

**ATTACHMENT A**  
**PROGRAM MANAGEMENT OFFICE (PMO) BUILDING**  
**DESIGN-BUILD**  
**SCOPE OF SERVICES**

**SECTION 1 - PROJECT DESCRIPTION**

1.01 INTRODUCTION

The Scope of Services for this Project is the design and construction of a new PMO Building and associated site work.

1.02 WORK PHASES AND MILESTONES

The Contract time is as follows:

A. The Contract Time is four hundred and twenty eight (428) Calendar Days, based on the following durations that align with the Phase 1 - Pre-Construction and Phase 2 - Construction Milestones:

1. Phase 1 - Pre-Construction Milestone – one hundred and sixty (160) Calendar Days from Notice to Proceed with Services until submission of the Project Guaranteed Maximum Price (GMP).

2. Phase 2 - Construction Milestone

If HAS authorizes its option for Phase 2 and issues a subsequent Construction Notice to Proceed for Phase 2, the Design Build Contractor shall be responsible for construction of the Project as identified in this Scope of Services. Time from Construction Notice to Proceed to Final Completion is two hundred and sixty eight (268) Calendar Days.

B. The Liquidated Damages for each of the Milestones are:

1. Phase 1 – Pre-Construction GMP Submittal – \$2,000/Day

2. Phase 2 – Construction Substantial Completion – \$5,000/Day

1.03 PROJECT SUMMARY

A. The PMO Building address will be 115 Standifer Road. An existing one story warehouse building on the site has been demolished in advance of the Design Build Contractor commencing construction and is not part of the project scope. This supersedes the work as defined on drawings C0.02 (Existing Conditions), C1.00 (Demolition Plan) and C2.00 (Existing Impervious) of the Design Criteria Package dated August 04, 2015 as it relates to the warehouse building. Existing parking lot paving, utilities and any remaining sub-surface structures and infrastructure must be confirmed and removed by the Design Build Contractor under this Project. The building toward the north has also been demolished and is not part of the project scope.

- B. The PMO is a single-story office building (approximately 42,960 gross square foot) that will be composed mostly of tilt-up concrete wall panels on the exterior. The new building will include tilt-wall panels that are 18'-0" tall by 6-1/4" thick and resting on a 6" thick concrete slab on grade. The concrete walls will be painted (two colors) and accented with a form liner 3/4 inch deep corrugated pattern and pierced by a string of vertical windows throughout. The main entry is emphasized by a glazed curtain wall system and a 1,430 square foot extruded aluminum covered entry canopy. Also adjacent to the entry is an accent material, an alternating color pattern of 3 inch deep concealed fastener metal panels. Another key design feature that is implemented to aide in providing occupants with natural daylight into centralized areas, is a series of clerestory windows occurring at the raised roof elements. These clerestory windows will allow the interior environment to have an added connectivity to the exterior environment, while receiving additional daylight.
- C. The majority of the interior collaborative space will contain open workstations. This open workstation area consists of approximately 15,500 square feet of floor space. The workstation environment will be open and will have ample natural daylight. The daylight can be controlled by manual chain driven Mecho Shades, occurring at every exterior perimeter window. The open environment will be enhanced by having exposed structural bar joists and metal deck structure, both of which will be painted white. There will be a series of suspended acoustical ceiling blades to reduce noise levels in this open area. In addition to open workstations, there will be a 4,000 square foot HAS executive suite and a 3,750 square foot suite for United Airlines staff.
- D. Programmed Space will include, the following, to be confirmed during the Project Design Phase:
1. (14) Hard walled offices
  2. (120) 8'x8' Workstations
  3. (1) Main entry reception/waiting area
  4. (1) Entry Vestibule
  5. (1) 180 Person "Big Room" meeting area (that can be divided into two smaller r with a motorized wall)
  6. (2) 10 Person conference rooms
  7. (2) 8 Person conference rooms
  8. (1) Large conference room to accommodate 28 plus persons in a flexible configuration
  9. (1) Conference storage room
  10. (1) Mail room
  11. (10) Huddle areas
  12. (1) Break room for 25-30 persons
  13. (1) Coffee/vending area
  14. (1) Print station
  15. (1) Document control room
  16. (3) Copy /Work rooms
  17. (15) Storage and File cabinets
  18. (2) Men's + Women's Restrooms per Code
  19. (1) Building storage/supply room
  20. (1) Janitor's closet

21. (1) Fire riser closet
  22. (1) Mechanical room
  23. (1) Main electrical room
  24. (1) Electrical support closet
  25. (1) MDF room
- E. In addition, the United suite will include the following to be confirmed during the Project Design Phase:
1. (5) Enclosed offices
  2. (24) Workstations
  3. (1) 8 person conference room
  4. (1) Storage/file/print room
  5. (1) IDF Server room
  6. (1) Reception Area
- F. Site improvements include, but are not limited to: The 4.25 acre site will be fully enclosed with a 7 ft. (black epoxy clad) chain link fence and will have two vehicular entrance/exit gate locations. The vehicular gates will be motorized, one of which will serve as an “after hours” point of access with a call box/key pad/card reader. Each vehicular gate will have (1) CCTV- video surveillance security camera. The site will be well illuminated (with an average over 3 footcandles) with (14) LED area parking fixtures on 25 ft. tall poles. Also located near the front entry will be (3) 25 ft. tall flagpoles.
- G. Other site design considerations to include:
1. (1) 1,300 square foot outdoor courtyard with pavers + landscaping
  2. (1) exterior loading area for two delivery vehicles
  3. (201) paved parking spaces with 26 foot drive isles
  4. (1) CMU trash enclosure with metal door at NE corner
  5. (1) Transformer enclosure at NE corner
  6. (1) Generator at NE corner
- H. All furniture including modular furniture and workstation panels, and technology / communications equipment shall be furnished by the Design Build Contractor as part of this Project. This requirement supersedes the work as defined in drawing A-141 General Notes No. (1) of the Design Criteria Package.

#### 1.04 HOUSTON AREA CONSTRUCTION COLLABORATIVE

- A. The City of Houston/Houston Airport System (HAS), in partnership with local community colleges, has formed the Houston Area Construction Education Collaborative (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.
- B. 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 HACEC will operate out of this facility. It is the intention that the Design Build Contractor become

aligned with this initiative, employ graduates of the program when and if available, and integrate these skilled workers into the Project if possible.

