



Office of the City Controller
HOUSTON AIRPORT SYSTEM
IAH Terminal Redevelopment Program
Program Manager Contracts
Performance Audit



Chris Brown
City Controller

Report # 2021-07

Courtney Smith
City Auditor



**PERFORMANCE AUDIT OF THE
HOUSTON AIRPORT SYSTEM**

**PROJECT: IAH TERMINAL
REDEVELOPMENT PROGRAM -
PROGRAM MANAGER CONTRACTS**

June 18, 2021





**OFFICE OF THE CITY CONTROLLER
CITY OF HOUSTON
TEXAS**

CHRIS B. BROWN

June 30, 2021

The Honorable Sylvester Turner, Mayor

**SUBJECT: REPORT #2021-07 HOUSTON AIRPORT SYSTEM (HAS)
IAH TERMINAL REDEVELOPMENT PROGRAM (ITRP) PROGRAM MANAGER CONTRACT
PERFORMANCE AUDIT**

Mayor Turner:

The Office of the City Controller's Audit Division contracted the professional services of BDO USA, LLP to conduct a performance audit of Houston Airport System's – IAH Terminal Redevelopment Program-Program Manager Contracts. The IAH Terminal Redevelopment Program (ITRP) is a \$1.23 billion program of new construction, renovation, and demolition projects at the George Bush Intercontinental Airport. The current plan was updated in 2018 and is expected to be substantially complete by 2024.

The primary audit objectives were to:

- Determine if ITRP expenditures comply with key terms and conditions of applicable contracts; and
- Determine the contract deliverables to-date.

The engagement scope included the review of construction contract documents and related deliverables from the onset of the ITRP program through December 14, 2020.

During the course of the engagement, we determined that the executive program manager for the ITRP program is providing all scope of service identified in their agreement and noted that all program managers are generally meeting, and in some cases exceeding, their contractual requirements.

Based on the procedures performed during the audit, we identified an opportunity to improve transparency and internal controls by formalizing the process of using Letters of Authorization and Personnel Authorization Forms to document changes to the membership of the project team.



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CITY OF HOUSTON
TEXAS

CHRIS B. BROWN

We appreciate the time and effort from HAS and ITRP management extended to the Audit team during this engagement.

Respectfully submitted,

A handwritten signature in blue ink that reads "Chris B. Brown".

Chris B. Brown
City Controller

cc: Mario Diaz, Director, Houston Airport System
City Council Members
Marvalette Hunter, Chief of Staff, Mayor's Office
Kertecia Mond, Chief Auditor-Deputy Assistant Director, Houston Airport System
Robert Barker, Deputy Director-Infrastructure, Houston Airport System
Stephen Buwalda, Manager Program Controls, Houston Airport System
Shannan Nobles, Chief Deputy City Controller, Office of the City Controller
Courtney Smith, City Auditor, Office of the City Controller

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INTRODUCTION

The Office of the City Controller, City of Houston, Texas (“the City”, “Client” or “you”) engaged BDO USA,LLP (“BDO”, “we” or “our”) to conduct an audit of the Houston Airport System – IAH Terminal Redevelopment Program- Program Manager Contracts. The IAH Terminal Redevelopment Program (ITRP) is a “Program” of various new construction, demolish & replace, and renovation projects located at George Bush Intercontinental Airport in Houston, TX. BDO performed sample-based, cost audit testing to determine if Program Manager’s expenditures complied with the terms and conditions of the applicable contracts. BDO also observed and documented Program Services Consultant’s deliverables. The primary purpose of this report is to present BDO’s audit observations to The Office of the City Controller, City of Houston Texas, for review and considerations.

SCOPE AND OBJECTIVES

BDO observed Program Manager’s costs and deliverables for the following consultants: Turner & Townsend (TT), Houston Aviation Alliance (HAA), and Parsons & HJ Russel IAH Team (PHJ). The consultants observed were executed using the following contracts: TT (Agreement for Executive Program Management Services), HAA (Agreement for Program Management Support Services), and PHJ (Agreement for Program Management Support Services). TABLE 1 identifies the program consultant, project, and most recent invoices (at the time sample was selected) reviewed by BDO (period ending, invoiced to date, and contract to date):

TABLE 1: PROGRAM MANAGERS MOST RECENT INVOICES REVIEWED BY BDO				
PROGRAM SERVICES CONSULTANT	PROJECT	PERIOD ENDING	TOTAL INVOICED	CONTRACT AMOUNT
Turner & Townsend Inc. (TT)	Executive Program Manager Services	8/28/2020	\$ 8,045,139.81	\$ 9,000,000.00
Houston Aviation Alliance (HAA)	Program Management Support Services	7/31/2020	\$ 23,234,696.08	\$ 25,893,200.00
Parsons & HJ Russel IAH Team (PHJ)	Program Management Support Services	7/31/2020	\$ 51,754,310.43	\$ 54,151,200.00
TOTALS			\$ 83,034,146.32	\$89,044,400.00

The primary objectives of this engagement were to:

- (i) Determine if expenditures for the Program Services Consultants comply with key terms and conditions of applicable contracts. BDO reported findings on an exception-basis.
 - a. Sample-based testing: 25% of each Program Services Consultant invoices
 - b. Reconcile most recent payment period for each Program Services Consultant (at the time of invoice sample selection).
- (ii) Evaluate the contract deliverables to consider whether deliverables met or exceeded the projected timeline. BDO reported findings on an exception-basis.
 - a. Sample-based testing pertaining to the quality of deliverables
 - b. Determining the quantity of contract deliverables

BDO performed the following audit steps (testing performed on a sample basis):

- Provided initial request for information (RFI)
- Interviewed key personnel to understand the Program Managers roles and responsibilities
- Identified and documented internal controls
- Obtained and reviewed relevant contracts and contract expenditures
- Evaluated whether expenditures are compliant with contract terms and conditions
- Evaluated the quality and quantity of contract deliverables
- Performed payment invoice testing to test expenditures for arithmetic errors and contract compliance
- Documented, received, and reviewed additional RFI from Executive Program Manager
- Observed sample Program Manager invoices
- Observed sample Program Manager deliverables and other documentation included in the "ITRPProgram Folder" (located on the Houston Airports System secure network)
- Documented audit observations and discussed/ reviewed with ITRP
- Provided the City relevant planning workpapers including relevant planning documents, relevant email communication, and record of conference calls
- Drafting and providing the City with BDO's Final Report

BDO utilized a phased approach to execute this engagement as follows:

