

San Antonio Airport System Strategic Development Plan

2021 AIRPORT MASTER PLAN

MASTER PLAN UPDATE

CHAPTER 6 – IMPLEMENTATION AND FUNDING PLAN

AUGUST 2022



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6 IMPLEMENTATION AND FUNDING PLAN

6.1 INTRODUCTION

Chapter 5: Alternatives Development and Evaluation presented the preferred airport development plan for the San Antonio International Airport (SAT or the Airport). The implementation planning process refines the preferred airport development plan by determining the component projects and the timing of the individual projects that will be needed to execute the overall plan. This chapter presents the methodology and process that was used to develop the implementation plan and project phasing. In addition, this chapter provides information regarding the funding sources that have been identified for the projects, as well as assumptions that were used to assign specific funding sources to each project.

6.1.1 IMPLEMENTATION PLAN GOALS

At the outset of the development of the implementation plan, the San Antonio Airport System (SAAS) intended the phased development met the following goals.

- **Incorporates SAAS prioritization criteria** – SAAS has criteria for prioritizing capital projects. These criteria include project that will impact or are dependent on enhancing terminal gate capacity, will preserve airfield capability and operations, or sustain vital infrastructure. These priorities were incorporated into the development of the phased airport development plan.
- **Development of an implementable plan** – the plan should not be difficult to implement, that is the projects should make sense, have a logical sequence, and the SAAS should have the reasonable capacity to complete them. Thought was given to the overall “load” of projects resulting from the phased development plan that are planned to be implemented at the same time.
- **Projects would be implemented efficiently** – the plan was divided into projects that are implemented in reasonable pieces. For instance, the terminal functional area projects are not divided into projects that add only two gates at a time, nor is it so large that it results in the closing of the terminal all at one time, resulting in no available gates.
- **Projects completed when projected demand warrants** – for projects that are demand-driven, they should be completed in a timeframe that is ahead of the demand. The forecast adjusted for the COVID-19 pandemic was used to determine the timing of projects.
- **Projects completed as needed to make way for other projects** – certain projects, while not necessarily needed for demand, would need to be completed prior to others. These projects are often referred to as enabling projects.

This implementation plan represents the goals, objectives, and strategies developed through the master planning process. As projects are refined and as SAAS considers new and changing circumstances, the order and scope of projects may change. This plan serves as a springboard for those next steps.

6.1.2 CHAPTER OVERVIEW

The remainder of the chapter is divided into the following sections. Each section contains details regarding the methodology and analysis used to create the implementation and funding plan, as well as the details regarding the implementation plan for each airport functional area.

- Implementation Plan Process
- Airfield
- Terminal
- Multimodal Access
- Support Facilities
- Phased Airport Development Plan/Composite Plan
- Proposed Funding
- Next Steps

6.2 IMPLEMENTATION PLAN PROCESS

The analysis prepared for this chapter included conducting multiple workshops for each airport functional area (airfield, terminal, multimodal access, and support). During the workshops, a process was followed to develop the implementation plan for the preferred development plan or the phased airport development plan. The bullets below describe the steps in the process, followed by **Figure 6.2-1** that graphically depicts this process.

- **Divide preferred development plan into functional areas** – First the preferred airport development plan was divided into functional areas, like those discussed in *Chapter 5: Alternatives Development and Evaluation*. These categories included airfield, terminal, multimodal access, and support.
- **Identify specific projects** – for each functional area, specific projects were identified from the preferred airport development plan.
- **Develop cost estimates** – for each project developed in each functional area, cost estimates were developed, including environmental, design, and construction costs. A portion of the design costs was then allocated for advanced planning and project programming.
- **Determine project sequence** – in this step, it was determined whether the project would occur in the short, mid, or long term, based on the need for the project and other factors as described above. The timeframes for this study include the following:
 - Near term (2023-2025)
 - Mid term (2026-2030)
 - Long term (2031-2040)