- C. All IAH Terminal Redevelopment Program (ITRP) construction contractor employees are required to successfully complete the HACEC safety/security training prior to mobilizing on the job site. Dated attendance sheets to be submitted to HAS weekly. Current hard hat stickers to be worn while on site.

1.05 RELATED PROJECTS

- A. HAS Third Party Suppliers may also be engaged for certain elements of the project. Third-party suppliers and installers may be contracted separately by HAS during the course of this project. The Design Build Contractor may be required to integrate those work packages into the course of its own construction during the Project.

**SECTION 2 - PROJECT ADMINISTRATION**

2.01 General

- A. The services provided by the Design Build Contractor are intended to be provided in a collaborative Project team environment. The Design Build Contractor is required to be engaged in the Project Design and Construction Document development process working with HAS. The Design Build Contractor shall collaborate, advise, assist, estimate, schedule and provide recommendations to members of the Project team on the design and construction aspects of the Project. Recommendations to be ongoing and noted in weekly Design Progress Meeting minutes.

2.02 PROJECT ROLES AND RESPONSIBILITIES

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).

Role	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>• Approves, makes decisions throughout project phases</li> <li>• Ensures that HAS-required decisions are made in a timely manner</li> <li>• Facilitates communication with HAS of Houston Public Works 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	<ul style="list-style-type: none"> <li>• Provides leadership to the ITRP and advises HAS on project status and key decisions affecting scope, schedule, budget, safety, and</li> </ul>

(EPM) Team	<p>quality</p> <ul style="list-style-type: none"> <li>• Develops policies, procedures, and execution plans to deliver the Program and Project</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>
Program Management Support Services (PMSS) Team – Project Management	<ul style="list-style-type: none"> <li>• Led by Project Manager Representative from Program Management Support Services (PMSS) staff to the Program; provides management for overall Project</li> <li>• Acts as interface between the Executive Program Management Team and the Design Build Contractor</li> <li>• Ensures integration and execution of project-specific controls systems</li> <li>• Ensures change management decision-making process is defined, documented and understood</li> </ul>
PMSS Team - Construction Management	<ul style="list-style-type: none"> <li>• Led by Construction Manager Representative from PMSS staff to the Program; provides management specifically for cost, schedule, quality and safety</li> <li>• Manages contracting and project management process through all phases of design and construction</li> <li>• Manages the Design Build Contractor contract</li> </ul>
PMSS Team - Design Management	<ul style="list-style-type: none"> <li>• Led by Design Manager representative from the PMSS staff to the Program; provides management specifically for the design process, managing scope to budget, and safety in 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>• Manages the Designer's scope of the Design Build Contractor contract</li> </ul>
Design Build Contractor	<ul style="list-style-type: none"> <li>• Provides management during pre-construction 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> </ul>

2.03 CONSULTANT MANAGEMENT

A. Design Build Contractor shall submit the names of all consultants, persons, or firms, which Design Build Contractor proposes to use in the execution of its services prior to Pre-construction NTP. This list is to be updated in the Monthly Report. If requested by the City, Design Build Contractor shall provide the City with a fully executed copy of any contract or agreement that Design Build Contractor enters into with any consultant. The Designer may be a consultant to the Design Build Contractor, or a part of the prime Design Build Contractor's organization, or may be the prime itself with subcontractors providing construction.

- B. Design Build Contractor is responsible for managing the work of all of its consultants to assure that their services are appropriate for and adequately incorporated into the design of the Project. The City reserves the right, in its sole discretion, to reject the employment by Design Build Contractor of any consultant for the Project to which City has a reasonable objection. Design Build Contractor, however, shall not be required to contract with any consultant to which it has a reasonable objection.
- C. Design Build Contractor shall pay for its consultants' services out of its fees. The City is not responsible for any consultant fees or costs unless expressly agreed to in writing.
- D. Design Build Contractor shall be responsible for coordinating the work of all consultants, whether hired directly by Design Build Contractor or the City, to ensure that Construction Documents are integrated.
- E. Design Build Contractor shall provide direct oversight of all consultants and their design activities. Designer will be in direct contact with all sub consultants to respond to questions and maintain an understanding of the progress of design. Design Build Contractor / Designer shall meet at a minimum on a weekly basis with all sub consultants performing services during the previous week with all team members to discuss design progress, performance, adherence to scope, schedule and budget and to discuss the overall progress of the Project. A summary of issue resolution and action items will be included in the minutes of the meeting with a copy to HAS.

#### 2.04 POST-AWARD KICK-OFF MEETING

Prior to commencing work and at a specific time and place to be determined by HAS, meet with the HAS Team for a post-award kick-off meeting. The goals of the kick-off meeting are:

1. To integrate the Design Build Contractor into the HAS project team.
2. To achieve consensus from the Project team on any issues and concerns.
3. Confirm that Scope of Work 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 and the required WBS breakdown.
6. To establish expectations of the ongoing cost estimate and the required WBS breakdown.
7. To establish clear lines of communication and points of contact for the Project team.

#### 2.05 PROJECT STATUS MEETING

- A. The Design Build Contractor shall organize weekly Project Status Meetings starting 14 Calendar Days after Pre-construction NTP separate from the Design / Sub-consultant meeting.
- B. The weekly Project Status Meeting shall be attended by the Design Build Contractor's Key Personnel and HAS. HAS reserves the right to cancel or request a rescheduling of this meeting. In addition to providing a project update to HAS, addressing both design and construction, and other risks and elements affecting the Project, the Design Build

Contractor shall use this meeting to present the initial documents to HAS and then update weekly:

1. Initial and then update Design Build Contractor's risk management plan
  2. Initial and then update permitting plan
  3. Initial and then update cost estimates
  4. Initial and then update CPM Schedule
- C. The Design Build Contractor shall submit the aforementioned project update documents to HAS within 72 hours after each Project meeting.
- D. Agenda: The Design Build Contractor will be responsible for developing the meeting agendas in collaboration with the PMT.
- E. Minutes: The Design Build Contractor will record and distribute meeting minutes, regardless of whether someone else is also doing the same.

#### 2.06 DESIGN PROGRESS MEETINGS

- A. HAS will schedule regular Design Progress Meetings to determine the progress of the development of the Design portion of the work prior to allowing any construction to commence.

