

















































## DESIGN-BUILD CONTRACTOR SCOPE OF SERVICES

- q. Security Plan.
- r. Temporary construction signage.
- s. Traffic Control Plan during construction.
- t. Security of work site including Airport Operational Areas (AOA).
- u. BIM Execution Plan.
- v. Closeout Plan.

## SECTION 7 - CONSTRUCTION SERVICES

### 7.1 GENERAL

- A. Upon issuance of the Construction Phase NTP(s), 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 always comply with any and all oral and /or written instructions by the OMT 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 coordinate with the OMT 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 OMT. 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 is expected to solicit bids from subcontractors for elements of the work. Under management of the DB, the selected subcontractor/trade may provide 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 DB can self-perform up to 65% of the value of the Contract Price. Award of the Work to major subcontractors (over 10% of the Contract value) will be procured using a transparent competitive process which may be witnessed by HAS.
- E. The DB will be responsible for completing all Work related to this Project whether, or not, Work is contained in trade packages or subcontracts for the Project.
- F. The DB will be responsible to interact and efficiently coordinate with the various HAS departments, FAA, and TSA, and other agencies and utility companies, as required and address all federal, state, county and city permitting requirements. The OMT and Director will be kept fully informed regarding communication with these parties and shall be included in all interagency meetings, unless otherwise decided by the Director or authorized designee. All communications with these parties shall be documented by the DB for inclusion in the Project records and appropriate submittal to the Director.

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7.2 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 shall not delegate responsibility for project coordination to any Subcontractor. The DB's coordination responsibilities include but are not limited to:

1. Preparing and issuing material and subcontractor bids to obtain input from Subcontractors for use in the final design phase.
2. Scheduling and managing the documentation and permitting process with the various regulatory agencies with jurisdiction over the Project.
3. Scheduling and managing the construction 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.

7.2.1 COORDINATION WITH THE PROGRAM MANAGEMENT TEAM

- A. The DB shall notify the OMT 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 OMT for longer durations.
- B. Within 30 days of Phase 1 NTP, the DB shall notify OMT 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 OMT and affected HAS representatives regarding the required notice period and actual scheduling of work.
- C. Observation of Work by HAS or the OMT shall not be interpreted as relieving the DB from responsibility for coordination, superintendence, scheduling, and direction of the Work.



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- D. Coordinate with the OMT 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.

**7.3 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.

**7.4 PROJECT REPORTS**

**A. Daily Construction Reports**

- 1. Prepare and submit within 24 hours of the end of each construction workday, 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:
    - i. The number of DB's workers at the Project site.
    - ii. 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

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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).

**B. 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.

**7.5 PROJECT MEETINGS**

The person designated to make decisions binding on 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 OMT.

**A. Scheduling Conference**

1. A separate scheduling conference is required during both Preconstruction and Design Phase and Construction Phase(s) of the Project.
2. Attendees: OMT, 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.

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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 OMT within two (2) days of the meeting for review and comment.
- B. Preconstruction Conference
1. The OMT will schedule a preconstruction conference and organizational meeting, following the construction scheduling conference and before start of construction.
  2. Attendees: OMT, 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.

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- u. Safety.
  - v. First aid and Local Emergency Response Plan.
  - 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 OMT within two (2) days of the meeting for review and comment.
- 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 OMT, 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 OMT.
  - 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 OMT.
  - 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 OMT based on the level of impact to the affected facilities. Primary airport infrastructure shutdowns will require longer notification periods, defined through coordination with the OMT and the affected parties. An ASR/USR meeting will be held with the DB and OMT and Airport Operations before any ASR is approved. Agenda for the meeting will include:
    - a. Review of current ASR and USR work as well as look-ahead scheduling for all project work. Provide appropriate narratives, schedules, documentation, and graphics to adequately describe planned work and to meet requirements of ASR and USR applications,

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- 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.
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. 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 OMT will schedule and administer weekly progress meetings following Construction Phase NTP(s). The OMT 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 OMT for issuance.
- 2. Attendees: In addition to the OMT, 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 discussion 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:
  - c. Safety,
  - d. Security,
  - e. Four (4) weeks look ahead Schedule,
  - f. Project Logs,