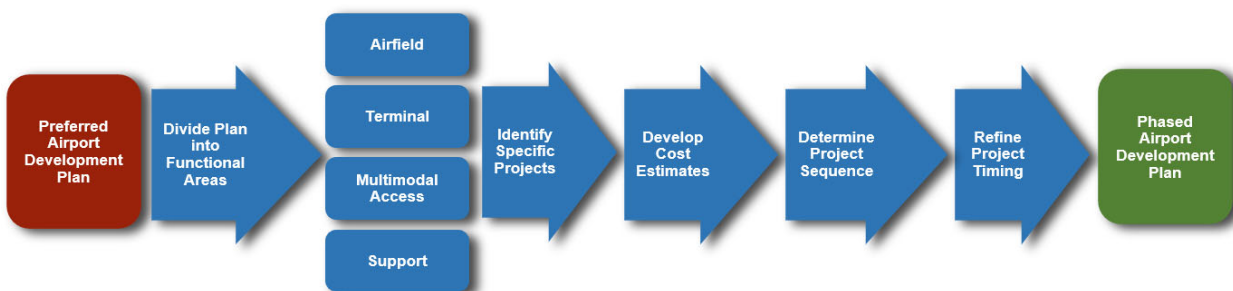
— Long term+ (Post-2040)

- **Refine project timing** – to develop phasing for the projects, priorities were given to some projects over others based on being demand driven or being an enabling project for another project. In addition, timelines for each phase of a project (i.e., planning/programming, environmental, design, and construction) were developed.

For certain functional areas and/or specific projects, phasing alternatives were developed. For instance, for the preferred terminal plan, projects and costs were developed based on the two phasing alternatives, followed by a workshop to present the advantages and challenges of each phasing alternative. These workshops resulted in the selection of a preferred phasing plan. Subsequent to the workshops, refinements to the phasing plans were made based on SAAS input.

- **Phased airport development plan** – each of the functional areas were then combined to create the phased airport development plan, or composite airport development plan. In some cases, projects were identified and combined to create potential programs (i.e., a group of complementary projects) that could potentially be more efficient to implement in a group rather than separately.

Figure 6.2-1: Implementation Plan Process



Source: WSP USA, 2022.

Figure 6.2-2 presents the preferred airport development plan at the outcome of the Alternatives Development and Evaluation process.

Figure 6.2-2: Preferred Airport Development Plan



Source: WSP USA, 2021.

For ease of review and where applicable, graphic depictions of the preferred development plan for the major components of the preferred development plan (airfield, terminal, landside/multi-modal access, cargo) have been included in this chapter. In addition, some support functions described in *Chapter 5: Alternatives Development and Evaluation* have been combined with a larger functional area, such as terminal or airfield, as they are either part of another project for that functional area or the project directly complements another project in that functional area. Some parts of the preferred development plan were deemed to be outside the 2040 planning period and are not included in the overall implementation plan. **Table 6.2-1** lists what functional area these projects were placed under in the implementation plan.

Table 6.2-1: Support Facilities Projects Placed in Another Functional Area

SUPPORT FUNCTION	AIRFIELD	TERMINAL	SUPPORT FACILITIES	NO PROJECT*
Integrator Cargo			✓	
Aircraft Maintenance, Repair, and Overhaul (MRO)			✓	
Aircraft Rescue and Fire Fighting (ARFF)			✓	
Fixed Base Operators (FBO)			✓	
General Aviation (GA)			✓	
Air Traffic Control Tower (ATCT) **	✓			
Remain Overnight (RON)/Hardstand Parking Positions		✓		
Belly Cargo			✓	
Ground Support Equipment (GSE) and Line Maintenance			✓	
Airport Maintenance and Operations			✓	
Airport Administration				✓
Airport Police and Security				✓
Consolidated Distribution & Receiving Facility (CDRF)			✓	
Ground Runup Enclosure (GRE)	✓			
Isolation Pad				✓
Terminal Waste Disposal		✓		
Fuel Storage		✓		
Compass Rose				✓

Note:

* No construction project included in the SDP 20-year planning horizon.

** While the ATCT is a function that supports the airfield, the relocation of this facility, discussed later in this chapter, is to accommodate expansion of the Airport's terminal and parking facilities.

Source: WSP USA, 2022.

6.3 AIRFIELD

This section presents individual airfield projects and associated timing developed during workshops with SAAS. **Figure 6.3-1** depicts the preferred airfield plan selected during the Alternatives Development and Evaluation process.