#### 2.07 PROGRESS REPORTING REQUIREMENTS

- A. Design Build Contractor shall prepare and submit a monthly report at least one week prior to the end of each month, during the duration of the Project, at the time of progress invoicing. The report shall address, but not be limited to:
1. Progress Reporting of the Project with photos.
  2. Project Schedule incorporating Design and Construction activities and progress of such.
  3. A Narrative of the Design Build Contractor's constructability recommendations including construction phasing, site logistics and traffic control planned and or implemented.
  4. Identify opportunities for increased efficiency and/or innovation planned and or implemented.
  5. Material recommendations and risks due to inflation, lead times, resource availability and supply demands.
  6. Design option reviews including a comparison of the risks and benefits of the different design elements types and their corresponding schedule, cost, construction related impacts.
  7. Development of the Project Procurement Plan outlining supporting deliverables and project buy out.
  8. Forecast and Trend Reports that identify and itemize specific events which cause Design to Budget variations.

9. Any issue that, in the opinion of the Design Build Contractor, should be considered in the planning, management, or execution of the Project to maintain budget, schedule, scope and quality objectives.
10. Recommendations and identification of issues concerning the Project schedule, risk analysis and mitigation, and other required information be updated based on the design development and changes to the Project known at the time of submittal.
11. Quality update for the Design and any construction activities outlining any Non-Conforming work and the resolution of said work.
12. Changes to the Work (Change Orders) and WCD's in progress and or completed summary.
13. Risk management plan to include risk identification, allocation and mitigation that are identified. Risks to be addressed include, but are not limited to; cost, schedule, and design/constructability risks, or any matter that affects execution of the Project.
14. A Material Management Plan for ordering materials and equipment and provide a monthly procurement, fabrication, and delivery status report.

#### 2.08 DESIGN TO BUDGET REQUIREMENTS

- A. The Design Build Contractor shall be responsible for establishing and updating the Project construction cost estimate monthly throughout development of the Construction Documents. Many of these estimates may be on specific Design to Budget allocations to ensure that the design is developing and maintaining expected quality standards.
- B. The initial Design to Budget cost components will be consistent with the HAS WBS and to a level of detail so a scope to budget analysis can be performed. Each WBS will be broken down as defined in the CSI MasterFormat.
- C. HAS will retain a cost team throughout the Project to validate and evaluate costs developed or proposed by the Design Build Contractor.

#### 2.09 COST ESTIMATING AND REPORTING

- A. The Design Build Contractor shall provide cost estimating throughout Pre-Construction and Construction. The Design Build Contractor shall utilize an electronic data-base program to research and store pricing of various construction items. All estimates will build-off and reconcile to the initial Design to Budget. All estimates shall be open book.
- B. The Design Build Contractor shall work with HAS's cost estimators in reconciling methods and information sources for the pricing of construction elements. As estimates are developed, the Design Build Contractor shall develop a system to manage and organize the various estimates utilizing the Work Breakdown Structure (WBS).
- C. Once construction is authorized, the Design Build Contractor shall 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, and variances and deviations from the overall total Project budget.

## 2.10 SCHEDULE REQUIREMENTS

- A. The Design-Build Contractor shall coordinate the requirements of this Section with Specification Section 01 32 16 Project Schedules and Progress Reporting.
- B. The Design Build Contractor shall develop the initial Preliminary Schedule and submit to HAS fourteen (14) Calendar Days after Pre-construction NTP and update as required by conditions and progress of the Work and as indicated in the Contract. Such revisions shall not relieve the Design Build Contractor of its obligations to complete the Work within the Contract Time. Review of, and response to, the schedule shall not be construed as relieving the Design Build Contractor of its complete and exclusive control over the means, methods, sequences, and techniques for executing the Work.
- C. In addition to the requirements of the Contract Documents, HAS will conduct schedule update meetings at monthly intervals.
- D. Attendees: Design Build Contractor's senior construction scheduler, project manager, general superintendent, and HAS's Project Staff.
- E. Purpose: Review progress since the last work session. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Design Build Contractor's construction schedule. Determine how construction that is behind schedule will be expedited; 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.
- F. Schedule Updating: Revise Design Build Contractor's construction schedule after each scheduling meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting. When reviewed by HAS, schedule revisions shall be incorporated into the Project Schedule in the next monthly update.
- G. Design Build Contractor shall submit the initial and all following Project schedule to the Program Management Team using approved software by HAS, for all schedule submittals required by this Contract.
- H. A Post Award Kick-off Meeting and Project Scheduling Workshop is required during both Phase 1 and Phase 2 of the Project, within fourteen (14) Calendar Days of the Pre-construction Notice to Proceed for Phase 1 and within twenty-one (21) Calendar Days of the Construction Notice to Proceed for Phase 2. Agenda will include but not limited to:
  - 1. Introduction to the Design Build Contractor's scheduling team's qualified personnel that will develop and update the Project schedule;
  - 2. Content, format, and submittal requirements and reports;
  - 3. Schedule for other concurrent work under HAS's separate contracts and coordination with other work and personnel;
  - 4. Review time required for submittals and resubmittals;
  - 5. Review time required for Request for Information (RFI), Change Orders, and Regulatory Permitting;
  - 6. Agency Reviews and Approvals, and project logistics;

7. Requirements for tests and inspections by independent testing and inspecting agencies;
8. Time required for completion and startup procedures. List of Contract activities to be included in schedule. Procedures for updating schedule;
9. Software limitations, if any; and
10. The Design Build Contractor will record and distribute meeting minutes of the Scheduling Conference regardless of whether someone else is doing the same.

I. Schedule Content and Format

1. Design Build Contractor shall develop the Project Schedule in accordance with the current version of the Program Management Team Schedule Process,
2. The Project Schedule once accepted shall be baselined.
3. The Project Schedule shall show progress to-date, durations, and dependencies including tasks and key decision milestones that are the responsibility of HAS. It shall show total project float and portray the complete and continuous critical path, throughout the Project.
4. The Project Schedule shall allow for the direct linking of design deliverables to be produced by the Design Build Contractor to the Program Management Teams' Document Management System wherein the full sheet index of design deliverables shall be listed and mastered.
5. All activities in the Project Schedule shall have a predecessor and successor except for the contract start and finish milestones. Constraints are not allowed on activities. Each activity shall contain the resource(s) executing that activity, the estimated hours budgeted to do so, and the resultant estimated budgeted cost. The total budgeted cost of all activities within the schedule shall equal the combination of design and construction cost.
6. The Program Management Team will continually monitor the Project Schedule, and as part of invoice reviews, to check Design Build Contractor's progress against cost and schedule goals.

