred.
- C. The DB will be designated as the “Prime Contractor” for the Project.
- D. The DB is responsible for the management and implementation of general services works and security for the Project site. This includes, but is not limited to: management of miscellaneous site preparation activities, escorting and work force transportation to and from the areas of work, subcontractor/trade work force logistics, clean-up and housekeeping, temporary works for construction, public safety barriers, fencing, partitions etc., traffic maintenance, and temporary signage.
- E. The DB is responsible for management of the Project environmental plan and sustainability initiatives related to the site. This includes the tracking, disposition and reporting of demolition work, salvage of any materials, and reuse of any materials.
- F. Some work will be completed within the secure area of the airport. Security Identification Area or SIDA badges will be required for employees, as will full security measures and escorting.
- G. A portion of the Project may be funded by the FAA’s Airport Improvement Program and airport collected passenger facility charges. All work for the Project must be awarded to subcontractors via an open and fair competitive procurement process. The DB will be required to administer a bidding process to select subcontractors for the Project. The DB’s competitive procurement process must be open, fair and transparent, and should result in the DB selecting subcontractors that provide the best value to HAS.

#### 4.02 PROJECT ROLES AND RESPONSIBILITIES

- A. This section defines general roles and responsibilities for the entities involved in the Project.

HAS, EPM and PMSS representatives comprise the Program Management Team (PMT).

Entity	Responsibility
City of Houston (City)	<ul style="list-style-type: none"> <li>▪ The City of Houston is the owner and approver of all Contracts executed for work at Houston Airports, including the Intercontinental Airport of Houston (IAH).</li> <li>▪ The Houston City Council approves all Contracts and changes to Contracts, unless otherwise delegated.</li> <li>▪ Delegated authority for work within the Houston Airport System is granted to the Director of the Department of Aviation.</li> </ul>
Houston Airport System (HAS)	<ul style="list-style-type: none"> <li>▪ HAS, through the Director (Department of Aviation) or their designee, represents the City of Houston with respect to management and operation of the Airport.</li> <li>▪ Use of the terms City or HAS may be used interchangeably</li> <li>▪ Approves, makes decisions throughout project phases.</li> <li>▪ Ensures that HAS required decisions are made in a timely manner.</li> <li>▪ Facilitates communication with City of Houston, Department of Public Works and Engineering (PWE) and Building Standards Group (BSG) to keep all parties informed of project progress and construction permit submittals.</li> <li>▪ Provides key input on owner requirements related to planning, art program, technology, finance, operations, maintenance, security, and safety.</li> </ul>
Executive Program Management (EPM) Team	<ul style="list-style-type: none"> <li>▪ Provides overall leadership of the ITRP and advises HAS on project status and key decisions affecting scope, schedule, budget, safety, and quality.</li> <li>▪ Develops policies, procedures, and execution plans to deliver the Program and Projects.</li> <li>▪ Coordinates all work to be undertaken with HAS divisions, HAS departments and external stakeholders (such as airlines, concessionaires) as necessary for the timely and quality execution of the Program.</li> <li>▪ Engages and collaborates with airlines and other airport stakeholders to minimize disruption of operations and services throughout the duration of the Program.</li> </ul>

Entity	Responsibility
Program Management Support Services (PMSS) – Project Management	<ul style="list-style-type: none"> <li>▪ Led by Project Manager representatives from Program Management Support Services (PMSS) staff; provides overall management of the ITRP Projects.</li> <li>▪ Acts as interface between the Executive Program Management Team, and Design Build Contractor (DB).</li> <li>▪ Ensures integration and execution of project-specific controls systems.</li> <li>▪ Manages contracting and project management processes through all phases of design and construction.</li> <li>▪ Ensures change management decision-making is defined, documented and understood.</li> <li>▪ Provides overall administrative management of contracts with the design consultants and construction contractors.</li> </ul>
Program Management Support Services (PMSS) Team - Construction Management	<ul style="list-style-type: none"> <li>▪ Led by Construction Manager representatives from the Program Management Support Services (PMSS) staff; provides management of contractors engaged to deliver ITRP projects.</li> <li>▪ Provides management of cost, schedule, quality, security and safety.</li> <li>▪ Manages contracting and project management process through all phases of construction.</li> <li>▪ Manages the contractor's performance in accordance with the terms and conditions of the Contract.</li> </ul>
Program Management Support Services (PMSS) Team - Design Management	<ul style="list-style-type: none"> <li>▪ Led by Design Manager representatives from the Program Management Support Services (PMSS) staff; provides management of Design Build Contractor during design to deliver ITRP projects.</li> <li>▪ Provides management of the design process, managing scope to budget, compliance with project requirements plus safety and security throughout design.</li> <li>▪ Manages and tracks design from concept through construction permit packages and delivery of record close-out documents.</li> <li>▪ Manages the design review process through all phases of design.</li> <li>▪ During Design manages the Design Build Contractor performance in accordance with the terms of the Contract.</li> </ul>

Entity	Responsibility
Design-Build Contractor Project Manager (DB)	<ul style="list-style-type: none"> <li>▪ Provides execution for all phases of design to produce a final design that achieves Project objectives, scope, schedule, safety in design, and budget.</li> <li>▪ As prime contractor, leads and coordinates sub-consultants and specialty consultants.</li> <li>▪ Provides management during preconstruction and construction phases for cost, schedule, work package planning and sequencing, quality, safety and constructability.</li> <li>▪ Performs design reviews and provides recommendations for design alternates to identify and resolve constructability issues and to assist in maintaining budget and schedule.</li> <li>▪ As prime contractor, leads and coordinates all sub-contractors.</li> </ul>
Commissioning Authority (CxA)	<ul style="list-style-type: none"> <li>▪ Verifies testing and operational intent of all applicable elements of the Project scope.</li> <li>▪ Performs design phase reviews focused on 'commissionability', functionality, maintainability, sustainability and best practices.</li> <li>▪ Participates in concurrent design phase reviews with the PMT, other consultants and contractors, as applicable</li> <li>▪ Develops overall Commissioning Plan requirements as the basis for the DB to develop the Project technical commissioning plans.</li> </ul>

4.03 HOUSTON AREA CONSTRUCTION EDUCATION COLLABORATIVE

- A. The Houston City Council has approved funding for Lone Star College to train construction workers and trades at an IAH facility to be renovated for this purpose. The Houston Area Construction Education Collaborative (HACEC) will operate out of this facility. It is the intention that the DB become aligned with this initiative, employ graduates of the program, and integrate these skilled workers into the Project workforce.
- B. The HAS, in partnership with local community colleges, has formed the HACEC. The mission of the HACEC is to provide safety and security training, as well as construction trade skills training, to construction contractor employees. HAS funds the delivery of the training curriculum through payment of a per-labor-hour contribution for every hour worked by construction contractor employees on HAS-designated capital projects.
- C. All ITRP construction contractor employees are required to successfully complete the HACEC safety/security training prior to mobilizing on the job site.

## SECTION 5 - DESIGN SCOPE OF SERVICES

### 5.01 GENERAL RESPONSIBILITIES

- A. The DB shall designate in writing a representative who is responsible for the day-to-day management of design services. The designated representative shall be the PMT's primary contact during the design phase of the Project and shall be available as required for the benefit of the Project and the PMT. The designated representative shall be authorized to act on behalf of and to bind the DB in all matters related to design services. The designated representative shall not be changed without advance written approval from the PMT.
- B. The DB shall engage the services of a Designer and other qualified professionals as required for performance of the Design services. The DB certifies that the Designer and all other professional consultants have been or will be selected on the basis of competence and qualifications pursuant to the Texas Government Code. The Designer shall not perform any architectural or engineering services directly unless Designer is licensed in Texas to perform such services. All drawings, specifications, change orders and other design-related documents shall bear the seal of the licensed professional who prepared them in accordance with the applicable laws and regulations of the State of Texas.
- C. The DB shall participate in design review meetings with the PMT at the end of each design stage and shall document and respond to the PMT review comments.
- D. The DB shall be responsible for managing design services so as to ensure that the Project, as designed, can be constructed for an amount that is within the Design-To-Budget Requirement. The obligation to design the Project to achieve objectives of scope and cost shall continue through completion and acceptance of Construction Documents.
- E. At appropriate times, the DB and/or Designer will contact governmental agencies including but not limited to; HAS, County, State and Federal agencies that are required to approve the Contract Documents and the entities providing utility services to the Project. In designing the Project, Designer will respond to applicable design requirements imposed by governmental agencies and by such entities providing utility services. Designer will assist HAS in connection with City's responsibility for filing documents required for the approval of governmental agencies.
- F. The DB and/or Designer will be expected to present to and consult with stakeholders and HAS staff as required.
- G. HAS DESIGN CRITERIA
  - 1. The following HAS design criteria, available on the HAS Fly2Houston website ([www.fly2houston.com](http://www.fly2houston.com)), shall be incorporated into the Project and be included as part of the Contract by reference:
    - a. HAS Design Criteria Manual 2015

- b. HAS Wayfinding System – Signage Design Guidelines, Standards, and Typical Applications (01.17.2014)
- c. CAD/ Geospatial Data Standards and Procedures

## 5.02 REVIEW OF CONSTRUCTION DOCUMENTS

- A. The DB shall perform internal quality control reviews at the end of the each design stage. The results of these reviews shall be submitted to the PMT.
- B. The DB shall provide the PMT with design document review sets as required at each stage of design.
- C. The DB shall incorporate into the documents such corrections and amendments as the PMT requests at each design review, unless the DB objects to such changes in writing and the PMT agrees to the objections. Any additional cost incurred due to the DB's failure to incorporate the PMT's requested corrections and amendments shall be borne by the DB.