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- g. Submittals,
  - h. RFI's,
  - i. Work Change Directives,
  - j. Non-Conformances,
  - k. Quality Control and Work standards,
  - l. Traffic Control,
  - m. Site utilization,
  - n. Hours of Work,
  - o. Temporary facilities and services,
  - p. Temporary Erosion Control,
  - q. Deliveries,
  - r. Status of off-site fabrications,
  - s. Project Costs: budget, commitment, and progress payments,
  - t. Project Record File additions (Change Orders, meeting minutes, etc.),
  - u. Applications for Payment,
  - v. 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 OMT 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 OMT of all required meetings and scheduled dates. Dates of pre- installation meetings shall be identified on the Project Schedule.
  - 2. Attendees: The OMT, Consultants, DB management team and Subcontractors, equipment installer and representatives of manufacturers and fabricators involved in or affected by installation, and its coordination or integration with other materials and

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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 OMT within two (2) days of the meeting for review and comment.
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.

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**F. Monthly Progress Reviews**

1. In addition to the requirements of the Contract Documents, the DB will conduct project status review meetings monthly 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 OMT, 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, updated and approved 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 OMT, 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



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accurate understanding of the meeting. The minutes shall be issued to the OMT within two (2) days of the meeting for review and comment.

**G. Safety Meetings**

1. Within thirty (30) days after the Construction Phase NTP(s) but prior to commencement of field work activities, the DB will arrange a Safety Meeting with the OMT to review Project safety requirements.

**H. Pre-Demolition Meetings**

1. The DB shall schedule and administer meetings through the OMT for stakeholders affected by the Work prior to any demolition activities. Demolition work shall not start unless authorized by the OMT. 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 OMT, 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 OMT 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 OMT, 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.

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- I. 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 OMT within two (2) days of the meeting for review and comment.

**SECTION 8 - DESIGN SUBMITTAL PRODUCTION STANDARDS**

**8.1 DEFINITIONS**

- A. OMT 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 to develop the Project design.
- F. Construction Model(s): created by Design Build Contractor from the Design Model 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: the BIM 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.

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10. Coordination procedures.
11. Quality control.
12. Technological infrastructure needs.
13. Model structure.
14. Project BIM deliverables.
15. Delivery strategy / contract.

**8.2 SCOPE**

- A. The general scope of producing design submittals is to create technically accurate, highly developed computer models 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 OMT, Designer and Design Build Contractor BIM Managers.
- D. The OMT 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.

**8.3 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 Mechanical/Electrical/Plumbing (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 Director.

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- D. Other secondary software usage shall be based upon mutual agreement and with approval by the Director.

**8.4 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 OMT 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. OMT 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. OMT 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. OMT BIM Manager will also be responsible for archiving models and conducting reviews/audits of model deliverables.

**8.5 BIM MODELS AUTHORSHIP**

- A. To maximize effectiveness throughout the Project's planning, design, and construction phases, the BIM Design Model will be authored, maintained, and kept accurate at all times by the Designer's 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

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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.

**8.6 INTERFERENCE CHECKS**

- A. The Designer BIM Manager shall coordinate the BIM design models to minimize or eliminate conflicts between design elements during design phase. Prior to every transmittal of design file(s), 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 the construction phase. Prior to every transmittal of construction file(s), 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 OMT document management software.

**8.7 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.

**8.8 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

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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.

**8.9 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.

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**SECTION 9 - ENERGY AND SUSTAINABILITY**

**9.1 INTRODUCTION**

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.

**9.2 SUSTAINABLE MANAGEMENT PLAN**

- A. HAS is in the process of developing a Sustainable Management Plans for their airports.
  - 1. Phase 1 will focus on energy and waste reduction/ recycling
  - 2. Phase 2 will focus on water efficiency/ reuse
- B. The Airport may require the DB to incorporate the concepts in the final design or construction documents where feasible at the time of preparation of these documents.

**9.3 LIFE CYCLE ANALYSIS**

- A. The DB shall perform Life Cycle Analysis (LCA) for the Project lifetime period as defined by the OMT (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.