J. Schedule Approval

1. The Project Schedule initial submission shall be made without showing progress. The Program Management Team will review the Project Schedule and will issue a letter to Designer stating approval or disapproval. If the Project Schedule is deemed unacceptable, the letter will detail areas of concern. Design Build Contractor shall address the areas of concern, correct the schedule to the satisfaction of the Program Management Team and resubmit. Once the Project Schedule is approved, it will become the Designer Builder's Schedule.

K. Schedule Revisions

1. No changes shall be made to the Design Build Contractor's Schedule without written approval from the Program Management Team. This includes, but is not limited to: logic changes, duration changes, and addition or deletion of activities. In accordance with the Program Management Team published project procedures, the Design Build Contractor shall submit all Change Orders or scope change schedules to the Program Management Team in writing for approval before incorporation into the Design Build Contractor's Schedule.

L. Float Time and Time Extensions

1. The Design Build Contractor's Schedule shall show total project float and portray the complete and continuous critical path throughout the Project. Float shall not be considered to be for the exclusive benefit of either City or the Design Build Contractor. Time extensions for Contract performance will be granted only to the extent permitted in the Contract Documents.

M. Recovery Schedule

1. 1. If, at any time during Design Build Contractor's performance of the Services, HAS determines, based on its assessment of the current Schedule and actual progress that Design Build Contractor is fourteen (14) or more Calendar Days behind schedule and the delay is impacting any specified design milestone, Design Build Contractor shall prepare a recovery schedule indicating no additional construction cost to HAS (unless a party other than Design Build Contractor is solely responsible for the event or occurrence which has caused the schedule slippage) explaining and displaying how Design Build Contractor intends to reschedule its Services in order to regain compliance with the Design Build Contractor's Schedule. Design Build Contractor shall submit the recovery schedule within seven (7) Calendar Days of a written notification by HAS.

N. Scheduled activities for services under this Contract shall be coded into separate Project Phases in accordance with ITRP master schedule.

O. Each Project Phase summary shall have a start and completion date derived from the early start and early finish dates of the detailed activities included in the Design Build Contractor's Schedule. All schedule activities are to be coded by Project Phase.

P. Upon receipt of a Pre-construction NTP for Phase I, the Program Management Team shall issue to the Design Build Contractor the Work Breakdown Structure (WBS) to be used to code all schedule activities. This WBS shall be mastered and change controlled by the Program Management Team and the Design Build Contractor.

2.11 RISK MANGEMENT

A. The Design Build Contractor shall prepare a Risk Management Plan at Pre-construction NTP that will include risk identification allocation and mitigation based upon the Work package and update the plan weekly. Risks to be addressed include, but not limited to: cost, schedule; design/constructability or any matter that affects the execution of the project.

- B. The Design Build Contractor will work with HAS to review the initial risk plan and update the list of identified risks weekly.

#### 2.12 QUALITY CONTROL (QC) PROGRAM

- A. The Design Build Contractor shall be responsible for all activities necessary to manage, control, and document Work so as to ensure compliance with the QC Program and Contract Documents. The Design Build Contractor responsibilities include, but are not limited to: ensuring adequate quality control services are provided for work accomplished on and off-site by its organization, pre-inspection of work prior to installing, coordinating with suppliers, subcontractors, tracking and resolution of non-conformance issues, technical laboratories and consultants. Quality Control Program is to be submitted to HAS within ten (10) calendar days after Construction NTP and updated monthly.

### **SECTION 3 - PRE-CONSTRUCTION SERVICES**

#### 3.01 GENERAL SCOPE OF SERVICES

- A. The Design Build Contractor for the Project shall be required to provide a finished design based on the Design Criteria Package to be provided, Pre-construction 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. 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.
- C. Furnish all services in accordance with a professional standard of care and design standards currently practiced on projects similar in size, complexity, and cost.
- D. Develop Project design to a level of detail sufficient for execution of the GMP for Phase 2, which should be at the end of Design Development (60% design) completion.
- E. Be responsible for the quality, completeness, accuracy, and coordination of design documents.
- F. Provide Quality Control over design before review submissions to HAS.
- G. Establish, implement, and modify Project administrative functions and reporting requirements to the PMT at periodic intervals.
- H. Identify and provide corrective actions for all Project risks.
- I. Participate in appropriate weekly Project meetings.
- J. The Design Build Contractor will be designated as the "Prime Contractor" of the Project site.
- K. The Design Build Contractor will be required to coordinate and work with the Program Management Team and HAS.

- L. The Design Build Contractor is responsible for the management and implementation of general services work and security for the site. This includes, but is not limited to: management of miscellaneous site preparation activities, 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.
- M. The Design Build Contractor is responsible for ignition and 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. The Environmental Plan is to be submitted at Construction NTP and updated monthly.

### 3.02 DESIGN TO BUDGET REQUIREMENTS

- A. Within thirty (30) Calendar Days after Pre-Construction NTP, Design Build Contract shall develop a Design to Budget cost component framework. Design Build Contractor shall update the Design to Budget cost component framework monthly to confirm the design remains within the budget.
- B. The Design to Budget Report must be agreed to by HAS prior to progressing the design to the 60% GMP stage.
- C. The Design to Budget will be the framework/benchmark to which the cost estimates are measured. All changes from initial Design to Budget allocations require HAS written approval.
- D. The period of performance for Phase 1 Pre-Construction Services will commence with an issuance of the Pre-Construction NTP and will terminate upon HAS's acceptance of the GMP.
- E. Immediately upon issuance of the Pre-Construction NTP the Design Build Contractor shall review and become familiar with the Project scope, requirements and constraints, including all information in the Design Criteria Package and any other pertinent information available or ascertainable for the Project including, but not limited to:
  - 1. The goals and objectives of the Project;
  - 2. Development and management of the Design to Budget;
  - 3. Required project construction quality standards and requirements;
  - 4. The development of project reports;
  - 5. The needs and requirements of HAS and other Project participants;
  - 6. The Project site and available records, as-built drawings, specifications, local conditions and all related limitations and constraints;
  - 7. Schedule assumptions and constraints; and
  - 8. Submittal requirements.

### 3.03 PRELIMINARY SCHEDULE REQUIREMENTS

- A. Within fourteen (14) Calendar Days after Pre-Construction NTP, the Design Build Contractor shall prepare and submit a preliminary schedule for execution of the Work for HAS review and response. The Preliminary Schedule shall also include the Designer's design activities.