## 5.03 BASIS OF DESIGN

- A. The Basis of Design (BOD) is a narrative description of the Project that is intended to provide a summary of the design progression and enable development of the construction cost estimate. The BOD documents thought processes and assumptions behind design decisions to meet HAS's project requirements. Designer shall submit the BOD at completion of Design Development and submit an updated BOD at completion of Construction Document for the PMT review.
- B. The BOD shall assemble all design information prepared under each design stage and shall include the following:
  - 1. List of assumptions
  - 2. Validation of the schematic design level bridging document
  - 3. A discussion of the overall design concept
  - 4. Major design decisions with regards to systems, form, size, quantity, materials, appearance and quality
  - 5. Explanation of impacts on or by other projects
  - 6. Outstanding issues
  - 7. Identification of additional studies, if required
  - 8. Recommendations for long-lead purchase items
  - 9. And identification of any outstanding issues and considerations to be resolved prior to beginning the next stage of design

C. The BOD also includes, but is not limited to, the following as appropriate to the Project Scope:

1. Project Scope Description
2. Design workshops/ information data collection sessions
3. Information exchange/ team meetings/ design and decision registers
4. Quality management process for Design
5. Total Building Square Footage (SF)
6. Functional Space Requirements (SF)
7. Section Drawings with Overall Dimensions
8. Building Structure - Exterior Closure Description
9. Finishes Descriptions and Requirements
10. Building Code or Standards Requirement - Summary code outline
11. Plumbing, Fire Protection, and Mechanical Systems and Total Capacity - system type and total capacity, narrative and quantities, general sizes and number of systems
12. Electrical Systems - electrical system capacity and general system concept
13. Communication Systems
14. Life Safety Requirements
15. Security System - Confirm HAS requirements
16. Soils and Hydrology Report - Provide assumed foundation strategy
17. Drawings
  - a. Site Zoning Diagram, indicating:
  - b. General size and location of elements
  - c. Existing Site Plan
  - d. Demolition Plan and/or Drawings
18. Site Plan, indicating:
  - a. Outline of all structures
  - b. Dimensions for each building component
  - c. Paved areas and utility connections and capacity
  - d. Storm Water Plan and/or Drawings

19. Utility Plan and/or Drawings

- a. Provide sketch plan and narrative of location of utilities to the construction boundary
- b. Identify utilities connection points
- c. Confirm sufficient capacity at site boundary

20. Building:

- a. Preliminary diagrams and narrative indicating assumed materials and fenestration patterns
- b. Building Codes and Standards Drawing
- c. Section Drawings with Overall Dimensions
- d. Foundation Drawings including Sections and Details - Provide assumed foundation strategy, narrative of foundation strategy
- e. Room Layout Plan or Drawings
- f. Roof Plan and Details – provide roof covering options
- g. Plumbing Drawings - Provide preliminary narrative including assumed fixture count
- h. Fire Protection Drawings and Details
- i. Mechanical Drawings and Schedules - Provide mechanical systems type and total capacity
- j. Electrical and Lighting Drawings
- k. Communications Drawings

21. Budget, Schedule and Risk Analysis

- a. Construction Cost
- b. Schedule: Identify key project dates
- c. Risk Implications and Mitigation Strategies: Identify the various risks associated with the conceptual design and initial mitigation strategies

5.04 BASIC SERVICES DELIVERY

- A. At each stage of design services, as part of Basic Services, the DB shall provide the following services as appropriate to the Project scope:
  - 1. Architectural Design
  - 2. Landscape Design

3. Civil Engineering
  4. Structural Engineering
  5. Plumbing Engineering
  6. Fire Protection Systems Design
  7. Mechanical Engineering
  8. Building Automation and Controls Systems
  9. Electrical Engineering
  10. Lighting Design
  11. Technology and Communications
  12. Security Systems
  13. Acoustical Design
  14. Traffic Design
  15. Hydrant Fueling System Design
  16. Visual Communications including Signage, Graphics and Wayfinding
  17. GIS Design
  18. Storm Water Pollution Prevention Plan Design Services
  19. Surveying
  20. Artwork Program
  21. Furniture, Fixtures and Equipment (FF&E)
  22. Life Safety Code Compliance
  23. Other Services as mutually agreed to by the DB and the PMT
- B. Basic Services for this Project will be staged as follows based on the Design Criteria Package that are already developed.
1. Pre-Design
  2. Design Development
  3. Construction Documents
  4. Bid Packaging and Permitting
  5. Design Services during Construction

## 5.05 PRE-DESIGN

### A. Data Collection

1. The DB shall take reasonable precautions to verify the accuracy and suitability of any drawings, plans, sketches, instructions, information, requirements, procedures, requests for action, and other data supplied to DB (by HAS or any other party) that DB uses for the Project. DB shall identify to the PMT in writing any such documents or data which, in DB's professional opinion, are unsuitable, improper, or inaccurate in connection with the purposes for which such documents or data are furnished.
2. The City does not warrant the accuracy or suitability of such documents or data as are furnished unless DB advises PMT in writing within five (5) Calendar Days of uncovering the unforeseen condition, that in DB's professional opinion, such documents or data are unsuitable, improper, or inaccurate and PMT confirms in writing that it wishes DB to proceed in accordance with the documents or data as originally given.
3. The DB shall make reasonable efforts to investigate any documents provided by HAS and the visible existing conditions at the Project site to identify existing systems and construction which must be modified to accommodate DB's design for the Project and construction of the Project.
4. The DB shall identify to PMT in writing within five (5) Calendar Days, any discrepancies between the documents and visible conditions, and shall consult with PMT on any special measures, services or further investigations required for DB to perform its services free from material errors and omissions and to properly coordinate with existing systems and construction. This investigation shall be accomplished by registered, professional architects and engineers, as appropriate.

- B. The DB shall provide a written evaluation of the Design Criteria Package and budget and advise PMT on alternative design schemes and value engineering suggestions as applicable.

## 5.06 DESIGN DEVELOPMENT

- A. Based on the approved Design Criteria Package evaluation and any adjustments to the Project budget authorized by PMT, The DB shall prepare Design Development documents, up to 60% overall design completion consisting of Drawings and Specifications, and a detailed construction cost estimate and submit them to the PMT for approval. The Design Development Documents shall fix and describe the size and character of the entire Project, including site work, architectural, structural, plumbing, mechanical and electrical systems, materials and such other elements as may be appropriate. The detailed construction cost estimate shall confirm adherence to the Cost of Work.
- B. The DB shall prepare presentation materials at completion of Design Development and, if requested, present them at HAS stakeholder meetings.

- C. Before proceeding into the Construction Documents Stage, the DB shall obtain HAS's written approval of the Design Development documents and the mutually established Cost of the Work.
- D. Furnish the BOD as described in this Section.
- E. Design Development Documents (60% - Completion)
  - 1. The purpose of this submittal is to determine that all major features of design are progressing in accordance with prior direction, that major architectural and engineering decisions have been made, that most drawings and other documents are well advanced, and that general plans and sections of the drawings and calculations are appropriately advanced. This submittal is also to demonstrate agreement with the practices, policies, criteria, directives and standards that have been adopted and approved by HAS for the Project.
  - 2. The DB will be expected to establish the Project Guaranteed Maximum Price at this submittal stage.

#### 5.07 CONSTRUCTION DOCUMENTS

- A. Based on the approved Design Development documents and any further adjustments to the Project budget as authorized by HAS, the DB shall prepare Construction Documents consisting of Drawings and Specifications and submit them to HAS for approval. The Construction Documents shall set forth in detail the requirements for construction of the Project. The Construction Documents shall provide for the construction of the Project within the approved Project construction cost.
- B. Construction Documents shall be consistent in all material respects with Design-Build Contractor's prior design proposals to HAS and with the approved Guaranteed Maximum Price Proposal.
- C. The DB shall advise the PMT regarding construction phasing and scheduling, the construction contract time period, and such other construction conditions considered appropriate for the Project.
- D. The DB shall assist and advise the PMT in connection with HAS's responsibility and procedures for obtaining approval of governmental agencies having jurisdiction over the Project.
- E. Construction Documents (Final Review – 100%)
  - 1. This submittal shall comprise completed Construction Documents, satisfying all previous review comments and suitable for bidding and construction. Final quality control elements performed by Designer such as inter-discipline coordination, peer reviews and document and calculation checking shall be completed and incorporated. Any work remaining at this stage shall be only minor corrections to resolve discrepancies discovered during the final review.
  - 2. Furnish the updated BOD as described in this Section.

3. Included as part of this design submittal will be a construction submittal schedule, which will list all items by specification section, that is to be submitted by the DB for review and approval.
4. At this stage drawings and specifications shall be suitable for permitting and construction.

#### 5.08 BID PACKAGING AND PERMITTING

- A. The DB shall provide multiple procurement package documents to support the construction schedule. The construction packages will be released at different times, which will require the DB to prioritize the work and provide separate design submittals for approval.
- B. In conjunction with the development of the Guaranteed Maximum Price and at other times as appropriate to the Project, the DB shall answer inquiries from bidders, and shall prepare and issue any necessary addenda to the bidding or proposal documents.