- **Phase 1- Preliminary Survey and Planning:** The goal of the planning phase was to gather information from appropriate sources, identify ITRP Program Manager team members, and use the information to develop a detailed fieldwork plan to ensure the accomplishment of the engagement objectives. Initially we created an RFI and engagement plan, then scheduled Kickoff meetings with team members from ITRP. Following initial requests and Kickoff meetings, we collaborated with Executive Program Manager (TT) to develop interview dates/ times with the various team members, so that BDO could gain knowledge regarding the ITRP Program Manager Scope.
- **Phase 2- Fieldwork:** BDO performed a detailed transactional analysis of payment invoices on a sample basis. During this phase we requested and reviewed detailed documentation used by the 1 executive Program Manager (TT) and 2 program management support service providers (HAA and PHJ) to gather evidence, analyze and evaluated that evidence to meet the stated audit

Objectives:

- (1) Obtained and reviewed relevant contracts and Program Manager invoices,
- (2) Evaluated whether expenditures are compliant with contract terms and conditions and reporting on an exception basis, and
- (3) Evaluated the quality and quantity of contract deliverables and reporting on an exception basis.
- **Phase 3- Reporting:** BDO finished observing, reviewing, and testing Program Manager's documentation during this phase. BDO, Program Manager team members, and The City Auditor had regular contact as necessary, including regular BDO status updates. BDO drafted an observations log, which were exceptions documented over the course of the performance audit. BDO, executive Program Manager, and the City discussed observations, and executive Program Manager provided BDO with additional supporting documentation to clear up any open items. BDO also provided the Audit Manager relevant engagement planning workpapers including planning documents, email communications, and a record of interview & conference calls. BDO also prepared the "Final Report- Executive Summary" during this phase of the engagement".

OVERALL ENGAGEMENT ASSESSMENT

BDO's engagement letter was dated July 10, 2020 for audit. On September 17, 2020, BDO provided the City with an RFI and a tentative engagement plan, while coordinating "Kickoff Meetings" and interview times with ITRP personnel. BDO and ITRP had a "Kickoff" conference call on October 2, 2020. BDO issued the City a final report draft on March 24, 2021. Below is a list of major engagement milestone email and conference call communications:

1. **BDO Request for Information (RFI) - Program Manager Contracts:** BDO Sent RFI via email to The City on September 17, 2020.
2. **City Auditor (City of Houston) and BDO - Discuss Program ManagerContract engagement:** Call at 11:00a.m. CST on September 22, 2020.
3. **Audit Manager (City of Houston) BDO discuss BDO's scope and RFI:** Call at 2:00p.m. CST on September 24, 2020
4. **ITRP Program Management Team – External Audit Kick-Off:** Call at 2:00p.m. CST on October 2, 2020.
5. **Update - BDO - Houston Airport System - Program Manager Contracts Observation Log:** BDO sent observation log via email to the City on December 4, 2020.
6. **Walk through Observation Log - BDO - Houston Airport System - Program Manager:** Call at 10:00a.m. CST on December 8, 2020.
7. **Manager of Program Controls (TT) and BDO – Discuss BDO Observations and also approach regarding Program Manager's "Deliverables":** Call at 9:30a.m. CST on December 9, 2020.
8. **BDO Status Update:** BDO sent City of Houston Status Update via email on January 5, 2021
9. **Manager of Program Controls (TT) and BDO (BDO) – Discuss Deliverables Walk Through:** Call at 2:00p.m. CST on January 29, 2021.
10. **BDO Status Update:** BDO sent City of Houston Status Update via email on January 30, 2021
11. **Manager of Program Controls (TT) and BDO - Catch up discussion for deliverables clarification:** Call at 12:30p.m. CST on March 12, 2020

12. Engagement milestone emails, conference call communications, workpapers, and planning documents: On March 15, 2021, BDO sent Audit Manager emails and conference call communications. On March 16, 2021, BDO provided the Audit Manager with all relevant workpapers and planning documents.

13. FINAL REPORT DRAFT: BDO sent City of Houston Final Draft on March 24, 2021

BDO observed, reviewed, and tested ITRP Program Manager documentation. BDO provided regular status updates via email throughout the duration of this engagement. On December 4, 2020, BDO provided the City a draft copy of the observation log. BDO, members from the City, and ITRP members had a conference call to walk through the items in the log on December 8 and 9, 2020. The Executive Program Manager (TT) provided BDO with additional supporting documentation to clear up open items.

Based on the review of sample deliverables, contractual requirements are being met and often exceeded by the program management support teams (HAA and PHJ) and the executive Program Manager (TT). Please see the “Contract Deliverable Management” section below for our detailed analysis.

Program Manager invoices (based on samples reviewed) are also compliant with the contract documents as BDO and the Executive Program Manager (TT) were able to clear up all preliminary observations pertaining to Program Manager invoices. Please see the **“Program Manager Expenditures”** section below for our analysis.

BDO observed the ITRP Program has endured numerous changes, challenges, and significant events over the lifecycle of the program. For example, in 2014 the ITRP initially consisted of Mickey Leland International Terminal (MLIT) Project, and Enabling Utilities Landside Project, and at that time the estimated budget was \$900 million. It was noted that this original budget increased to \$1.7 billion in December of 2016 with 7 additional projects being added to the overall ITRP Program (Federal Inspection Service (FIS) Project, Program Management Office Building Project, New Terminal C North Concourse Apron & Utilities, Relocation of Ramp Control Tower on the Old Terminal C North Concourse, Roadway Rehabilitation Project, Apron & Taxi-lane Project, and East Aircraft Remote Parking Hardstand Project). Then, the ITRP Budget was reduced to around \$1.3 billion in December 2018 by way of reducing certain scopes, elimination of a project, and through the design process. Please see **“EXHIBIT A – ITRP 2015 TO 2018 SIGNIFICANT EVENTS”** for more detailed information. In addition, this program has faced many challenges associated with enduring over a year of COVID-19 pandemic.

Having reduction/ addition to program scope and reduction/ addition to budget produces increased (many times unexpected) time and effort, which can greatly affect the overall cost of a program and can produce a “domino effect”. Managing and enduring through those challenges, along with the unprecedented challenges created by the COVID-19 pandemic, is a testament to the program management teams, the City of Houston, and the entire ITRP Team.

The City Auditor and ITRP team members have been very helpful and cooperative over the course of our engagement. The City Auditor and ITRP team members provided fast turnarounds to emails, responding to conference call meets, RFIs, answering questions, additional documentation requests, and they portray a genuine willingness to help make the process run efficiently. In addition, the City Auditor and ITRP teams are very detail oriented and organized. For example, each time BDO requested RFI's, a “Letter of Transmittal”, outlining the requested documents, was included with the requested information. These “Letters of Transmittal” included date of request, RFI number item, and description

of the document. This level of organization makes it a much easier/more efficient process of filtering through documentation.