### 3.04 DEVELOPMENT OF THE GUARANTEED MAXIMUM PRICE (GMP) or COMPONENT GUARANTEED MAXIMUM PRICE (CGMP)

- A. The Design Build Contractor shall be responsible for establishing the GMP within the Design to Budget allocations.
- B. HAS will develop a parallel estimate which will be used to reconcile and negotiate the GMP which requires HAS approval.
- C. Should HAS and the Design Build Contractor not be able to reach an agreement on the GMP, HAS may 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 Design Build Contractor to proceed with early packages in order to meet the Project schedule. If early packages are issued, the CGMP process will be followed.
- E. HAS will issue a request to the Design Build Contractor to establish the GMP or CGMP response for the complete Project or for the Work Packages(s). The Design Build Contractor shall deliver to HAS a proposed GMP or CGMP response, with a detailed estimate prepared by the Design Build Contractor which will be reviewed by HAS before being deemed to be adequately supported. Each GMP or CGMP response 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: Scope Clarifications and Assumptions.
  - 4. Section Four: Procurement Plan.
  - 5. Section Five: GMP or CGMP Construction Schedule.
  - 6. Section Six: Analysis of impact on the Total Cost Of Work and Project Schedule.
  - 7. Section Seven: MWBE participation level, including a total-to date participation level status report.
  - 8. Section Eight: Permitting Plan.
  - 9. Section Nine: Risk Mitigation Plan.
  - 10. Section Ten: Construction Work Plan.
  - 11. Section Eleven: Commissioning Plan and Activation Plan.

12. Section Twelve: Project Manuals.

- 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 Design Build Contractor's Contingency. This Contingency is the Design Build Contractor's contingency and may not be used for any costs not specifically allowed herein and may only be used with HAS's written permission. HAS shall track the net, cumulative unused Contingency until Project completion, at which time the balance of the unused contingency will revert to HAS.
1. For the GMP or each CGMP, the Design Build Contractor shall develop a corresponding Schedule of Values that utilizes the HAS WBS, including the Schedule of Stored Materials, if applicable.
  2. The GMP or each CGMP will be subject to modification for changes as allowed by the Contract Documents.
  3. The actual price paid by HAS to the Design Build Contractor shall be the actual incurred Cost of Work plus the Design Build Contractor's fee as defined by the Contract.

3.05 DESIGN, CONSTRUCTABILITY, AND VALUE ENGINEERING REVIEWS

- A. The Design Build Contractor shall provide a list of Value Engineering (VE) suggestions after the Pre-construction NTP. As part of the constructability review, the Design Build Contractor will prepare a list of possible VE items, discuss these with HAS weekly, and agree on which items will receive more detailed analysis. The Design Build Contractor, working with the PMT and HAS will perform more detailed analysis of the selected items to include analysis of alternative methods, systems, materials, equipment, or designs feasible to complete the construction at the lowest reasonable cost while achieving HAS's Project objectives.
- B. During the design process, the Design Build Contractor 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.
- C. The Design Build Contractor will evaluate opportunities and make recommendations to improve maintainability and sustainability and reduce lifecycle costs and energy use.

3.06 QUALITY CONTROL (QC) PROJECT REQUIREMENTS

- A. The Design Build Contractor shall submit within thirty (30) Calendar Days of the Pre-Construction NTP a Quality control Program for Pre-Construction and Construction Phase services for the Project for PMT and HAS review. The Design Build Contractor shall ensure that all Design Build Contractor services comply with the approved requirements and all procured materials conform to plans, technical specifications, and any other requirements, whether constructed by the Design Build Contractor or procured from Subcontractors or vendors. The Design Build Contractor shall assume full responsibility for the QC Program.

3.07 SUBCONTRACTING PLAN

- A. The Design Build Contractor shall perform sufficient industry outreach to ensure that adequate trade and MWBE participation and reports to HAS as required by this Contract occurs for each Work Package thirty (30) Calendar Days after Construction NTP. The

Design Build Contractor shall also conduct bid research to determine that bids were reasonable as well as responsive to the Work Packages.

- B. The Design Build Contractor shall develop and submit to HAS within ten (10) Calendar days after Construction NTP, a subcontracting plan that addresses all Subcontractor-required elements of this Contract as well as how the Design Build Contractor plans to meet those criteria. The Plan is to be followed with any deviations reported to HAS.

### 3.08 CONSTRUCTION WORK PLAN

- A. The Design Build Contractor shall develop a Construction Work Plan within fifteen (15) Calendar Days after the Construction NTP which shall define the Design Build Contractor's approach to constructing the Project. At a minimum the Construction Work Plan shall include:
  1. Project management systems necessary for successful execution of the Project and how those systems will be integrated into HAS's systems;
  2. Phasing and Logistics Plans tied to the Project schedule;
  3. Construction Disruption Mitigation Analysis;
  4. Field office and staging area needs;
  5. Plans and actions taken to comply with environmental requirements and permits;
  6. Use of and access to public roadways;
  7. Coordination of Work and communication of construction activities with HAS 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 traffic;
  17. Safety Plan;
  18. Temporary construction signage;
  19. Temporary road closures or detours;
  20. Maintenance of vehicular service roads during emergencies.

21. Vehicle provisions;
22. Public and worker health and safety protection;
23. Security of work site;
24. Commissioning Plan.
25. Closeout Plan.

#### **SECTION 4 - DESIGNER SCOPE OF SERVICES**

##### 4.01 GENERAL RESPONSIBILITIES

- A. Design Build Contractor shall designate in writing a representative who is responsible for the day-to-day management of design services. The designated representative shall be HAS's primary contact during the design phase of the Project and shall be available as required for the benefit of the Project and HAS. The designated representative shall be authorized to act on behalf of and to bind the Design Build Contractor in all matters related to design services. The designated representative shall not be changed without advance written approval from HAS.
- B. Design Build Contractor shall engage the services of a Designer and other qualified professionals as required for performance of the Design services. Design Build Contractor 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. 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. Design Build Contractor shall participate in design review meetings with HAS at the end of each design phase and shall document and respond to HAS review comments. Design Build Contractor shall provide HAS with the required number of design document review sets at each required stage of design completion.
- D. Design Build Contractor 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, Design Build Contractor and/or Designer will contact governmental agencies including but not limited to: HAS, County, State and Federal agencies that are required to approve the Construction 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. Design Build Contractor 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 August 2015
  - b) HAS Wayfinding System – Signage Design Guidelines, Standards, and Typical Applications (01.17.2014)
  - c) CAD/ Geospatial Data Standards and Procedures

#### 4.02 HAS REVIEW OF CONSTRUCTION DOCUMENTS

- A. Design Build Contractor shall perform internal quality control reviews at the end of the each design phase. The results of these reviews shall be submitted to HAS.
- B. Design Build Contractor shall incorporate into the Construction Documents such corrections and amendments as HAS requests at each design review, unless the Design Build Contractor objects to such changes in writing and HAS agrees to the objections. Any additional cost incurred due to Design Build Contractor's failure to incorporate HAS's requested corrections and amendments shall be borne by the Design Build Contractor.