#### 5.09 DESIGN SERVICES DURING CONSTRUCTION

- A. The DB is fully responsible for the services performed by their Designer. It is expected that these Services shall generally include the following to support Phase 2 construction Work:
  1. Project site visits at intervals appropriate to the type and stage of construction progress to observe the progress and quality of the Work.
  2. For general observation, Designer shall visit the site for specific purposes related to start-up or mock-up reviews for significant work activities and for formal inspections of the Work.
  3. Interpretation of the technical requirements of the Contract Documents. Interpretations and recommendations shall be consistent with the intent of and reasonably inferable from the Contract Documents.
  4. Review and approve or take other appropriate action upon the DB's submittals such as shop drawings, product data and samples, but only for conformance with the design concept of the Work set forth in the Contract Documents. These actions shall be taken prior to issuance of these submittals to the PMT for concurrence.
  5. Participate in concealed space inspections, systems start-up inspections, and Substantial Completion inspections.
  6. Review Design-Build Contractor's submission of operating and maintenance instructions, and all manuals, brochures, drawings, and other close-out documentation furnished by the DB for conformance with the requirements of the Construction Documents.

## SECTION 6 - PHASE 1 PRECONSTRUCTION SERVICES

### 6.01 GENERAL RESPONSIBILITIES

- A. The DB shall be required to provide a finished design based on the Design Criteria Package dated September 18, 2015, Preconstruction Services and Construction Work, and to furnish all labor, materials, and equipment, necessary and reasonable to complete the entire contemplated Work or improvements in accordance with HAS's requirements and terms of the Contract. The Work includes, but is not limited to; design, construction, permitting, supervision, testing, inspection, integration, commissioning building and system components, systems integration and activation, regulatory requirements and Project closeout.
- B. The DB will be required to coordinate and work with the PMT and HAS.
- C. The DB is responsible for the management and implementation of general services works and security for the site. This includes, but is not limited to: management of miscellaneous site preparation activities, escorting if required, safety, and work force transportation to and from the areas of work if required, subcontractor/trade work force logistics, clean-up and housekeeping, temporary works for construction, public safety barriers, fencing, partitions etc., traffic maintenance, and temporary signage.
- D. The DB is responsible for management of the Project environmental plan and sustainability initiatives related to the Project. This includes the tracking, disposition and reporting of demolition work, salvage of any materials, and reuse of any materials.
- E. The DB's Designer is responsible for designing the Project in accordance with all applicable local, state, and federal codes and standards to enable permits to be obtained from the City of Houston and other governmental agencies for approval and/or construction.
- F. Furnish all services in accordance with a professional standard of care and design standards currently practiced on projects similar in size, complexity and cost.
- G. Develop Project design to a level of detail sufficient for execution of the GMP for Phase 2, which shall be at the completion of Design Development (60% design completion).
- H. The DB shall be responsible for the quality, completeness, accuracy, and coordination of construction documents.
- I. The DB shall provide quality control over design before review submissions to PMT.
- J. The DB shall establish, implement, and modify Project administrative functions and reporting requirements to the PMT at periodic intervals.
- K. The DB shall identify and provide corrective actions for all Project risks.
- L. The DB shall participate in appropriate weekly Project meetings.

## 6.02 PHASE 1 NOTICE TO PROCEED

- A. The period of performance for Phase 1 Preconstruction Service will commence with an issuance of a Notice to Proceed (NTP) and will terminate upon HAS's acceptance of the Project GMP in accordance with the Work Phases and Milestones section of the RFQ.
  - 1. Immediately upon issuance of the NTP, the DB shall thoroughly review and become familiar with the Project scope, requirements and constraints, including:
    - a. The goals and objectives of the Project
    - b. Development and management of the Design to Budget process
    - c. Required project construction quality standards and requirements
    - d. The development of project reports
    - e. The needs and requirements of HAS and other Project stakeholders
    - f. The Project site available records, as-builts, specifications, local conditions and all related limitations and constraints
    - g. Schedule assumptions and constraints

## 6.03 KEY PERSONNEL

- A. The DB shall provide all dedicated Key Personnel and support staff at the start of Preconstruction Services and throughout the Project as necessary to complete all Preconstruction and Construction Phase Services.
- B. The DB Key Personnel shall be located on-site at an HAS-provided facility and shall be dedicated to the Project to perform those tasks required in the Contract.

## 6.04 PRECONSTRUCTION MEETINGS

### 6.04.1 KICKOFF MEETING

- A. Prior to commencing work and at a specific time and place to be determined by HAS, meet with the PMT for a Project kickoff meeting. The PMT, the DB, DB's Designer, and the Project team key personnel will be required to attend the Kickoff Meeting. The goals of the kickoff meeting are:
  - 1. To integrate the DB with the Project team
  - 2. To achieve consensus from the overall Project team on any issues and concerns
  - 3. To confirm that Scope of Services requirements are understood
  - 4. To establish and explain policies and procedures for completion of a successful project

5. To establish expectations of the Project schedule
6. To establish expectations of the ongoing cost estimate process
7. To establish clear lines of communication and points of contact for each Project team

#### 6.04.2 BI-WEEKLY PROJECT UPDATE MEETINGS

- A. Following the Kickoff meeting, the DB shall organize and lead Bi-weekly Project Update Meetings throughout the duration of the Contract. The Bi-weekly Project Update meetings shall be attended by the DB and PMT key personnel. The purpose of this meeting is to address design, construction and other risks and elements affecting the Project. The DB shall use this meeting to review and update, but not limited to, the following general project related matters to the PMT:
  - a. Safety (Incident) Management
  - b. DB's Risk Management Register/Issue Log
  - c. Design Development Issue Log
  - d. Potential Change to the Work
  - e. Coordination and Logistic Planning
  - f. CPM Schedule (Critical Path or Near Critical Path)
- B. Any issue in the opinion of the DB and/or the PMT that has the potential to impact the planning, management, or execution of the Project will be discussed in the Bi-Weekly Update Meeting. Such as maintaining the budget, schedule, scope and quality objectives.
- C. The DB shall submit the aforementioned project update documents to the PMT at least three (3) business days prior to the Bi-weekly Project Update Meeting.

#### 6.04.3 DESIGN PROGRESS MEETINGS

- A. The PMT will schedule regular Design Progress Meetings to monitor progress of the Design portion of the Work. These meetings will start within 30 days from the date of Phase 1 NTP and will occur as follows:
  1. Phase 1 Preconstruction: Once a week minimum and as required to accomplish the GMP submittal.
  2. Phase 2 Construction: Bi-weekly until the design and construction submittals are complete, then as needed and determined by the PMT.
- B. Attendee: Design Progress Meetings will be attended by:
  1. The PMT
  2. The DB, Designer and Key Personnel

3. Major subcontractors, as required
  4. Others as directed by the PMT
- C. Agenda: The DB will be responsible for developing the meeting agendas in collaboration with the PMT. The purpose of the meeting is to discuss significant items that could affect completion of the Construction Documents and that have a major impact on the quality, cost and overall schedule of Work.
- D. Minutes: The DB will record and distribute meeting minutes, regardless of whether someone else is also doing the same to facilitate verification of a complete and accurate understanding of the meeting. The minutes shall be issued to the PMT for review and comment within two (2) days of the meeting.

#### 6.05 PRELIMINARY SCHEDULE

- A. The DB shall coordinate the requirements of this Section with Specification Section 01 32 16, Project Schedules and Progress Reporting.
- B. Within Thirty (30) days after Phase 1 NTP, the DB shall prepare and submit a preliminary schedule for execution of the Work for the PMT review and response.
- C. The Preliminary Schedule shall include the preconstruction design activities.
- D. The DB shall update the Preliminary Schedule as required to reflect progress of the Work and as indicated in the Contract. Such updates shall not be construed as relieving the DB of its complete and exclusive control over the means, methods, sequences, and techniques for executing the Work.

#### 6.06 DESIGN TO BUDGET

- A. Within thirty (30) Calendar Days of NTP for Preconstruction services, the DB will develop a cost component framework (template). The DB will use the Design Criteria Package dated September 2015 to develop an initial Probable Cost of the Work.
- B. The Probable Cost of the Work shall not exceed the Agreed Cost of the Work accepted by the Director.
- C. During the performance of the design, any updated cost component framework and revisions to the Probable Cost of the Work shall be reviewed, reconciled and accepted by the PMT.
- D. An Agreed Cost of the Work must be approved by the Director prior to proceeding with Design Development, which shall culminate with delivery of the 60% Design Package and the Project GMP.
- E. During the design process, the DB shall conduct site visits and field investigations to ensure plans and specifications accurately reflect current field conditions and make recommendations for changes to the plans and specifications if necessary, based on these findings.