Contract Deliverable Management

BDO observed thousands of Program Manager deliverables and other documentation included in the "ITRP Program Folder" (located on the Houston Airports System secure network). The Program Manager deliverables contained on "ITRP Program Folder" are contractually required to be managed and provided to ITRP (as necessary) by the Program Managers. Below is a partial list of the required Program Manager deliverables observed:

1. Baseline packages
2. Re-baseline summaries
3. Program/ project scope
4. Budgets
5. Project/ program schedules
6. Organizational charts
7. Role Assignment Document (RAD)
8. Role Request Forms (RRF)
9. Resumes
10. Design Build Scopes
11. Architect/ Engineer Scopes
12. Construction Manager at Risk Scopes
13. Project controls Safety
14. Project management plans
15. Various stakeholder presentations
16. Milestone tracker sheets
17. Master Schedules
18. Financial plans
19. Financial updates
20. Schedule of Value tracking logs
21. Weekly VE & Cost Pressure logs
22. Change management procedures
23. Claims, Dispute and DARB Process
24. Deficient Conditions Instructions
25. Deficient Conditions Procedures
26. Design Submittal Review Procedure
27. Discipline Conditions Procedure
28. End to End Design Process
29. Design Submittal Review Procedure
30. Quality Audits- External Procedure
31. Technical Queries & RFI Procedure
32. Critical paths
33. Program/ project updates
34. Program flow charts
35. Meeting minutes
36. Procurement flow charts
37. Risk management
38. plans
39. Quality management plans
40. Document control plans
41. OBO contract compliance
42. Constructability review matrix
43. Architect/ engineer/ design consultants RFQs & RFPs
44. Construction manager RFQs & RFPs
45. Geospatial Data Standards & Procedures
46. CAD & BIM manuals
47. Communication plans
48. Newsletters
49. Flowchart showing process of establishing Component Guaranteed Maximum Price (CGMP)
50. Flowchart showing process of establishing Guaranteed Maximum Price (GMP)

TABLE 2 illustrates the number of folders and files managed by the executive Program Manager. There were 22,191 separate folders, and 193,164 individual files from project inception of March 2015 to December 14, 2020.

TABLE 2: PROGRAM MANAGER DELIVERABLES FROM 3/2015 - 12/14/2020			
BDO NO.	EXECUTIVE PROGRAM MANAGER DESCRIPTION	FILES	FOLDERS
1	00 Network Guidelines	1,026	72
2	01 ITRP Administrative & Operations	1,830	598
3	02 Contracts (Working Files)	0	0
4	03 Project Controls	21,517	3,714
5	04 Projects	148,980	16,041
6	05 HSSE	160	12
7	06 Quality	19,420	1,570
8	07 ITRP Current Construction Documents	68	117
9	08 Pay applications (Finance Dept Controlled)	0	0
10	99 - City of Houston March 2020	163	67
TOTALS		193,164	22,191

- Note: Manager of Program Controls (TT) advised No. 3 (Contracts) are working files, and No. 9 (pay applications) are controlled by the Finance Department.

Turner & Townsend Inc. is the executive Program Manager for the ITRP program. Therefore, any program deliverable requirement is ultimately their responsibility to manage and to provide to ITRP Stakeholders as necessary. BDO reviewed Turner & Townsend's executed agreement (1. Turner & Townsend Executed Agreement 4600013156.pdf) and extracted the 31 executive Program Manager deliverable requirements stated in the Overall EPM Scope of Services (please see below **EXHIBIT B – EXECUTIVE PROGRAM MANAGER SCOPE OF SERVICES**).

Turner & Townsend Inc. provided a document that highlights each scope of service, description of the deliverable, and sample documentation. See attachment "**EXHIBIT C – PMSS SCOPE OF SERVICES**". This exhibit includes 35 scope line items which accomplishes and exceeds the 31 of requirements listed in their executed contract. BDO observed documents that corresponded to each of the 31 contractual executive Program Manager deliverable requirements.

Based on our review of the contract requirements and deliverables provided, appears Turner & Townsend Inc. is providing all scope of services identified in their scope of services. BDO observed and reviewed all sample deliverables provided for each scope area. We observed documents included, but not limited to program/ project scope, budget, schedule, organizational charts, project controls, project management plans, various stakeholder presentations, construction scopes, milestone tracking, other tracking logs, change management procedures, project updates, program flowcharts, meeting minutes, CGMP/ GMP documents, procurement flow charts, risk management, safety, quality management, OBO contract compliance, design updates, architect/ engineer/ design consultantsRFQs & RFPs, Geospatial Data Standards & Procedures, CAD & BIM manuals, communications plans, newsletters, etc.

Program Manager Expenditures

BDO observed contract documents and 18 invoice packages from each Program Manager for a total of 54 invoices reviewed. BDO reviewed \$22,385,268.40 of Program Manager amounts invoiced (27% of the total invoiced amount of \$83,034,162.32; amount through audit scope).

BDO's preliminary observations pertained to the following risk items:

- Unable to validate employee job titles, and
- Hourly rates exceeding agreed upon billing range.

BDO worked with the executive Program Manager (TT) to discuss and resolve all of BDO's preliminary observations pertaining to Program Manager invoices. The cause of preliminary observations is addressed in "Finding 1" in the "**FINDINGS AND RECOMMENDATIONS**" section below.

TABLE 3 lists each Program Manager, number of invoices reviewed, and the amount of Program Manager invoices reviewed by BDO:

TABLE 3: INVOICES AND AMOUNTS REVIEWED				
PROGRAM MANAGER	NO. OF INVOICES	AMOUNT REVIEWED	TOTAL INVOICED	PERCENT REVIEWED
Turner & Townsend Inc.	18	\$ 2,156,798.32	\$ 8,045,139.81	27%
Houston Aviation Alliance	18	\$ 6,619,699.50	\$ 23,234,696.08	28%
Parsons & HJ Russel IAH Team	18	\$ 13,608,770.58	\$ 51,754,310.43	26%
TOTALS	54	\$ 22,385,268.40	\$ 83,034,146.32	27%

FINDINGS AND RECOMMENDATIONS

Finding #1:

The finding relates to the Program Management Support Services (PMSS) contracts, and not the Executive Program Management (EPM). Regarding Houston Aviation Alliance, and Parsons & HJ Russell IAH Team – During invoice testing, in certain instances, we were unable to validate employee job titles and/or hourly labor rates appeared to exceed the agreed-upon billing ranges. This issue is likely caused by turnover for individuals providing program management support services.