#### 4.03 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 HAS review.
- B. The BOD shall assemble all design information prepared under each design phase and shall include the following but not limited to:
  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; and
  9. And identification of any outstanding issues and considerations to be resolved prior to beginning the next phase 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

#### 4.04 BASIC SERVICES

- A. At each stage of design services, as part of Basic Services, Design Build Contractor 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. Visual Communications including Signage, Graphics, and Wayfinding
16. GIS Design
17. Storm Water Pollution Prevention Plan Design Services
18. Surveying
19. Artwork Program
20. Furniture, Fixtures, and Equipment (FF&E)
21. Life Safety Code Compliance
22. Other Services as mutually agreed to by Design Build Contractor and HAS

B. Basic Services for this Project will be phased as follows based on the Design Criteria Packages that are already developed.

1. Pre-Design
2. Design Development
3. Construction Documents
4. Bid Packaging and Permitting
5. Design Services during Construction

#### 4.05 PRE-DESIGN

A. Data Collection

1. Designer 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 Designer (by HAS or any other party) that Designer uses for the Project. Designer shall identify to HAS in writing any such documents or data which, in Designer'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 HAS documents or data as are furnished by HAS. The Designer shall advise HAS in writing within five (5) Calendar Days of uncovering unforeseen conditions that in Designer's professional opinion, such documents or data are unsuitable, improper, or inaccurate. HAS will

confirm in writing if it wishes Designer to proceed in accordance with the documents or data as originally given.

3. Designer shall identify to HAS in writing within five (5) Calendar Days, any discrepancies between the documents and visible conditions, and shall consult with HAS on any special measures, services, or further investigations required for Designer to perform its services and to properly coordinate with existing systems and construction. This investigation shall be accomplished by registered, professional architects and engineers, as appropriate.

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

#### 4.06 DESIGN DEVELOPMENT

- A. Based on the approved Bridging Document evaluation and any adjustments to the Project budget authorized by HAS, Design Build Contractor shall prepare Design Development documents, up to 60% completion consisting of Drawings and Specifications, and a detailed construction cost estimate and submit them to HAS for approval. The Design Development Documents shall fix and describe the size and character of the entire Project, including site work, architectural, structural, mechanical and electrical systems, materials and such other elements as may be appropriate. The detailed construction cost estimate shall confirm adherence to the Design to Budget requirement and approved WBS.

- B. Design Build Contractor shall prepare presentation materials at completion of Design Development and, if requested, present them at HAS stakeholder meetings.

- C. Before proceeding into the Construction Document Stage, the Design Build Contractor shall obtain HAS's written approval of the Design Development documents and the mutually established Cost of 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. Design Build Contractor will be expected to establish the Project Guaranteed Maximum Price at this submittal phase.

#### 4.07 CONSTRUCTION DOCUMENTS

- A. Based on the approved Design Development documents and any further adjustments to the Project budget as authorized by HAS, Design Build Contractor 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. Design Build Contractor shall advise HAS regarding construction phasing and scheduling, the construction contract time period, and such other construction conditions considered appropriate for the Project.
- D. Design Build Contractor shall assist and advise HAS 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 Contract Documents, satisfying all previous review comments and suitable for public 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 Design Build Contractor for review and approval.
  - 4. At this stage drawings and specifications shall be suitable for permitting and construction.

#### 4.08 BID PACKAGING AND PERMITTING

- A. Designer shall provide multiple procurement package documents in collaboration with the Design Build Contractor to support the construction schedule. The construction packages will be released at different times, which will require Designer 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, Design Build Contractor shall answer inquiries from subcontractors, installers and suppliers bidders when requested and shall prepare and issue any necessary addenda to the bidding or proposal documents.

#### 4.09 DESIGN SERVICES DURING CONSTRUCTION

- A. Designer, through the Design Build Contractor, shall furnish the following services during the Construction Phase.
  - 1. Designer, and related consultants, shall visit the Project site at intervals appropriate to the type and stage of construction progress to observe the progress and quality of the Work and to determine in general if the Work is proceeding in accordance with the Contract Documents. On the basis of such on-site

observations, Designer shall observe the progress and quality of the Work, and shall endeavor to guard HAS against defects and deficiencies in the Work.

2. In addition to site visits for general observation, Designer shall visit the site for specific purposes as requested by HAS relating to start-up or mock-up reviews for significant work activities and for formal inspections of the Work. The Designer shall provide written reports of all site visits to HAS and the Design Build Contractor within three (3) Calendar Days.
3. Designer shall interpret the technical requirements of the Contract Documents. Designer shall render interpretations necessary for the proper execution or progress of the Work with reasonable promptness on written request of either HAS or the Design Build Contractor, and shall render written recommendations to HAS within five (5) Calendar Days on matters relating to the execution or progress of the Work or the interpretation of the Contract Documents.
4. Designer shall provide consultation for the purpose of clarification and interpretation of the intent and scope of the Construction Documents. Designer's interpretations and recommendations shall be consistent with the intent of and reasonably inferable from the Contract Documents. Designer's interpretations shall be made in written and/or graphic form including, if necessary or appropriate, supplemental documents to amplify or clarify portions of the Construction Documents.
5. Designer shall review and approve or take other appropriate action upon the Design Build Contractor'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, and shall respond to Design Build Contractor's inquiries and questions and provide such supplemental information as appropriate.
6. Designer shall participate in inspections of the Work including concealed spaces inspections, systems start-up inspections, and Substantial Completion inspections to determine the dates of Substantial Completion, and Final Acceptance. Report results to HAS at Substantial Completion request by Design-Build contractor
7. Designer shall review, for conformance with the Contract Documents, Design Build Contractor's submission of guarantees and warranties. Designer to confirm compliance to HAS when requested.
8. Designer shall assist HAS in checking record documents during the course of the Work and shall review final record documents for completeness and compliance with Contract requirements.
9. Designer shall review Design Build Contractor's submission of operating and maintenance instructions, and all manuals, brochures, drawings, and other close-out documentation furnished by the Design Build Contractor for conformance with the requirements of the Construction Documents and report compliance to HAS.