- F. During the design process, the DB will conduct constructability reviews and provide input and suggestions for design optimization to align the design with the Agreed cost of the Work. The DB will perform more detailed analysis of selected items to include alternative methods, systems, materials, equipment, or designs feasible to complete the construction at the lowest reasonable cost while achieving HAS's Project objectives.
- G. The DB will evaluate opportunities and make recommendations to improve maintainability and sustainability and reduce lifecycle costs and energy use.
- H. Cost Estimating and Reporting
  - 1. The DB will utilize an electronic data-base program to research and store pricing of various construction items. All estimates will build-off and reconcile to the approved Probable Cost of the Work. The estimates developed by the DB will be used by HAS during negotiations with the DB to set the GMP or CGMPs. All estimates shall be open book.
  - 2. The DB will work with the PMT's cost estimators in reconciling methods and information sources for the pricing of construction elements. As estimates are developed, the DB shall develop a system to manage and organize the various estimates utilizing the Work Breakdown Structure (WBS) provided by the PMT.
  - 3. During Preconstruction, the DB will provide monthly cost estimate reports. The reports shall include the updated Probable Cost of Work, changes and variances from previous report and/or selected milestone reports, constructability review summary, list of value engineering/lifecycle cost reduction recommendations, and market updates.
    - a. If the (PMT/DB) reconciled cost estimate exceeds the Agreed Cost of the Work. The PMT will arrange a meeting between the Director, DB, to present the cost estimate and to identify areas where the progressed design can be modified to bring the Project within the Agreed Cost of the Work. The presentation shall include an assessment of the impact of potential changes to the progressed design on aesthetics, function and impact to the maintainability or efficiency of the Project. The intent of the meeting is to obtain acceptance of any design modifications and the Agreed Cost of the Work from the Director.
    - b. The PMT will document decisions reached and any Agreed Cost of the Work adjustments resulting from the cost estimate presentation meeting.
  - 4. Once construction is authorized, the DB will provide a monthly budget report/buy-out report with their request for payment summarizing the Work accomplished in the month for which the request is being submitted, the forecast cost to complete, a summary of the pending and authorized GMP or CGMP adjustments, Work planned for the following month, progress percentage complete of Work deliverables, current status per budget line item, plus variances and deviations from the authorized GMP.

- 6.07 DEVELOPMENT OF THE GUARANTEED MAXIMUM PRICE (GMP) OR COMPONENT GUARANTEED MAXIMUM PRICE (CGMP)
- A. The DB shall be responsible for preparing and submitting a proposed GMP to construct the Project within the Agreed Cost of the Work when the DB has completed and issued the Design Development (60% Design Completion) submittal, the DB.
  - B. The PMT will develop a parallel estimate which will be used to reconcile and negotiate the GMP which, when accepted by the Director, will be submitted to the Houston City Council for approval.
  - C. Should HAS and the DB not be able to reach an agreement on the GMP, HAS may, at their sole discretion, use the work products produced to-date to complete the Project.
  - D. HAS will require a GMP for the Project no later than the 60% Design stage; however, HAS may authorize the DB to proceed with early packages in order to meet the Project schedule. If early packages are issued, an independent CGMP submittal and negotiation process will be followed.
  - E. HAS will issue a request to the DB to establish the GMP or CGMP Proposal for the complete Project or for multiple Work Packages(s). The DB shall deliver to HAS a proposed GMP or CGMP Proposal, with a detailed estimate prepared by the DB which will be reviewed by the PMT before being deemed to be adequately supported prior to submittal to the Director for review and acceptance. Each GMP or CGMP proposal shall include the following sections:
    - 1. Section One: Summary of Work, including a list of all Construction Documents.
    - 2. Section Two: GMP or CGMP Price Summary with line item Schedule of Values.
    - 3. Section Three: Project Team and Burden Rates
    - 4. Section Four: Scope Clarifications and Assumptions.
    - 5. Section Five: Procurement Plan.
    - 6. Section Six: GMP or CGMP Construction Schedule.
    - 7. Section Seven: Analysis of impact on the Total Construction Budget and Project Schedule.
    - 8. Section Eight: MBE/WBE/DBE/SBE participation level, including a total-to date participation level status report.
    - 9. Section Nine: Permitting Plan.
    - 10. Section Ten: Risk Management Plan.
    - 11. Section Eleven: Construction Work Plan.
    - 12. Section Twelve: Commissioning and Activation Plans.
    - 13. Section Thirteen: Project Manuals.

14. Section Fourteen: Insurance.

15. Section Fifteen: Bonds.

- F. In addition to the Cost of Work, a GMP or CGMP may include agreed-to allowances needed to complete the scope of work that cannot be defined in a bid package or the DB's Contingency. This Contingency is the DB's contingency and may not be used for any costs not specifically allowed herein and may only be used with the PMT's written permission. The PMT shall track the net, cumulative unused Contingency until Project completion, at which time the balance of the unused Contingency will revert to City.
- G. For the GMP or each CGMP, the DB shall develop a corresponding Schedule of Values, including the Schedule of Stored Materials, if applicable.
- H. The GMP or each CGMP will be subject to modification for changes as allowed by the Contract Documents.
- I. The actual price paid by the City to the DB shall be the actual incurred Cost of Work plus the DB's fee as defined by the Contract.

#### 6.08 DESIGN BUILD CONTRACTOR MANAGEMENT PLAN

- A. Within Thirty (30) days after Phase 1 NTP, the DB shall prepare a DB Management Plan, to be reviewed and accepted by the PMT, which documents the DB's plan for delivery of the Project. The DB Management Plan shall be updated monthly to reflect actual project progress and shall be submitted to the PMT at least one week prior to the Monthly Progress Review Meetings. The DB Management Plan shall address, but not be limited to:
  - 1. Project Management and Administration Plans.
    - a. Project communications plan in accordance with ITRP policies and procedures.
    - b. Preconstruction and Construction Organization Chart.
    - c. Design management plan
    - d. Design quality assurance/control plan
    - e. Schedule management plan.
    - f. Management reporting plan.
    - g. Pay request preparation and submittal plan.
    - h. Record keeping and document control plan.
    - i. Change management plan.
    - j. Project Procurement Plan
    - k. Material Management Plan

- l. Coordination and Logistics Plan
  - m. Subcontracting Plan
  - n. Construction Work Plan
2. Preconstruction Evaluation Report
- a. Project Schedule incorporating design activities and progress.
  - b. DB's constructability recommendations including construction phasing, site logistics and traffic control.
  - c. Identify opportunities for increased efficiency and/or innovation.
  - d. Material recommendations and risks due to inflation, lead times, resource availability and supply demands.
  - e. Design option reviews including a comparison of the risks and benefits of the different design element types and their corresponding schedule, cost, construction related impacts.
  - f. Development of the Project Procurement Plan outlining supporting DB deliverables and project buy out.
  - g. Forecast and Trend Reports that identify and itemize specific events which cause Design to Budget variations.
  - h. Any issue that, in the opinion of the DB, should be considered in the planning, management, or execution of the Project to maintain budget, schedule, scope and quality objectives.
  - i. Recommendations and identification of issues concerning the Project schedule, risk analysis and mitigation, and other required information updated based on the design development and changes to the Project known at the time of submittal.
3. Risk Management Plan
- a. The DB shall prepare a Risk Management Plan that will include risk identification, allocation and mitigation based upon the Work Package(s). Risks to be addressed include, cost, schedule, design/constructability risks, and any other matter that affects the execution of the Project. The DB shall work with PMT to review and update the preliminary list of preconstruction and construction related risks. The DB shall conduct risk analysis workshops to develop a Risk Matrices and supporting documents for the Preconstruction and Construction phases of the Project that:
    - 1) Lists the related program risks.

- 2) Creates a qualitative ranking of the risks most critical to the achievement of Project schedule and budget limitations.
  - 3) Definition of the potential cost and schedule impacts of the identified risks.
  - 4) Includes research and development of documents and materials on topics specific to the identified Project risks and opportunities.
  - 5) Proposed risk mitigation strategies.
4. Material Management Plan
- a. Prepare a plan for ordering materials and equipment and provide a monthly procurement, fabrication, and delivery status report.
  - b. Identify long-lead and early procurement materials plans, including definition of materials for which the DB will intend to seek payment for stored materials.
5. Quality Control (QC) Program.
- a. The DB shall submit a Quality Control Program for Preconstruction and Construction Phase Services for the Project for the PMT review and acceptance. The DB shall ensure that all services comply with the Project requirements, all design services fully comply with the requirements of the contract and all procured materials conform to plans, technical specifications and any other project requirements, whether constructed by the DB or procured from Subcontractors or vendors. The DB shall assume full responsibility for the QC Program execution throughout the Preconstruction and Construction phases of the Project.
  - b. The DB shall be responsible for all activities necessary to manage, control, and document Work to ensure compliance with the QC Program established to comply with the requirements of the Contract Documents. The DB responsibilities include, but are not limited to;
    - 1) Ensuring adequate resources (labor, equipment and materials) are provided for quality control services to be accomplished on and off-site by its organization,
    - 2) Pre-inspection of work prior to notifying the PMT for inspections,
    - 3) Coordinating with suppliers and subcontractors,
    - 4) Tracking and resolution of non-conformance issues,
    - 5) Hiring and management of certified quality control laboratories and professionally credentialed consultants appropriate to meet the Contract Documents requirements.
6. Industry Outreach, Trade Participation and Bid Research

- a. The DB shall perform sufficient industry outreach to ensure that adequate trade and MBE/WBE/SBE participation, as required by the Contract, occurs for each Work Package and the complete Project. The DB shall also conduct bid research to determine that bids were reasonable as well as responsive to the Work Packages.
7. Subcontracting Plan
    - a. The DB shall develop and submit to the PMT a subcontracting plan that addresses all Subcontractor required elements of the Contract as well as how the DB plans to meet the criteria.
8. Construction Work Plan
    - a. The DB shall develop a Construction Work Plan which shall define the DB's approach to constructing the Project. At a minimum, the Plan shall include:
      - 1) Project management systems necessary for successful execution of the Project and use of how they are integrated into HAS's systems. The PMT will implement project management systems specific to this Project.
      - 2) Phasing, Coordination and Logistics Plans tied to the Project schedule.
      - 3) Construction Disruption Mitigation Analysis, which includes coordination of airfield safety, logistics and airport/airlines operations.
      - 4) Field office and staging area needs.
      - 5) Plans and actions taken to comply with environmental requirements and permits.
      - 6) Use and access to public roadways.
      - 7) Coordination of Work and communication of construction activities with the PMT regarding airlines, tenants and other stakeholders including utility disruptions.
      - 8) Protection of private and public properties, including lease properties on the airport site.
      - 9) Dust/dirt/debris mitigation.
      - 10) Temporary erosion control.
      - 11) Storm water drainage management.
      - 12) Vibration control and monitoring.
      - 13) Proposed construction means and methods validation.
      - 14) Temporary facilities.