Currently, when an employee changes job titles or there is a new employee hired after a contract has been executed, the job titles are formalized on Letter of Authorizations (LOA), requested by executive program management team and authorized by HAS Director or Chief Development Officer per Delegation of Authority; and Personnel Authorization Forms (PAF) requested by executive program management team and authorized by HAS Director or Chief Development Officer per Delegation of Authority.

Unfortunately, ITRP invoice requirements do not / have not stipulated LOAs or PAFs to be included in the invoice supporting documentation. Therefore, when BDO was conducting review of Program Manager payment invoices, we did not initially observe any LOAs or PAFs, although LOAs and PAFs were provided on request to clarify observed changes.

Ultimately, it was discovered that all individuals and individual rates were approved by the HAS Director, we just didn't see evidence of this in the payment invoice packets, and the contract is silent regarding the LOA/ PAF process.

Risk Rating: Low

Background: The Program Management Support Services (PMSS) executed contract states the following in 3.4.1, "*Consultant's initial Project Team is identified in Exhibit A-1. Consultant shall not modify membership of the Project Team without prior written approval from the Director.*"

The practice of utilizing PAFs is not specifically specified in the Program Management Support Services contracts. In addition, LOAs and PAFS were not included in the Program Management Support Services invoice packets.

Recommendation: We recommend Houston Airport System (HAS) consider formalizing the process of utilizing LOAs and PAFs by incorporating necessary language in the **"Agreement for Program Management Support Services"**. In addition, LOAs and/or PAFs should be included in consultant payment invoice packets to help alleviate any confusion around whether an individual is authorized and if a rate is authorized.

Management Response:

ITRP Response: The Personnel Approval Form (PAF) form and process is an HAS approved process that was approved for use by HAS Finance and HAS Internal Audit (IAD) in December 2016 and June 2020 and utilizes the same level of governance approval as the LOA process. The PAF is an internal governance process used to manage the approval of the LOA.

The following summarizes the ITRP LOA and PAF processes presented to HAS IAD:

1. The LOA approves scope and commits Budget for execution of services
2. The PAF administers changes to services, already approved within an executed LOA
3. The LOA is periodically reconciled and formally closes approved scope of services

On the second aspect of the recommendation; this is noted. It should also be noted that every billable PMSS labor hour is captured within the ITRP Timesheet System, which includes the current Exhibit B approved ITRP role and rate and used for cross checking and validation of invoiced amounts.

Internal Audit Response - In the meeting held in December 2016, Internal Audit understood the PAF allowed ITRP to hire new employees more efficiently. ITRP explained that the PAF would be reconciled to the LOA at the completion of the approved services. Internal Audit was not under the impression that the PAF was being used in-lieu of the approved rates in the executed LOA. In keeping with contract compliance, the LOA should've been amended with the increased rates for clarity and consistency.

Responsible Party: Houston Airport System (HAS) Infrastructure Division

Estimated Date of Completion: September 15, 2021

BDO COMPLIANCE STATEMENT

We conducted this performance audit in accordance with Generally Accepted Government Auditing Standards and in conformance with the International Standards for the Professional Practice of Internal Auditing and in conformance with Statements on Standards for Consulting Services of the American Institute of Certified Public Accountants. Those standards require that we plan and perform the audit to obtain sufficient and appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

BDO

By: _____



Date: 6/30/2021 _____

Acknowledgement Statement

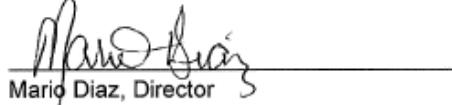
Date: June 24, 2021

Chris B. Brown
City Controller
Office of the City Controller

SUBJECT: IAH TERMINAL REDEVELOPMENT PROGRAM (ITRP) PROGRAM MANAGER
CONTRACT PERFORMANCE AUDIT

I acknowledge that the management responses contained in the above referenced report are those of the Houston Airport System management. I also understand that this document will become a part of the final audit report that will be posted on the Controller's website.