#### 4.10 DESIGN SUBMITTAL PRODUCTION STANDARDS

##### A. Definitions

1. PMT's BIM (Building Information Modeling) Manager leads BIM implementation and oversees the BIM application to the Program.

2. Designer's BIM Manager leads the BIM implementation and oversight for the Designer.
3. Design-Build Contractor's BIM Manager leads the BIM implementation and oversight for the Design-Build contractor.
- A. Designer's BIM Manager and Design-Build Contractor's BIM Manager may be represented by a single individual, the details will be defined in the BIM Project Execution Plan (BPxP).
4. Design Model(s): created and developed by the Designer in order to develop the project design.
5. Construction Model(s): created by Design Build Contractor from the Design Model in order to develop and fulfill the construction needs.
6. As-Built Model(s): prepared by the Design Build Contractor to show on-site changes to the original Construction Models.
7. Record Model: prepared by the Designer from the Design Model and reflect on-site changes the Design Build Contractor noted in the As-Built Models.
8. The BPxP is the document defining the extent of the BIM works which shall be performed during the project. The BPxP at a minimum shall include:
  - a. Project information
  - b. Key project contacts
  - c. Project goals / BIM uses
  - d. BIM process design
  - e. BIM information exchanges
  - f. BIM and facility data requirements
  - g. Modeling requirements
  - h. Construction sequencing and cost loading (4D and 5D) requirements
  - i. Collaboration procedures
  - j. Coordination procedures
  - k. Quality control
  - l. Technological infrastructure needs
  - m. Model structure
  - n. Project BIM deliverables
  - o. Delivery strategy / contract

#### 4.11 SCOPE

- A. The general scope of Project work is to create a technically accurate, highly developed computer model of the civil, utilities, architectural, structural, and building systems elements for Preconstruction and Construction phases.
- B. The Designer BIM Manager and Design Build Contractor shall be expected to 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 BIM Project model(s) will be to serve as a data rich legacy document for operations and maintenance management.

- C. The computer model(s) developed for the Project may be utilized for multiple purposes including, but not limited to: design, documentation, building systems 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 the BIM Manager and the Design Build Contractor BIM Manager shall collaborate to develop Project BPxP no later than thirty (30) Calendar Days after the Pre-construction NTP is issued.
- D. 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 extents of details and data shall be defined by BPxP.

#### 4.12 BIM PRODUCTS

- A. Designer and Design-Build Contractor, including all vendors, consultants, and any subcontractors/ subconsultants, shall use the HAS approved Autodesk products including Civil3D 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 generated from Civil3DRevit.
- B. Designer and Design Build Contractor shall use Navisworks throughout the Project to coordinate the model and identify clashes.
- C. No member of the Project team shall update software without the permission of HAS.
- D. Other secondary software use shall be based on agreement and with HAS approval.

#### 4.13 ORGANIZATIONAL ROLES

- A. Designer's 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's 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's 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's 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's architectural, structural, MEP/FP, and civil 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.

#### 4.14 BIM MODELS AUTHORSHIP

- A. In order to maximize effectiveness, throughout the Project's planning, design, and construction, the Design Model will be authored, maintained and kept accurate at all times by the Designer's BIM Manager during design.
- B. Design Build Contractor's BIM Manager will author, maintain and keep accurate the Construction Model during construction. The Design Build Contractor's 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 record conditions in BIM and track 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's BIM Manager will oversee the 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's 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.

#### 4.15 INTERFERENCE CHECKS

- A. Designer BIM Manager shall coordinate the Design Models to minimize or eliminate conflicts between design elements. Prior to every transmittal of design files, Designer 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's BIM Manager shall coordinate the Construction Models to minimize or eliminate conflicts between construction elements during the Construction phase. Prior to every transmittal of construction files, the Designer shall coordinate the construction models and check for clashes between model elements. Design Build Contractor's 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's BIM Manager will oversee the 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 keeps 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 document management software.

#### 4.16 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's 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 also deliver all As-Built Models to the HAS as part of project close-out documents.

#### 4.17 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 a 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.

#### 4.18 DESIGN SUBMITTAL FILE FORMATS

- A. Designer and Design Build Contractor shall submit drawings electronically at each formal 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 the 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. A 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.
9. All electronic format file delivery shall be in accordance with the requirements of the Project's Division 01 MasterFormat, Specification Section 01 33 00 Submittal Procedures.

## **SECTION 5 - CONSTRUCTION SERVICES**

### **5.01 GENERAL**

- A. Immediately upon issuance of the Construction NTP the Design Build Contractor 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 Pre-Construction Phase Services section of this document shall be maintained, enhanced, and utilized throughout management of Construction Phase Services.
- B. The Design Build Contractor shall comply at all times with any and all verbal and /or written instructions by HAS 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 Design Build Contractor shall work with HAS on the schedule of any night work that needs to be performed on HAS property.
- C. The Design Build Contractor will be responsible for construction means and methods of the Work.
- D. The Design Build Contractor will be required to solicit bids from subcontractors for the various trade packages. Under management of the Design Build Contractor, 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. The Design Build Contractor can self- perform up to 50% of the value of each GMP or CGMP. Award of the Work will be based on a comparative process witnessed by HAS.
- E. The Design Build Contractor will be responsible for completing all Work related to the Project.
- F. Interact and efficiently coordinate with the various HAS departments, Federal Aviation Administration (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.

### **5.02 COORDINATION RESPONSIBILITIES**

- A. The Design Build Contractor shall coordinate all construction operations included in the Contract to ensure efficient and orderly development and installation of each part of the Work. The Design Build Contractor'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 various Regulatory Agencies;
  3. Scheduling and managing the submittal process;
  4. Preparing and managing the Safety Plan. The Design Build Contractor will submit the initial Safety Plan within fifteen (15) Calendar Days of Construction NTP;
  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. Ensuring that anchorage, blocking, joining, and other detailing are provided.
  10. Coordinating Code and Permit documentation requirements; and
  11. Implementation of all systems integration and commissioning for compliance with contractual and permitting requirements.
- B. The Design Build Contractor shall not delegate responsibility for project coordination to any Subcontractor, and at all times when work is ongoing have competent Prime Contractor Supervision on site.