- 15) 3rd party coordination with utilities and other entities.
- 16) Construction zone accommodation of vehicular, GSE equipment and aircraft traffic.
- 17) Safety Plan.
- 18) Security Plan.
- 19) Quality Control Plan
- 20) Temporary construction signage.
- 21) Traffic Control Plan.
- 22) Temporary dust walls and construction enclosure strategy for passenger facing areas.
- 23) Maintenance of vehicular service roads, taxiways/taxilanes and aprons during emergencies.
- 24) Vehicle provisions.
- 25) Public and worker health and safety protection.
- 26) Security of work site including Airport Operational Areas.
- 27) BIM Execution Plan.
- 28) Closeout Plan

## **SECTION 7 - PHASE 2 CONSTRUCTION SERVICES**

### **7.01 GENERAL**

- A. Upon issuance of the Phase 2 NTP, the DB shall provide all labor, materials, equipment, temporary utility service and facilities to construct the entire Project as required by the Contract Documents. Those policies and procedures defined in the Preconstruction Phase Services section of this document shall be maintained, enhanced and utilized throughout management of Construction Phase Services.
- B. The DB will be solely responsible for construction means and methods of the Work.
- C. The DB shall comply at all times with any and all verbal and /or written instructions by the PMT regarding routes of travel to be used in moving personnel and/or materials to and from the Project site. The deliveries of materials and removal of construction related debris may be required to be done at night. The DB shall work with the PMT on the schedule of any night work that needs to be performed on HAS property. Delivery vehicles, material trucks and heavy equipment shall enter and depart through a point designated by the PMT. Except as otherwise directed or approved by HAS, vehicles in use on the Airport shall be confined to the Project site. Only operators with current

restricted area driving passes issued by HAS will be permitted to operate vehicles in the AOA. When an operator does not have a current pass, a HAS authorized driver must escort the operator.

- D. The DB will be required to solicit bids from subcontractors for the various trade packages. Under management of the DB, the selected subcontractor/trade will provide all materials, equipment and labor including the necessary coordination, supervision, programming, scheduling, cost control, contract administration, field engineering, commissioning, and closeout and support services to accomplish the work covered by each work package. Based on prior HAS approval, the DB can self-perform up to 50% of the value of the GMP or each CGMP. Award of the Work will be based on a competitive process witnessed by HAS.
- E. The DB will be responsible for completing all Work related to the MLIT Project whether or not Work is contained in one trade package or subcontract or another, but is on or contained in one of several bid packages as prepared for the Project.
- F. The DB will be responsible to interact and efficiently coordinate with the various HAS departments, FAA, and the Transportation Security Administration (TSA), and other agencies and utility companies, etc., as required and address all federal, state, county and city permitting requirements. The PMT will be kept fully informed regarding communication with these parties and shall be included in all meetings, unless otherwise chosen by the PMT. All communications with these parties shall be documented by the DB for inclusion in the Project records and appropriate submittal to the PMT.

## 7.02 COORDINATION RESPONSIBILITIES

- A. The DB shall coordinate all construction operations included in the Contract to ensure efficient and orderly development and installation of each part of the Work. The DB's coordination responsibilities include but are not limited to:
  - 1. Preparing and issuing trade bids to obtain early design assist input from Subcontractors, when applicable.
  - 2. Scheduling and managing the documentation and permitting process with the various Regulatory Agencies with jurisdiction over the Project.
  - 3. Scheduling and managing the submittal process.
  - 4. Preparing and managing the Project Safety and Security Plans.
  - 5. Scheduling construction operations in the sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
  - 6. Coordinating the installation of all components to ensure maximum performance and allow access for required maintenance, service, and repair, including but not limited to mechanical, electrical and plumbing systems.
  - 7. Making adequate provisions to accommodate items scheduled for future installation.

8. Resolving actual or potential conflicts between Subcontractors concerning coordination, interference, and sequencing.
  9. Coordinating Code and Permit documentation requirements.
  10. Implementation of all systems integration and commissioning for compliance with contractual and permitting requirements.
  11. Coordination with Operational Readiness, Activation and Transition (ORAT) Teams to support the requirements for turn-over of the completed Project to HAS, as required.
- B. The DB shall not delegate responsibility for project coordination to any Subcontractor.

#### 7.02.1 COORDINATION WITH THE PROGRAM MANAGEMENT TEAM

- A. The DB shall notify the PMT in writing, a minimum of thirty (30) calendar days in advance, of any activity that will be outside the Contract limits or that would interfere with HAS's daily operation. Utility interruptions (shutdowns or connections) require at a minimum thirty (30) days advance written notice or as otherwise directed by the PMT for longer durations.
- B. Within 30 days of Phase 1 NTP, the DB shall notify PMT of any foreseeable Project work that requires interruption of primary airport facilities or infrastructure. Any such work shall be specifically identified on the Project schedule, included with the DB Management Plan and discussed with the PMT and affected HAS representatives regarding the required notice period and actual scheduling of work.
- C. Observation of Work by HAS or the PMT shall not be interpreted as relieving the DB from responsibility for coordination, superintendence, scheduling, and direction of the Work.
- D. Coordinate with the PMT to assure that Work on the project site, access to and from the project site, and the general conduct of operations is maintained in a safe and efficient manner, and that disruption and inconvenience to existing facilities and property is minimized.

#### 7.03 CONSERVATION

- A. The DB will coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
- B. The DB will salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to the Contract Documents for disposition of salvaged materials that are designated as HAS's property.

#### 7.04 PROJECT REPORTS

- A. Daily Construction Reports

1. Prepare and submit within 24 hours at the end of each construction work day, Daily Construction Reports which record at a minimum, the following information describing the daily events, incidents, accomplishments, and general progress as well as environmental conditions on the Project:
  - a. Description of construction activities performed.
  - b. Meetings and significant decisions.
  - c. Accurately recorded high and low temperatures, and general weather conditions at the site, including the presence and quantity of rain, sleet, or snow, wind direction and speed, and the relative humidity.
  - d. Project security and safety compliance.
  - e. Unusual events (including the discovery of missing or damaged materials).
  - f. The list of all Subcontractors (of any tier) at the Project site.
  - g. The list of other Contractors at the Project site.
  - h. The total number of all workers at the Project site, subdivided into:
    - 1) The number of DB's workers at the Project site.
    - 2) The number of subcontractor workers at the Project site, by subcontractor, vendor, etc.
  - i. The DB and Subcontractors' equipment at the Project site.
  - j. Material deliveries for the Project by location of delivery.
  - k. Quality related issues and Non-Conformance Reports.

**B. Material Location Reports**

1. At weekly intervals, prepare and submit a comprehensive list of materials delivered to and stored at the Project site. The list shall be cumulative, showing materials previously reported plus items recently delivered. Include with the list a statement of progress and delivery dates for materials or items of equipment fabricated or stored away from the Project site.
2. For material stored off-site, the DB shall provide the address where fabricated equipment and materials are stored (see General Conditions for further requirements).

**C. Field Condition Reports**

1. Immediately upon discovery of a difference between field conditions and the Contract Documents, the DB shall prepare and submit a detailed report in accordance with the provisions of the Contract.

## 7.05 PROJECT MEETINGS

The person designated to make decisions binding to and on behalf of the DB, defined as the DB's Project Manager, shall attend all of the meetings described below. Meetings in addition to those described below may be required for special purposes as determined by the PMT.

### A. Scheduling Conference

1. A scheduling conference is required during both Phase 1 and Phase 2 of the Project.
2. Attendees: PMT, the DB's Key Management Personnel, , Designer, major Subcontractors, and other major Consultants and other concerned parties shall each be represented at the conference by persons familiar with and authorized to conclude matters relating to the Work.
3. Agenda:
  - a. Introduction to the DB's scheduling team's qualified personnel that will develop and update the project schedule.
  - b. Content, format, and submittal requirements and reports.
  - c. Schedule for other concurrent work under HAS's separate contracts and coordination with other work and personnel.
  - d. Review time required for design and construction phase submittals and resubmittals.
  - e. Review time required for RFI's, Change Orders.
  - f. Regulatory Agency Reviews and Approvals.
  - g. Project logistics.
  - h. Requirements for tests and inspections by independent testing and inspecting agencies.
  - i. Time required for completion and startup procedures. List of Contract activities to be included in schedule. Procedures for updating schedule.
  - j. Project scheduling and document management software.
4. Minutes: The DB will record and distribute meeting minutes, regardless of whether someone else is also doing the same to facilitate verification of a complete and accurate understanding of the meeting. The minutes shall be issued to the PMT for review and comment within two (2) days of the meeting.