Sincerely,



Mario Diaz, Director
Houston Airport System

EXHIBIT A – ITRP 2015 TO 2018 SIGNIFICANT EVENTS

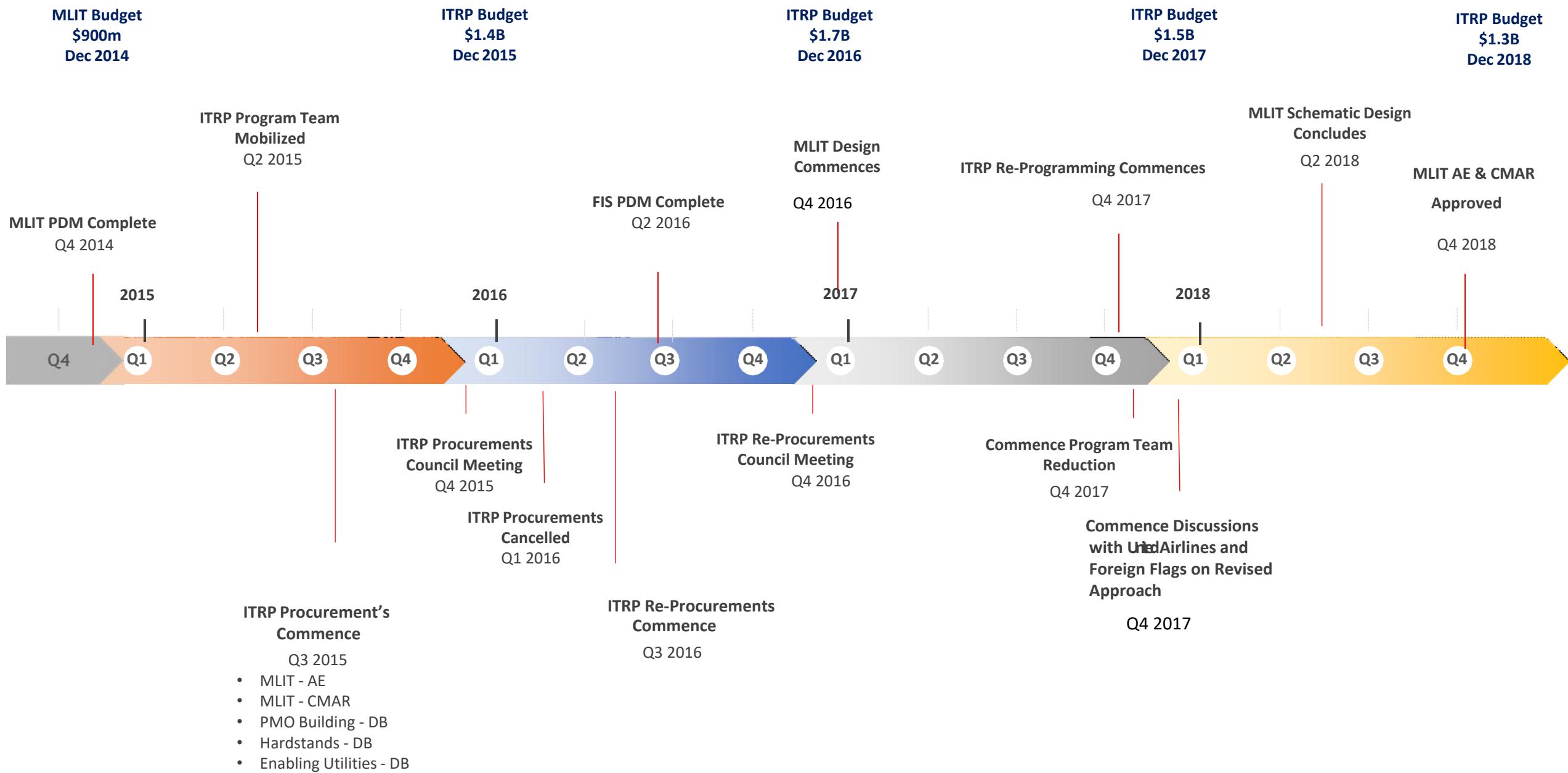


EXHIBIT B – EXECUTIVE PROGRAM MANAGER SCOPE OF SERVICES

"SCOPE OF SERVICES- EXECUTIVE PROGRAM MANAGER" - DELIVERABLES REQUIREMENTS		
BDO NO.	TITLE	SCOPE DESCRIPTION
1	Gain the buy-in of the HAS executive management	Gain the buy-in of the HAS executive management team as well as internal and external stakeholders to lead the Program;
2	Coordinate all work to be undertaken	Coordinate all work to be undertaken with HAS divisions, City of Houston (COH) departments and external stakeholders (such as airlines, concessionaires) as necessary for the timely and quality execution of the Program;
3	Engage and collaborate with airlines and other airport stakeholders	Engage and collaborate with airlines and other airport stakeholders to minimize disruption of operations and services throughout the duration of the Program;
4	Program Execution Plan	Develop and recommend program execution plan complete with program scope, schedule, budget and level of quality expected;
5	Develop and recommend the work breakdown structure;	Develop and recommend the work breakdown structure;
6	Gantt chart	Create a Gantt chart of sufficient detail to explain overall sequence of elements and timing to completion of each and the overall Program;
7	Program budget	Develop and recommend a Program budget with design-to-budget estimates for each design package;
8	Program organization structure	Develop and recommend a Program organization structure, such as systems, services and staff to be provided by the PMSS teams, as an integrated team to manage and execute the Program; Thoroughly vet and recommend each and every manager to join the Program team;

"SCOPE OF SERVICES- EXECUTIVE PROGRAM MANAGER" - DELIVERABLES REQUIREMENTS		
BDO NO.	TITLE	SCOPE DESCRIPTION
9	Review and recommend any changes to systems and processes	Review and recommend any changes to systems and processes needed to successfully execute the Program, implementing changes and any new systems/processes required;
10	ITRP controls, performance and management metrics, and related reports	Develop and recommend a set of ITRP controls, performance and management metrics, and related reports to assure all activities proceed within agreed upon scope, on schedule, within budget, and at quality levels agreed to;
11	Program Master Schedule	Develop and recommend the Program Master Schedule, sequencing, interface milestones and critical path elements;
12	Program budget, cash flow and financialplan	Develop and recommend the Program budget, cash flow and financial plan;
13	Program design definition documents	Manage the development of Program design definition documents. Review, critique and submit for approval all Program Definition Documents;
14	Manage Program estimating and life cycle	Manage Program estimating and life cycle {total cost of ownership} asset costing, including contingency methodology and estimate evolutionthrough program lifecycle;
15	change management and impact mitigation strategies	Develop and submit for approval change management and impact mitigation strategies throughout the life of the Program. This includes, but is not limited to scope, cost, schedule control and cost reduction initiatives. Establish protocols for configuration management and change management;
16	Management of Risk and Opportunities	Manage risk and opportunity identification, assessment and mitigation. Develop the policies and procedures for Management of Risk and Opportunities, incorporate into the Change management process as required;

"SCOPE OF SERVICES- EXECUTIVE PROGRAM MANAGER" - DELIVERABLES REQUIREMENTS		
BDO NO.	TITLE	SCOPE DESCRIPTION
17	Program Quality Plan and the Program Safety Plan	Develop the Program Quality Plan and the Program Safety Plan, establish an overall quality and safety culture for the Program;
18	Document Management Plan, and a Program Information Management Plan	Develop and implement a Document Management Plan, and a Program Information Management Plan, for all phases and entities within the Program;
19	Develop program phasing and execution strategy	Develop program phasing and execution strategy to achieve objectives for packaging of all Program contracts, coordinating with HAS Supply Chain Management (SCM);
20	Develop and recommend the program delivery method	Develop and recommend the program delivery methods to achieve program objectives for packaging all Program contracts, coordinating with HAS SCM;
21	CADD and BIM	Establish CADD and BIM framework, environment, policy and procedures;
22	Manage every construction project	Manage every construction project, holding to approved scope, budget, schedule and quality;
23	Coordinate at a program level with authorizing agencies for required permitting actions;	Coordinate at a program level with authorizing agencies for required permitting actions;
24	Construction Management guidelines, policy and procedures	Develop the Construction Management guidelines, policy and procedures;
25	Review and forward for approval all commissioning and activation activities of the Program prior to requested Certificates of Occupancy of facilities	Review and forward for approval all commissioning and activation activities of the Program prior to requested Certificates of Occupancy of facilities. Ensure independent third-party commissioning plans are developed and executed prior to requesting a Certificate of Occupancy (COO). Working with the HAS Operations, Readiness, Activation and Transition (ORAT Team, identify, schedule and support ORAT activities in the integrated

"SCOPE OF SERVICES- EXECUTIVE PROGRAM MANAGER" - DELIVERABLES REQUIREMENTS		
BDO NO.	TITLE	SCOPE DESCRIPTION
		program schedules.
26	Review all closeout documents at the end of the Program assignment	Review all closeout documents at the end of the Program assignment, ensuring that all documentation has been submitted and approved;
27	Develop and recommend strategy for M/WBE participation;	Develop and recommend strategy for M/WBE participation;
28	SOW/ RFQ/ RFP	Draft the scope of work to be incorporated in requests for qualifications/proposals for all design and construction packages forward of notice to proceed (NTP);
29	Communications Plan	Advise and assist HAS in developing a Communications Plan, including public relations and media strategy, for the ITRP;
30	Complete the design and build the PMO Building	Complete the design and build the PMO Building to accommodate the ITRP management team; and.