#### 5.03 COORDINATION WITH HAS

- A. The Design Build Contractor shall notify HAS 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 30-days advance written notice or as otherwise directed by HAS for longer durations.
- A. Observation of Work by HAS shall not be interpreted as relieving the Design Build Contractor from responsibility for coordination, superintendence, scheduling, and direction of the Work.
- B. The Design Build Contractor shall 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.

#### 5.04 CONSERVATION

- A. Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials including vehicle emissions.
- B. 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.

#### 5.05 PROJECT REPORTS

##### A. Daily Construction Reports

1. Prepare and submit 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:
  - a) The list of all Design Build Contractor Subcontractors at the Project site;
  - b) The list of other separate Subcontractors at the Project site;
  - c) The number of Design Build Contractor's workers at the Project site;
  - d) The number of Subcontractors' workers at the Project site;
  - e) The total number of all workers at the Project site;
  - f) The Subcontractors' equipment at the Project site;
  - g) Material deliveries;
  - h) Quality related issues and Non-Conformance Reports;
  - i) 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;
  - j) Safety;
  - k) Meetings and significant decisions.
  - l) Unusual events (including the discovery of missing or damaged materials);
  - m) Material Location Reports;
  - n) At weekly intervals, prepare and submit a comprehensive list of materials delivered to and stored at the Project site. 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. For material stored off-site, provide the address where fabricated equipment and material is stored;

- o) Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report in accordance with the General Conditions.

#### 5.06 PRE-INSTALLATION CONFERENCES

- A. Conduct a pre-installation (including any demolition) conference at the Project site before each construction activity that requires coordination with others.
- B. Attendees: 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. Advise HAS of scheduled meeting dates.
- C. Review progress of other construction activities and preparations for the particular activity under consideration at each pre-installation conference, including, but not limited to, requirements for the following, as applicable:
  - 1. Contract Documents
  - 2. Installation options
  - 3. Related Change Orders and WCDs
  - 4. Purchase
  - 5. Deliveries
  - 6. Shop
  - 7. Drawings, product data and quality-control sample
  - 8. Review of mockups
  - 9. Possible conflicts
  - 10. Compatibility of materials
  - 11. Time schedules
  - 12. Weather limitations
  - 13. Manufacturer's recommendations
  - 14. Warranty requirements
  - 15. Compatibility of materials
  - 16. Acceptability of substrates
  - 17. Temporary facilities
  - 18. Space and access limitations
  - 19. Governing regulations
  - 20. Safety-Work Hazard Analysis
  - 21. Inspecting and testing requirements

22. Required performance results

23. Recording requirements

24. Protection of other work

- D. Minutes: The Design Build Contractor will record the minutes and distribute them to those in attendance and other interested parties.
- E. Design Build Contractor shall not proceed with installation if the pre-installation conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of Work and reconvene the pre-installation conference at earliest feasible date.

#### 5.07 SAFETY MEETINGS

- A. Within fifteen (15) Calendar Days after the Construction NTP, but prior to commencement of field work activities, arrange a Safety Meeting with the HAS Program Safety Manager to review HAS Project Requirements for Safety. Design Build Contractor to submit minutes of meetings to HAS.

#### 5.08 PROJECT CLOSEOUT CONFERENCE

- A. HAS will schedule and conduct a Project closeout conference, at a time convenient to HAS, but no later than ninety (90) Calendar Days prior to the scheduled date of Substantial Completion. Refer to the Project requirement on Project Closeout for greater policy and procedure detail. Conduct the conference to review requirements and responsibilities related to Project closeout. Design Build Contractor to submit minutes of meeting to HAS

#### 5.09 COMMISSIONING AND ACTIVATION

- A. The Design Build Contractor will start-up, test, and commission components when completed and at the end of any phase.
- B. Warranty will not commence on any system until work is completed. The Design Build Contractor must coordinate, guarantee, and ensure from all manufacturers, that conditions of their warranties will be upheld and not commence until the date of Final Completion for the entire Project is achieved.
- C. Maintenance of any kind, on any and all operating systems, shall be performed by the Design Build Contractor until such time as Final Completion of the entire Project is granted. Then and only then, will the warranty period start.
- D. The building commissioning and activation process is intended to assure HAS that the requirements and performance criteria as identified in the Construction Documents, are managed throughout the Project, and successfully implemented.
- E. Commissioning shall include hands-on training of IAH and airline personnel, and other tenants who will use, operate, and maintain the facility and its systems, and the physical testing of the facility to assure HAS that when the building is open for public use, it will be useable in the manner for which it was intended.
- F. It is the Design Build Contractor's responsibility to ensure this process is achieved through all component and system-wide commissioning, punch list work, achievement of Substantial and Final Completion, obtainment of certificates of occupancy, lien releases

(final), and other activities as required to complete the Work in accordance with the Contract terms and conditions.

- G. Commissioning and activation activities are mutually inclusive and may at times be performed simultaneously. The activation process will start in the design phase and will continue through project closeout.
- H. The Design Build Contractor will provide input into the Activation Plan and assist with the activation process. HAS and the PMT will identify HAS personnel needed to support the operational requirements including airport operations, fire marshal, building inspection, and facilities maintenance personnel.
- I. HAS and the PMT shall perform activation administration services necessary to complete the Activation process according to the developed and approved plans.
- J. HAS and the PMT will provide the completed Activation Checklist with a summary level report to document completion of the activation activities.
- K. Design Build Contractor activities required to complete the Work and close out the physical and financial aspects on all self-performed work and each subcontract/trade package include:
  - 1. Prepare and submit training plan for HAS maintenance personnel and end users.
  - 2. Prepare and submit all final Record Documents as required.
  - 3. Prepare any and all certificates and warranties, as required.
  - 4. Prepare release bonds and any bond release documents, as required.
  - 5. Prepare Final Certificate of Occupancy, as required.
  - 6. Issue a final Project report.
  - 7. Schedule for completion of the punch list work.
  - 8. Deliver any final Operation and Maintenance Manuals (O&M) and other submissions as required per the Contract Documents.
  - 9. Complete all work as required by the punch list.
  - 10. Close out the safety and security program.
  - 11. Clean out staging areas and lay-down areas, restoring them to their original condition.
  - 12. Issue any other final environmental, sustainability or documentation as needed.
  - 13. Final cleaning of the project, including but not limited to, cleaning exterior surfaces exposed to view; removing temporary labels, stains, and foreign substances; polishing transparent and glossy surfaces; cleaning equipment and fixtures to a sanitary condition; cleaning roofs; cleaning the Project site; sweeping paved areas and raking clean other surfaces; removing trash and surplus materials from the Project site.