### B. Preconstruction Conference

1. The PMT will schedule a preconstruction conference and organizational meeting, following the Phase 2 scheduling conference and before start of construction.

2. Attendees: PMT, the DB and its Project Manager, Superintendent, Quality Control Manager, major Subcontractors, Designer and other concerned parties shall each be represented at the conference by persons familiar with and, authorized to conclude matters relating to the Work.
3. Agenda: The purpose of the meeting will be to discuss items of significance that could affect progress, including the following:
  - a. Introduction/designation of Key Personnel and their duties
  - b. Procedures to be followed during performance of the Work
  - c. Construction phase schedule
  - d. Critical work sequencing and long-lead items
  - e. Phasing
  - f. Work restrictions
  - g. Work hours
  - h. Procedures for processing change requests
  - i. Procedures for requesting information (RFIs)
  - j. Procedures for testing and inspecting
  - k. Procedures for processing Applications for Payment
  - l. Distribution of the Construction Documents
  - m. Submittal procedures
  - n. Preparation of record documents
  - o. Use of the premises and if applicable, existing building(s)
  - p. Parking availability
  - q. Office, work, and storage areas
  - r. HAS occupancy requirements
  - s. Responsibility for temporary facilities and controls
  - t. Equipment deliveries and priorities
  - u. Safety
  - v. First aid
  - w. Security

- x. Project in-progress site cleaning
  - y. Construction waste management
4. Minutes: The DB will record and distribute meeting minutes, regardless of whether someone else is also doing the same to facilitate verification of a complete and accurate understanding of the meeting. The minutes shall be issued to the PMT for review and comment within two (2) days of the meeting.

C. Project Coordination and Logistics Meetings

1. The DB will schedule and administer coordination and logistics meetings among all parties affected by the Work, as required to effectively manage performance of the Project.
2. Attendees shall include, but are not limited to, the PMT, DB, Designer, relevant Subcontractors, applicable Consultants and applicable, representatives of entities or Regulatory Agencies affected by or having jurisdiction over the Work plus stakeholders that will be affected by the Project.
3. The DB shall plan ahead for work that requires approvals from regulatory agencies and other logistical considerations to allow for a reasonable review and preparation time.
4. Refer to the Contract Documents for specific requirements on utility work and shutdowns, navigation and traffic impact plans, and other logistical and environmental mitigation or special construction work.
5. The DB shall develop an agenda incorporating all operational impacts identified in the DB's logistical and coordination plan into the Project schedule to allow for at least thirty (30) days' notice before implementation of Work affecting normal operations of the premises Airport operations, unless more time is indicated in the Contract Documents or defined by the PMT.
6. The DB shall identify all oversized, over-weight and/or long materials to be delivered to the Project site and shall define specific plans for the handling of these materials for review and acceptance by the PMT.
7. The DB shall identify long-lead materials and establish a plan to obtain the materials to not unnecessarily impact the Project schedule.
8. Applications for Area Shutdown Request (ASR) and Utility Shutdown Request (USR) are required to be submitted by the DB at least 30 days prior to the proposed shutdown time, unless otherwise defined by the PMT based on the level of impact to the affected facilities. Primary airport infrastructure shutdowns will require longer notification periods, defined through coordination with the PMT and the affected parties.
9. The DB shall coordinate with HAS for identification and inclusion of HAS defined blackout periods within the Project Schedule.

10. Traffic Control Plans for impacts to vehicular traffic must be prepared by professionals in traffic management. The plans must meet HAS drawing standards and are required to support ASR applications. (See Division 01 55 26 Traffic Control for further requirements)
11. Agenda to include:
  - a. Review of current ASR and USR work as well as look-ahead scheduling for all project work.
    - 1) Provide appropriate narratives, schedules, documentation and graphics to adequately describe planned work and to meet requirements of ASR and USR applications.
  - b. Plans for forthcoming ASR and USR work,
  - c. Long-lead materials procurement plans,
  - d. Project coordination and logistics plan, and
  - e. Traffic control plan
12. The DB is to publish minutes of the meetings. Minutes to include: topics discussed, alternatives considered, reasons that given alternatives were either discarded or adopted, attendees and copies as appropriate of documents distributed. Publish minutes within two days of the meeting to all attendees and to other appropriate parties as identified.

D. Weekly Progress Meetings

1. The PMT will schedule and administer weekly progress meetings following Phase 2 NTP. The PMT will distribute agendas in advance of the meeting and minutes of each meeting to those in attendance. The DB shall coordinate the meeting agendas with the PMT for issuance.
2. Attendees: In addition to the PMT, the DB management team, applicable Subcontractors, plus other entities concerned with current progress or who are involved in planning, coordination or performance of future activities.
3. Agenda: Agenda items include reviewing, correcting or approving minutes of the previous progress meeting and reviewing other items of significance that could affect Project progress. Topics for discussions shall be established as appropriate to the current status of the Project such as:
  - a. The DB's Four-Week Look-Ahead Construction Schedule and Overall Construction Schedule status.
  - b. Review the current and future needs of each entity present, including such items as:
    - 1) Safety
    - 2) Security

- 3) 4 week look ahead Schedule
  - 4) Project Logs
    - a) Submittals
    - b) RFI's
    - c) Work Change Directives
    - d) Non-Conformances
  - 5) Quality Control and Work standards
  - 6) Traffic Control
  - 7) Site utilization
  - 8) Hours of Work
  - 9) Temporary facilities and services
  - 10) Temporary Erosion Control
  - 11) Deliveries
  - 12) Status of off-site fabrications
- c. Project Costs: budget, commitment and progress payments.
  - d. Project Record File additions (Change Orders, meeting minutes, etc.)
  - e. Applications for Payment
  - f. Project Risks including:
    - 1) Hazardous conditions
    - 2) Hazardous materials
    - 3) Unforeseen conditions and potential impacts and mitigation measures.
    - 4) Major coordination or construction challenges that affect project's budget, schedule, or its environment (logistics, sequencing, traffic).
4. Minutes: The DB will record and distribute meeting minutes, regardless of whether someone else is also doing the same to facilitate verification of a complete and accurate understanding of the meeting. The minutes shall be issued to the PMT for review and comment within two (2) days of the meeting.

E. Pre-Installation Meetings

1. The DB will conduct pre-installation meetings before each major construction activity or activity that requires coordination with others. The DB will develop a list and schedule for the PMT of all required meetings and scheduled dates. Dates of pre-installation meetings shall be identified on the Project schedule.
2. Attendees: The PMT, Consultants, DB management team and Subcontractors, Installer and representatives of manufacturers and fabricators involved in or affected by installation, and its coordination or integration with other materials and installations that have preceded or will follow the installation.
3. The DB will review progress of construction activities affected by the installation and preparations for the particular activity under consideration at each pre-installation meeting. The review shall include, but not be limited to, requirements for the following, as applicable:
  - a. Applicable Construction Documents/Specifications
  - b. Manufacturer's recommendations
  - c. Governing regulations
  - d. Installation means and methods
  - e. Deliveries/site logistics
  - f. Space and access requirements/limitations
  - g. Existing facilities and Work protection
  - h. Possible conflicts
  - i. Temporary facilities
  - j. Time schedules
  - k. Weather limitations
  - l. Submittals and RFI's
  - m. Shop Drawings, product data and quality-control sample
  - n. Review of mockups, as applicable
  - o. Compatibility of materials
  - p. Warranty requirements
  - q. Safety
  - r. Inspecting and testing requirements
  - s. Required performance results
  - t. Project records requirements

4. Minutes: The DB will record and distribute meeting minutes, regardless of whether someone else is also doing the same to facilitate verification of a complete and accurate understanding of the meeting. The minutes shall be issued to the PMT for review and comment within two (2) days of the meeting.
5. The DB shall not proceed with installation if the pre-installation conference cannot be successfully concluded. The DB shall initiate whatever actions are necessary to resolve impediments to performance of Work and reconvene the pre-installation conference at earliest feasible date.

F. Monthly Progress Reviews

1. In addition to the requirements of the Contract Documents, the DB will conduct project status review meetings on a monthly basis, or as otherwise needed to effectively and efficiently deliver the Project in accordance with the Contract Documents.
2. The Monthly Progress Review meetings will be held in lieu of the Weekly Progress Meeting once each month and shall include the following agenda items in addition to the weekly meeting agenda topics, as required. Weekly meeting attendees shall be adjusted to reflect the Monthly meeting agendas.
3. Attendees: The PMT, the DB's senior construction scheduler, project manager, general superintendent, Designer plus relevant subcontractors and Consultants.
4. Purpose: Review of the Project progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to the DB's published and updated construction schedule. Determine how design and/or construction that is behind schedule will be expedited (including review of recovery schedules, as appropriate) and secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
5. Agenda: The intent of the meeting is to expand the weekly progress meeting agenda to include any proposed schedule revisions including, but not limited to, the following:
  - a. Delays to critical path and near critical path activities and actions taken or to be taken by the DB to mitigate the delays.
  - b. An analysis of any Project progress problem areas, current and anticipated delaying factors (causes) and their impacts, explanations of corrective action taken or to be taken, and any proposed schedule revisions to facilitate a recovery plan.
  - c. Revisions of any assumed activity durations including those due to conditions the DB deems to be outside their control.
  - d. Proposed Change Orders issued during the update period including any time impacts.