"SCOPE OF SERVICES- EXECUTIVE PROGRAM MANAGER" - DELIVERABLES REQUIREMENTS		
BDO NO.	TITLE	SCOPE DESCRIPTION
31	Perform any additional duties as directed by HAS	Perform any additional duties as directed by HAS for the overall success of the ITRP or other Programs as may be assigned.

EXHIBIT C – PMSS SCOPE OF SERVICES

Program Management Support Services - Scope of Services

This narrative scope of services is an excerpt of the Scope of Services contained in the Houston Airport System (HAS) Request for Qualifications (HAM-PMSS-2015-018) for Program Management Support Services for George Bush Intercontinental Airport (IAH) IAH Terminal Redevelopment Program (ITRP) and reflects the high level scope of service expectations of the Program Management Support Services (PMSS) team(s).

In general, the PMSS will report to, and take direction from, the Executive Program Manager (EPM). It is anticipated that more than one PMSS team will be selected and utilized to provide Project Management, Design Management, and Construction Management (PM/DM/CM) services. Each PMSS team shall be capable of providing the systems, services and staff to support each of these management functions.

Each PMSS firm will be responsible for providing the systems, services and staff for a broad spectrum of PM/DM/CM activities expected from a program of this magnitude and complexity. The PMSS will be required to perform assignments and tasks as directed by the EPM and to supplement HAS staff for the duration of a given assignment. It is not the intent of HAS to create a **stand-alone, full service, duplicative organization**.

Overall PMSS Scope of Services:		

This Scope of Services is not intended as an exhaustive list of individual responsibilities that may be performed during the conduct of the ITRP or other HAS designated capital projects.

Rather, it is intended as a representative list of responsibilities and reflects HAS' standing expectations of performance.

As requested by, and in support of, the EPM:		Sample Documents Provided
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#	Scope	Description of Deliverable	Document Names
1	Successfully manage, as measured through on schedule completion, within budget, within the approved scope , and delivering the level of quality agreed upon, the execution of the ITRP and other capital programs as may be assigned;	The primary program measurement deliverable is the Baseline. The program established the original baseline in January 2016, then conducted a re-baseline in May 2018, and again in Feb 2020. These considered the scope, budget and schedule to deliver the program, including changes, issues, risks and opportunities in design & delivery. Also provided is the Change Document used to establish the Enabling Utilities Landside (EUL) Design-Build Contractor Phase 1 Baseline.	ITRP Baseline Summary - 20160126_Final ITRP Rebaseline Summary - 20200302_FINAL D02-EUL-DB Pre-Construction Baseline Schedule R-20190501
2	Develop and support the organization structure of systems, services and staff to successfully manage the Program(s);	The ITRP organization (staff) has been through multiple rounds of development and change to respond to the needs of the program. The systems and processes to deliver the projects were designed and implemented at the onset of the program in 2015 / 2016 and as live documents, have been frequently updated since being written. Role Assignment Documents (RAD's) have been established to document actual role details, responsibilities and interfaces.	ITRP Organization Chart - Program_20201102 ITRP Program Controls RADs - Nov 2020 ITRP Systems Selection Report v4.0 FINAL
3	Develop the program and project level teams by proposing only qualified and	As staffing needs are identified by the requirements of HAS and/or the Program, the	PMT Status Update 20171024 v2.3 ITRP RRF - Office - Field Eng - ITRP 20200901

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	experienced individuals for the role being proposed;	EPM requests resources from the PMSS with typical skills / experience required. This is captured in a Role Request Form (RRF). The PMSS source, interview and propose candidates to the EPM. The EPM request interviews and vet candidates for the approval of HAS.	HAA Resume, ITRP Proj Eng, Rosa Castillo
4	Develop the scopes of work to be included in design and construction packages forward of receiving the notice to proceed dates as requested by the EPM;	The PMT has produced all of the Architect Engineer (AE), Design Build (DB) and Construction Manager at Risk (CMAR) scopes of work for the ITRP contracts. These are included in the City contracts as "Exhibit B"	Exhibit B - EUL DB Scope Exhibit B - FIS AE Scope Exhibit B - FIS CMAR Scope Exhibit B - MLIT AE Scope Exhibit B - MLIT CMAR Scope Exhibit B - PMO DB Scope
5	Develop and maintain the Program Master Schedule , developing sequencing, interface milestones and critical path elements as requested by the EPM;	With each Program Baseline exercise (2015/16, 2018 and 2020) we have represented program scope, phasing, interfaces and all necessary elements to provide a tool to provide visibility and manage deviances.	ITRP Proposed Rebaseline Schedule (RB02) ITRP - Milestones Tracker Sheet - Feb 2020 ITRP - Master Schedule - Update April 2020 ITRP - Master Schedule - Update April 2020_EUL ITRP - Master Schedule - Update April 2020_MLIT ITRP - Master Schedule - Update April 2020 _FIS
6	Develop and maintain the Program budget, cash flow and financial plan as requested by the EPM;	The ITRP master schedule provides the time phased program baseline budget. Actual costs to date and forecast cashflows of anticipated expenditures can then be overlaid. In addition, the time phased funding plan (when the City	ITRP Rebaseline Summary - 20200302 v2.0 ITRP Finance Update 20201021