- e. The resolution of conflicts between actual Work progress and schedule logic when out-of-sequence activities develop due to actual construction progress. DB shall submit revisions to schedule logic to conform to current job status and directions, without changing original activity identification.
6. Schedule Updating:
- a. The DB will revise the actualized construction schedule after each monthly progress review meeting, where revisions to the schedule have been made or recognized. The DB will issue revised schedule concurrently with the minutes of each meeting. Upon acceptance by the PMT, schedule revisions submitted by the DB shall be incorporated into the Project Schedule in the next monthly update.
7. Minutes: The DB will record and distribute meeting minutes, regardless of whether someone else is also doing the same to facilitate verification of a complete and accurate understanding of the meeting. The minutes shall be issued to the PMT for review and comment within two (2) days of the meeting.
- G. Safety Meetings
- 1. Within thirty (30) days after the Phase 2 NTP but prior to commencement of field work activities, the DB will arrange a Safety Meeting with the PMT Program Safety Manager to review Project safety requirements.
- H. Pre-Demolition Meetings
- 1. The DB shall schedule and administer meetings through the PMT for stakeholders affected by the Work prior to any demolition activities. Demolition work shall not start unless authorized by the PMT. In addition to addressing specific requirements of the proposed demolition Work to be undertaken, the DB shall include requirements of the "Project Coordination and Logistics Meetings" defined earlier in this section.
- I. Project Closeout Conference
- 1. The DB shall request a Project Closeout Meeting at a time convenient to the PMT, but no later than 90 days prior to the scheduled date of Substantial Completion. Refer to the defined requirements on Project Closeout for specific policy and procedure details. The PMT will conduct the meeting to review requirements and responsibilities related to Project closeout, in accordance with the provision of Specification Section 01 77 00 Closeout.
  - 2. Attendees: The PMT, the DB Management Team, including QC Manager, Senior Superintendent and Construction Manager, major Subcontractors, suppliers, and other concerned parties. Participants at the meeting shall be familiar with the Project and authorized to conclude matters relating to the Work.
  - 3. Agenda: Discuss items of significance that could affect or delay Project closeout including, as applicable, the following:
    - a. Preparation of as-built documents

- b. Procedures required prior to inspection for Substantial Completion
  - c. Submittal of written warranties
  - d. Requirements for preparing sustainable design documentation, as applicable
  - e. Requirements for preparing operations and maintenance data and manuals
  - f. Requirements for demonstration and training
  - g. Preparation of DB's punch list
  - h. Procedures for processing Applications for Payment at Substantial Completion and for final payment
  - i. Final Submittals procedures
  - j. Beneficial use requirements
  - k. Installation of HAS's equipment
  - l. Responsibility for removing temporary facilities and controls
  - m. Site cleanup and restoration
4. Minutes: The DB will record and distribute meeting minutes, regardless of whether someone else is also doing the same to facilitate verification of a complete and accurate understanding of the meeting. The minutes shall be issued to the PMT for review and comment within two (2) days of the meeting.

## **SECTION 8 - DESIGN SUBMITTAL PRODUCTION STANDARDS**

### **8.01 DEFINITIONS**

- A. PMT BIM (Building Information Modeling) Manager leads BIM implementation and oversees the BIM application to the Program.
- B. Designer BIM Manager leads BIM implementation and oversight for the Designer.
- C. Design Build Contractor BIM Manager leads BIM implementation and oversight for the Design Build Contractor.
- D. Designer BIM Manager and Design Build Contractor BIM Manager may be represented by a single individual, the details will be defined in the BIM Project Execution Plan (BPxP).
- E. Design Model(s): created and developed by the Designer in order to develop the Project design.

- F. Construction Model(s): created by Design Build Contractor from the Design Model in order to develop and fulfill construction requirements.
- G. As-Built Model(s): prepared by the Design Build Contractor to show on-site changes to the original Construction Models.
- H. Record Model: prepared by the Designer from the Design Model to reflect on-site changes that the Design Build Contractor noted in the As-Built Models.
- I. The BPxP defines BIM requirements which shall be performed during Project execution. The BPxP at a minimum shall include:
  - 1. Project information
  - 2. Key Project contacts
  - 3. Project goals / BIM uses
  - 4. BIM process design
  - 5. BIM information exchanges
  - 6. BIM and facility data requirements
  - 7. Modeling requirements
  - 8. Construction sequencing and cost loading (4D and 5D) requirements
  - 9. Collaboration procedures
  - 10. Coordination procedures
  - 11. Quality control
  - 12. Technological infrastructure needs
  - 13. Model structure
  - 14. Project BIM deliverables
  - 15. Delivery strategy / contract

## 8.02 SCOPE

- A. The general scope of producing design submittals is to create a technically accurate, highly developed computer model of the civil, utilities, architectural, structural and building system elements for preconstruction and construction phases.
- B. The Designer BIM Manager and Design Build Contractor shall freely and openly exchange models and data within a collaborative BIM environment. Development of the models will be the composite efforts of the Designer and Design Build Contractor teams. The fundamental use and purpose of the model(s) will be to serve as a data rich legacy document for operations and maintenance management.

- C. The model(s) developed for the Project may be utilized for multiple purposes including, but not limited to: design, documentation, spatial coordination, interference checking, record drawings, and operations and maintenance. The extent to which BIM is used will be decided within the BPxP created collaboratively by the PMT, Designer, and Design Build Contractor BIM Managers.
- D. The PMT BIM Manager, the Designer BIM Manager and the Design Build Contractor BIM Manager shall collaborate to develop the Project BPxP no later than thirty (30) calendar days after the Preconstruction NTP is issued.
- E. The BIM model shall include a high-level of detailed facility data, which consist of a set of intelligent elements for all discipline models. The facility data shall include all material definitions, quantities, and attributes that are necessary for the Project design. Each discipline will iteratively develop a highly detailed model to include all required systems as they will be built to ensure complete and accurate quantity take-offs of relevant construction materials at appropriate stages of the Project, and reflect final record conditions. The extent of details and data shall be defined by the BPxP.

### 8.03 BIM PRODUCTS

- A. Designer and Design Build Contractor, including all vendors, consultants, and any subcontractors/ subconsultants, shall use the HAS approved Autodesk products including Civil 3D as the core product to develop the civil and site models and Revit as the core product to develop the building architectural, structural and MEP models. Design deliverables such as PDFs and DWGs shall be directly generated from Civil3D and Revit.
- B. Designer and Design Build Contractor shall use Navisworks throughout the Project to coordinate the models and identify clashes.
- C. No member of the Project team shall update software without the permission of HAS.
- D. Other secondary software usage shall be based upon mutual agreement and with HAS approval.

### 8.04 ORGANIZATIONAL ROLES

- A. Designer BIM Manager will be a key implementer and will take the lead in setting up and developing the models and in managing the technologies. Designer will be responsible for directing, developing, and coordinating the work of subconsultants and will ensure that subconsultants' BIM-based work products are seamlessly integrated into the Project Design Models and resulting Construction Documents. Designer BIM Manager will work closely with the Design Build Contractor and PMT to receive design phase feedback and transition the model to construction phase integration.
- B. The Design Build Contractor BIM Manager will work closely with the Designer BIM Manager to add value to the Design Model by providing feedback during design. The Design Build Contractor will determine when best to engage subcontractors. The Design Build Contractor BIM Manager will use the Design Model as the basis for developing Construction Models, shop drawings for fabrication and construction and

will be responsible for the assembly and integration of subcontractor (trade) models with the Designer civil, utilities, architectural, structural, MEP/FP models, as appropriate to the Project scope.

- C. PMT BIM Manager will be the primary point of contact for BIM related issues, overseeing application of BIM technologies and ensuring that the model adheres to all internal and HAS-specific goals. PMT BIM Manager will lead the BPxP workshops and other BIM related meetings as determined in the BPxP and will oversee the application of the BPxP. PMT BIM Manager will also be responsible for archiving models and conducting reviews/audits of model deliverables.

#### 8.05 BIM MODELS AUTHORSHIP

- A. In order to maximize effectiveness throughout the Project's planning, design, and construction phases, the Design Model will be authored, maintained and kept accurate at all times by the Designer BIM Manager during design.
- B. Design Build Contractor BIM Manager will author, maintain and keep accurate the Construction Model during construction. The Design Build Contractor BIM Manager will provide its information to the Designer BIM Manager for incorporation into the Design Model.
- C. Designer will retain control of the final Design Model. While the Design Model is an integral tool of design, it is imperative that the Design Model be monitored at milestones during the preconstruction and construction phases to assure the Design Model is being properly updated.
- D. As the Project proceeds through construction completion, the Designer BIM Manager in collaboration with the Design Build Contractor BIM Manager, will capture and track record conditions in BIM as each system is procured and installed. The Record Model will become a tool in streamlining startup activities. The completed record Model will create the foundation for operations and maintenance, as well as a baseline for future facility modifications.
- E. The Designer BIM Manager will oversee review of interference checking reports and note areas that require further coordination or redesign and will review all models for integrity and validate that Project facility data is populated.
- F. The Designer BIM Manager shall coordinate the Design Models to minimize or eliminate conflicts between design elements. Prior to every transmittal of design files, the Designer shall coordinate the Design Models and check for clashes between model elements using Autodesk Navisworks. The identified clashes shall be organized in an interference check report and issued to the Project Team with the transmittal.