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		provides appropriated funds) is overlaid to provide visibility of funding vs budget vs cashflow distribution.	
7	Develop and produce Gantt charts with sufficient detail to explain the overall sequence of project elements and timing to completion of each element and the overall project;	The Master schedule is represented in a graphic Gantt chart report for all of the ITRP project scope. This provides a simple but comprehensive single-page view of the program.	ITRP - Master Schedule - Update April 2020 ITRP - Onboarding Presentation Schedule Management - - FIS - V2 ITRP - Summary Schedule_Option_RevR 202005
8	Develop project budgets with design-to-budget estimates for each design package;	Each project has a design to budget cost estimate that is referred to in the City contracts as the "Cost of the Work". The responsibility to design to budget exists for both the AE, the Design Build Contractor as well as the Contractor (CMAR).	ITRP CoW - Design to Budget (Oct 2020) FIS - Weekly VE & Cost Pressures Log 20200820 MLIT - Weekly VE & Cost Pressures Log 20201006
9	Develop revised systems and processes as requested by the EPM. Implement changes and new systems/processes as requested by the EPM;	A systems evaluation, specification and implementation was conducted at the program outset in 2015. This is attached. The systems interface diagram is a visual graphic of the inter-relationships between the systems. Also attached is a report on the status of all systems implemented and/or identified.	ITRP Change Management Procedure R01 ITRP Claims, Dispute and DAR Process ITRP Deficient Conditions Instructions ITRP Deficient Conditions Procedure ITRP Discipline Management Plan Interface Chart ITRP End to End Design Process Flow ITRP In-Progress Design Submittal Review Procedure ITRP Quality Audits-External Procedure ITRP Tech Queries & RFIs Procedure
10	Develop project controls, performance and management metrics and related reports to assure all activities proceed on schedule, within scope, within budget and at quality levels agreed to and as requested by the EPM;	Appropriate program and project controls reporting metrics are provided as an example of various levels of reporting to help present data for awareness and decision making.	ITRP Sponsor Board - ITRP and Project Updates Week 20200909 PMO - KPI- Framing- 20180728 PMO - KPI- Glazing- 20180728 PMO - KPI- Roof- 20180728

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			PMO DB Critical Paths - 20180728 PMO DB Detailed Schedule - 20180728 PMO Sub Contract With Variance-20180728 PMO Submittal Log With Variance -20180728
11	Develop and maintain the primary breakdown of work (WBS) into a comprehensive and consistent structure for the program. Develop project level detail of the WBS;	The program is represented by the Work Breakdown Structure into sub-programs, projects and sub-projects. The FIS Project and its sub-projects are provided as an example of how scope is broken down into packages of work.	ITRP-WBS_Revised 20200818
12	Establish sustainable design and construction practices , principles and protocols;	The PMT has produced sustainable design and construction practices, principles and protocols. These are written into the design contracts as well as in the ITRP Plans and Procedures	EUL DB Scope FIS AE Scope FIS CMAR Scope MLIT AE Scope MLIT CMAR Scope PMO DB Scope ITRP Design Management Plan ITRP Construction Management Plan ITRP - Sustainable Design and Construction Practices - Construction Mgmt Plan ITRP - Sustainable Design and Construction Practices - Design Mgmt Plan
13	Develop and maintain design definition documents ;	The PMT has produced sustainable design and construction practices, principles and protocols.	EUL DB Scope FIS AE Scope MLIT AE Scope

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		These are written into the design contracts as well as in the ITRP Plans and Procedures	ITRP Design Change Definition MLIT AE Amendment No 1 - Rev3.0 - 10.23.2018 (Modified Approach)
14	Manage change for all projects and contracts;	The PMT has documented plans and procedures for all aspects of Program Governance, which incorporates scope, time and cost change. Pre and Post Contract change is managed on a daily basis, with a weekly Change Review Board to review and progress the items.	ITRP CGMP GMP Approval Process- 20200515 ITRP Contractor Procurement Process ITRP Design Change Management Process Flowchart ITRP Change Management Process Flow Chart
15	Maintain the configuration control in all systems;	Scope, time and cost have been "configured" by the PMT by managing against a formal performance measurement baseline. Baseline Control is a sub-set of the Schedule Management Plan.	PMT-000122 20180202 ITRP Schedule Management Plan R01 ITRP IBR Plan - 20170420
16	Lead the team in project risk and opportunity identification , assessment and mitigation for the Program;	ITRP have identified best practice processes and procedures for managing risk and opportunity.	PMT-000118 20191121 ITRP Risk Management Manual IFI R01 Appendix A PMT-000148 Risk Register Template Appendix B PMT-000148 Risk Register Template MLIT - Weekly VE & Cost Pressures Log 20201006 FIS - Weekly VE & Cost Pressures Log 20200820
17	Establish and maintain quality plans and safety plans for all projects;	ITRP have identified best practice processes and procedures for managing risk and opportunity.	EUL DB Quality Plan EUL DB Safety Plan FIS AE Safety Plan FIS AE Quality Plan FIS CMAR Quality Plan FIS CMAR Safety Plan MLIT AE Quality Plan MLIT AE Safety Plan MLIT CMAR Quality Plan MLIT CMAR Safety Plan

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			ITRP Quality Management Plan ITRP HSSE Management Plan
18	Establish and maintain Program documentation and accuracy of records;	The PMT have provided the people, processes and systems to manage all forms of contract communications and project records to deliver ITRP. These are captured in the Document Management Plan and are implemented within all parts working on ITRP.	20170525 PMT-000124 ITRP PMS Document Control Plan R0 - IFI ITRP Doc Control - Examples of Version Control
19	Implement the contract compliance monitoring and reporting in accordance with HAS diversity requirements, support the achievement of M/WBE participation in all contracting opportunities;	The ITRP OBO Contract Compliance Office (ICO) is committed to cultivating a competitive and diverse economic environment in the Houston Airport System's (HAS) IAH Terminal Redevelopment Program (ITRP) by promoting the success of small businesses and developing the ITRP's workforce, with special emphasis on historically underutilized businesses and disenfranchised individuals.	ITRP Mgmt Plan - OBO Contract Compliance 05 - 20180914
20	Develop all project reports in accordance with Program requirements;	A selection of project reports, providing a range of levels of reporting are provided for your review.	PLW-000004 PMO - Monthly Progress Report - March 2017 AGJV-002911 - Monthly Report November 2019 BMcD-002781 - March 2020 Project Monthly Status Report HP-002719 January 2020 Monthly Progress Report ITRP DRC - CIRC 20201204_ITRP Update rev3.0 ITRP Sponsor Board - ITRP and Project Updates 20200909 ITRP Exec Dashboard 20170815 Ver 1.1

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21	Support HAS in the implementation of the procurement strategy and plan ;	Provided for your review is a procurement tracker / schedule developed by the PMT to support HAS in the procurement of ITRP contracts during the City instructed re-procurement of ITRP contracts.	ITRP - Procurement Strategy & Plan_2020
22	Develop the scopes of services/work and selection criteria for Program-related procurements, supporting HAS Supply Chain Management as necessary;	Provided for your review is a sample of the selection criteria and scoring metrics developed by the PMT to support HAS / Supply Chain Management in the procurement of ITRP contracts.	ITRP - Evaluation and Selection Criteria EUL Exhibit B - Scope of Services MLIT Modified Approach
23	Execute design management assignments for design packages, holding to approved scope, budget, schedule and quality	The PMT have developed various contractual requirements for the designers to provide. These are managed / monitored by the Program Management Team at various interventions to ensure compliance and timeliness of the designers deliverables. For example, the Subject Matter Expert Working Group (SMEWG) design presentations. The Design Review Committee and Construction Impact Review Committee (CIRC)	SMEWG Presentations 20201002 Fentress Design Meeting Minutes 20200920 Fentress Design Schedule Updates September Fentress monthly progress report 46 September 2020 Fentress monthly progress report 46 September 2020 Matrix ITRP DRC - CIRC 20201204_ITRP Update rev3.0
24	Establish, implement and maintain the CADD and BIM framework , environment, policy and procedures;	The PMT have developed a program Building Information Modeling policy, together with policies and procedures. This policy operates within the overall City of Houston CAD and GIS standards.	517461 - HAS CAD Standards - Geospatial Data Standards ITRP - CAD and BIM Frameworks - Manual 202005
25	Perform constructability reviews and provide recommendations for all assigned projects;	The PMT provide constructability reviews and provide recommendations for all assigned projects within a formal Comment Review	BHS 1 Constructability Review Matrix BHS 2 Adv Constructability Matrix D Helix & DE Garage Demolition Constructability Review Matrix

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		Matrix (CRM). A sample is provided for your review.	DE Garage Utilities Relocation Constructability Review Matrix PP2 Constructability Review Matrix RIDF Constructability Review Matrix Toll Plaza-Combined Review Constructability Matrix
26	Manage construction assignments for every construction project, holding to approved scope, budget, schedule and quality ;	The PMT have documented all necessary requirements and construction assignments for the contractor to deliver. These are contained with either the contract, exhibit B - scope of services, or the division 00 documents, or within the core contract agreement. These tasks are different, for different projects, as well as at different times of each contract. All construction assignments are combined together into the contractor's Schedule of Values (SoV), which are summary deliverables, against which the contractor is paid.	HP KPI - 20201009 PMO - KPI- Framing- 20180728 PMO - KPI- Glazing- 20180728 PMO - KPI- Roof- 20180728 HP-002748 20200326 OAC MTG - Minutes AGJV-003146 20200304 OAC Meeting
27	Review all project permitting efforts and documentation developed by the various contractors for compliance and completeness;	The Houston Airport System (HAS) retains an "in-house" permitting and plan-review team. This team is referred to as the Building Standards Group (BSG). The PMT work closely with this team to coordinate the submission, review and permitting of project scope. HAS also operates a project readiness process named the Tenant Improvement Plan, known as the "TIP Process". PMT staff from document control, office engineering, design/project / construction management all are involved and support both the BSG and TIP Processes.	20200427 TIP BSG Non-PWE Work Process Flowchart 20200501 TIP BSG PWE Work Process Flowchart 20200616 TIP BSG Non-PWE Work Process Flowchart 20200914 PMT-003810 BHS 2 Inspection and Testing Matrix (response) 20200914 PMT-003832 BHS 1 ITM (response) 20200914 PMT-003833 D Helix-DE Garage Demo ITM (response) 20200914 PMT-003834 DE Garage Utilities Relocation ITM (response) 20200914 PMT-003835 Toll Plaza Garage C Traffic Reroute ITM (response)

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			ITRP TIP-Permit Log
28	Implement the Logistics and Phasing Strategy . Review and recommend all project logistics and phasing plans developed by the various contractors, collaborating with all appropriate stakeholders and service providers to minimize impacts to operations;	The PMT have developed an ITRP Logistics and Construction Phasing plan, which is a live document, updated as the projects develop. The PMT has also written and included requirements within the DB and CMAR contract document, for the necessity to plan and submit logistics and phasing information. The DB contractors and CMAR have also submitted logistics and phasing plans which are required at certain intervals throughout their performance of the works.	2019 0627 - AG ITC Fence & Logistics Plan_rev08 FINAL HP Trailer Construction Work Plan HP Trailer CGMP 2 Matrix
29	Provide support services, as requested, for Program communications and media protocols and operations;	ITRP has appointed a Communications Manager to handle all ITRP related communications. Please see attached communications plan and sample material that they have produced as a role of the PMT.	HAS ITRP Communications Plan ITRP News Fall 2020 Council Approves Contracts, Funding for ITRP External - \$1.3 Billion ITRP Well Underway at Bush Airport External - Demo Work Reaches Milestone at IAH HAS Provides ITRP Update to Houston Economic Development Council Houston Airports Provides ITRP Update to North Houston Association ITC Underway at Bush Airport ITRP Plows Through Major Deconstruction Milestone Legacy of Mickey Leland Resonates Through ITRP Telecommuting Ends and ITRP Staff Returns to IDO External - ITRP Work Ongoing at Bush Airport

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30	Analyze and review construction progress reports and incorporate into project level status reports, requesting recovery plans as necessary;	The PMT have documented requirements for construction progress reporting and have included these into the DB and CMAR contracts as well as into the exhibits, such as Exhibit 00 requirements. These reports are received, reviewed and commented on by the PMT on a monthly basis, as they are received by the designers and contractors.	HP - May Monthly Progress Report 2020428
31	Lead the Claims Management process for all ITRP projects and make recommendations on the resolution of claims;	There have been no claims on ITRP to date. The ITRP PMT has deliberately included best practices, pre-emptive contract management language into the AE, DB and CMAR contracts to seek other means of mitigation or resolution, as opposed to engaging with a vendor in a claim (time or cost) situation.	ITRP Claim, Dispute and DAR Process 20191024
32	Complete the design and/or construction of the ITRP PMO Building as may be requested by the EPM;	The project reached substantial completion and was occupied in April 2019.	PN821 - PMO Building; Substantial Completion Certificate 20190429
33	Prepare and deliver presentations and briefings as may be requested;	A substantial amount of project level consultations, meetings, presentations, related remote site visits and other duties have been performed by the PMT for ITRP and at the request of HAS in related areas. <u>Please state any specific deliverables / areas that you wish to review.</u>	-

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34	Lead and facilitate project level consultations, meetings, presentations, related remote site visits and other duties as may be requested;	A substantial amount of project level consultations, meetings, presentations, related remote site visits and other duties have been performed by the PMT for ITRP and at the request of HAS in related areas. <u>Please state any specific deliverables / areas that you wish to review.</u>	-
35	Perform any additional duties as directed by HAS for the overall success of the ITRP or other capital programs as may be assigned.	Additional duties have been provided on an as needed basis. Any specific deliverables can be provided on request.	-

City Auditor

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