#### 8.06 INTERFERENCE CHECKS

- A. The Designer BIM Manager shall coordinate the Design Models to minimize or eliminate conflicts between design elements during design phase. Prior to every transmittal of design files, the Designer BIM Manager shall coordinate the Design Models and check for clashes between model elements. Designer will be responsible

for presentation and documentation of interference checks / clashes and resolutions. Specific processes, meetings and reports will be defined in the BPxP workshops.

- B. The Design Build Contractor BIM Manager shall coordinate the Construction Models to minimize or eliminate conflicts between construction elements during construction phase. Prior to every transmittal of construction files, the Design Build Contractor BIM Manager shall coordinate the construction models and check for clashes between model elements. The Design Build Contractor BIM Manager will be responsible for presentation and documentation of interference checks / clashes and resolutions. Specific processes, meetings and reports will be defined in the BPxP workshops.
- C. The Designer BIM Manager will oversee review of interference checking reports and note areas that require further coordination or redesign and will review the Design Model and Record Model for integrity and validate that Project facility data is populated.
- D. During construction, the Design Build Contractor shall keep the Designer current with any clashes or field changes affecting the Design Model throughout the construction phase. Designer shall support this effort as needed with updates provided in response to RFI's, HAS requested changes, and other design modifications affecting the Construction Model.
- E. Accompanying documentation shall be within the PMT document management software.

#### 8.07 BIM DELIVERABLES

- A. Models shall be prepared using HAS approved Autodesk Suite of tools. Authoring tools shall be Civil3D and Revit. Various disciplinary models, as appropriate to the project scope, federates into an aggregate project model using Autodesk Navisworks software.
- B. After receiving the Design Build Contractor As-Built Models, Designer shall revise the Design Model to incorporate all addenda, all change orders, and modifications and deliver the final Record Model to HAS as part of project close-out documents. Design Build Contractor shall deliver all As-Built Models to HAS as part of project close-out documents.

#### 8.08 DRAWING CONVENTIONS FOR DOCUMENTATION

- A. HAS maintains CAD/ Geospatial Data Standards and Procedures, available on the HAS Fly2Houston website to address Airport Spatial Information System (ASIS) general requirements and CAD drawing standards.
- B. HAS maintains BIM Standards and Procedures, available on the HAS Fly2Houston website to address Airport Spatial Building Information Modeling general requirements.
- C. Project files are specific to the Project and must be organized to facilitate the production of Contract Documents, record documents, and facility management documents from many different files. Project files include building and site models,

details, sheets, schedules, text, database, symbols, borders, title blocks, and other files created for the Project.

## 8.09 DESIGN SUBMITTAL FILE FORMATS

- A. Designer and Design Build Contractor shall submit drawings electronically at each formal submittal stage as follows:
1. Civil3D files in .dwg native data rich format that were used to generate the drawing sheets
  2. Revit files in .rvt format that were used to generate the drawing sheets
  3. 2D and 3D files that were used to produce the design in their native format
  4. Project Manuals in native and PDF file format
  5. AutoCAD files in .dwg native format for each drawing sheet exported from BIM (Civil3d and Revit) model(s)
  6. PDF files for each of the drawing sheets exported from the BIM model
  7. Navisworks Files: The .nwc shall be exported from a 3D view that shows all 3D objects in the model without cropping and without 2D objects or 3D objects from references. An .nwf or .nwd that compiles all NWC files and contains the design coordination data. An interference check report (PDF or HTML) that shows the coordination progress
  8. All electronic format files delivery shall be within HAS document management software.
- B. Design Build Contractor shall submit to HAS printed half size design review sets and printed project manuals of each design phase submittal at each formal design review stage and at issue for pricing, construction, or permit stages. Numbers of review sets and copies of project manuals will be confirmed during Project execution.
- C. All electronic format file delivery shall be in accordance with the requirements of Specification, Section 01 33 00 Submittal Procedures.

## SECTION 9 - ENERGY AND SUSTAINABILITY

### 9.01 INTRODUCTION

- A. While sustainability and energy conservation are critical factors in the determination of system design concepts and in the selection of building materials, the City will not seek the U.S. Green Building Council Leadership in Energy and Environmental Design (LEED™) certification for the Project. The DB; however, will be required to design the Project to include energy and sustainability measures as appropriate to the Project for the City's review, using the LEED™ Silver certification rating system for new building design and construction as a guide.

## 9.02 SUSTAINABLE MANAGEMENT PLAN

- A. HAS is in the process of developing a Sustainable Management Plan for IAH and William P. Hobby airports to be prepared in two phases with final completion targeted June 2016.
  - 1. Phase 1 will focus on energy and waste reduction/ recycling
  - 2. Phase 2 will focus on water efficiency/ reuse
- B. The Phase 1 and 2 Reports will be issued to the selected Proposer, when available.

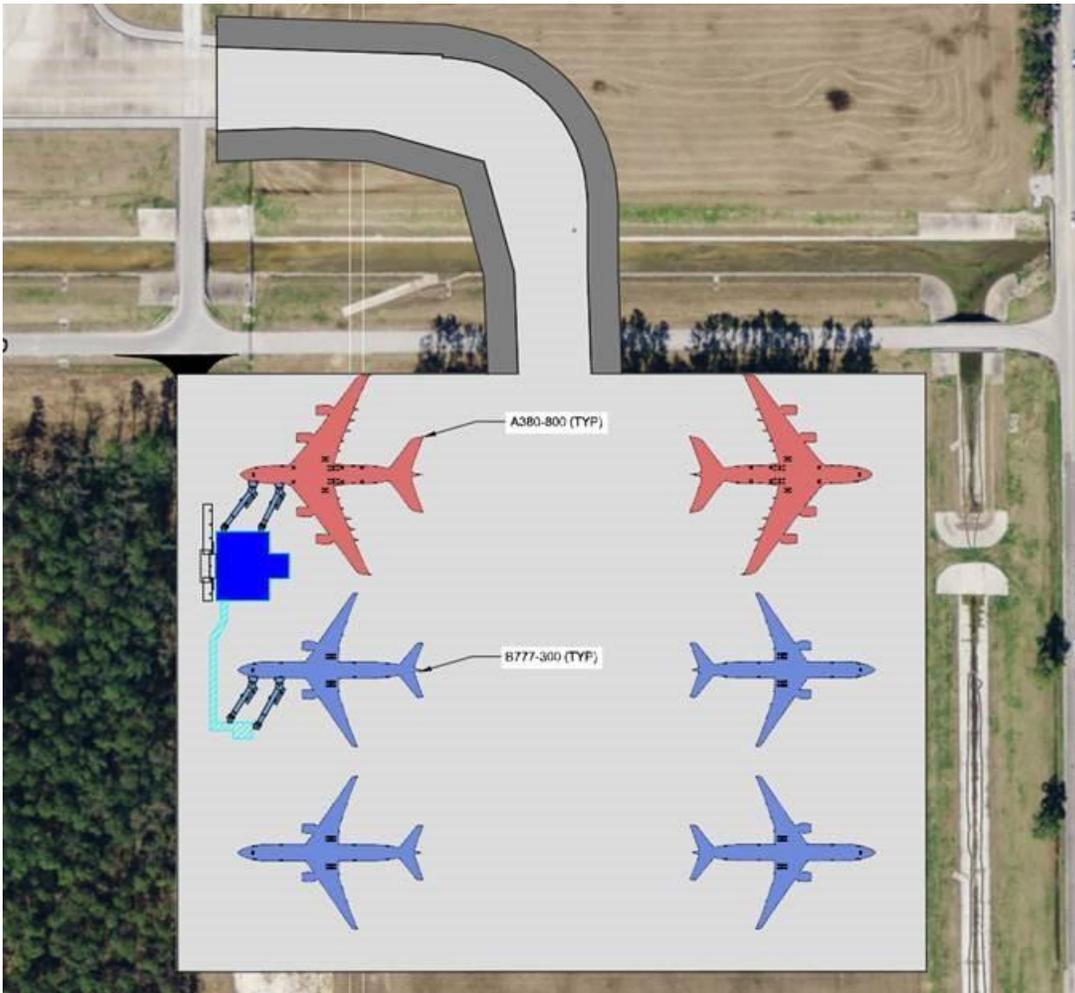
## 9.03 LIFE CYCLE ANALYSIS

- A. The DB, shall perform Life Cycle Analysis (LCA) for the Project lifetime period as defined by the PMT (minimum 30-year service life) to select design alternatives related to all energy and water consuming devices and to select materials and finishes for total cost of ownership that reflects overall building operation and maintenance parameters that are the most cost effective and sustainable, for the applicable portion of the Project.

**ATTACHMENT A**  
**Project Location Map**



**ATTACHMENT B**  
**Proposed Hardstand Layout**



Pod is shown as information only.  
The Pod is not part of the  
Construction Work for this Project.