Figure 6.3-1: Preferred Airfield Plan



Source: WSP USA, 2021.

The airfield preferred development plan was divided into projects that were prioritized based on the criteria reviewed with and agreed to by SAAS during the airfield phasing workshops. The following are the key objectives to determine the sequencing of the projects.

- Sequence projects in a logical order to meet demand and safety objectives, with the Runway 13R-31L safety enhancement project being the priority, followed by the Runway 13R high-speed taxiway exit to allow for additional airfield capacity.
- Ensure that SAAS has the financial ability and staff capacity to deliver the SDP projects, considering other airfield projects that were already included in the CIP and the scope of the future terminal expansion.

The preferred airfield plan consists of the following projects, with the high-level sequencing agreed to by SAAS:

- Extend Runway 13R End to 9,749 ft, including Taxiway G Extension** – Extension of the Runway 13R approach end and Taxiway G by up to approximately 1,250 feet. Includes regrading of the existing runway/Taxiway G to allow the slope of the runway extension to be compatible with the existing Approach Light System (ALS) light plane across U.S. 281 (ALS bridge is fixed and cannot be lowered). *At the time of the Airfield Implementation Workshop, the final refinements to the Runway 13R-31L safety enhancement project had not yet been completed; the finalized project scope and sequencing is described herein.*
- Demolish and Relocate ATCT and TRACON** – This project includes the relocation of the Air Traffic Control Tower (ATCT) and Terminal Radar Approach Control (TRACON) facilities. The early years of this project are dedicated to advanced planning and coordination with the Federal Aviation Administration (FAA) to identify the relocation site of the ATCT/TRACON, as well as obtain the necessary approvals for its construction. Once the ATCT/TRACON are relocated, the existing ATCT/TRACON will be demolished, and its site available for future parking garage expansion.
- Construct Runway 13R High-Speed Exit Taxiway** - This project includes the construction of a high-speed exit taxiway for Runway 13R arrivals, in the optional location and of standard geometry, to decrease runway occupancy times and optimize the capacity of the runway. This project will require the demolition of Taxiways L and D. Although this project is a long-term capacity-enhancing project, it will be implemented in the short-term for pavement condition mitigation.
- Install Runway Guard Lights at Taxiway J** – Installation of Runway Guard Lights (RGL) at Taxiway J to mitigate airfield geometry noncompliance with FAA standards.
- Expand GRE**– Expansion of the airport's existing Ground Runup Enclosure (GRE) to 290 feet by 310 feet, to accommodate Boeing 747-800 aircraft, which is the largest aircraft in the forecasted fleet mix. This project supports the robust MRO activity at SAT, which services large aircraft from many airlines and frequently uses the GRE.
- Decouple Runway 31L from Runway 4-22** - Decouple the Runway 31L end from Runway 4-22 by shortening the Runway 31L end by approximately 490', per FAA direction. Some of the pavement will be removed (and replaced with grass) and some will be painted.
- Install RGL on both sides of Taxiway T** - Installation of RGLs at Taxiway T to mitigate airfield geometry noncompliance with FAA standards.

Table 6.3-1 presents the sequence and cost of airfield projects in the phased airport development plan, based on the aforementioned criteria and in conjunction with the project sequence that was identified for other portions of the phased development plan. In addition, the start time of each project within the Implementation Plan timeframe is noted in the table. Further details on planned project timeframes are presented later in this chapter.

Table 6.3-1: Airfield Projects Sequence

PROJECT NAME	PROJECT START	CONSTRUCTION COST (2021\$, MILLIONS) ¹
Extend Runway 13R End to 9,749 ft, including Taxiway G Extension	Near Term	\$89.4
Demolish and Relocate ATCT and TRACON	Near Term	\$105.2
Construct Runway 13R High-Speed Exit Taxiway	Mid Term	\$8.5
Install RGLs at Taxiway J	Long Term	\$1.6
Expand GRE	Long Term	\$20.6
Decouple Runway 31L End from Runway 4-22	Long Term	\$9.9
Install RGLs on Both Sides of Taxiway T	Long Term	\$9.0

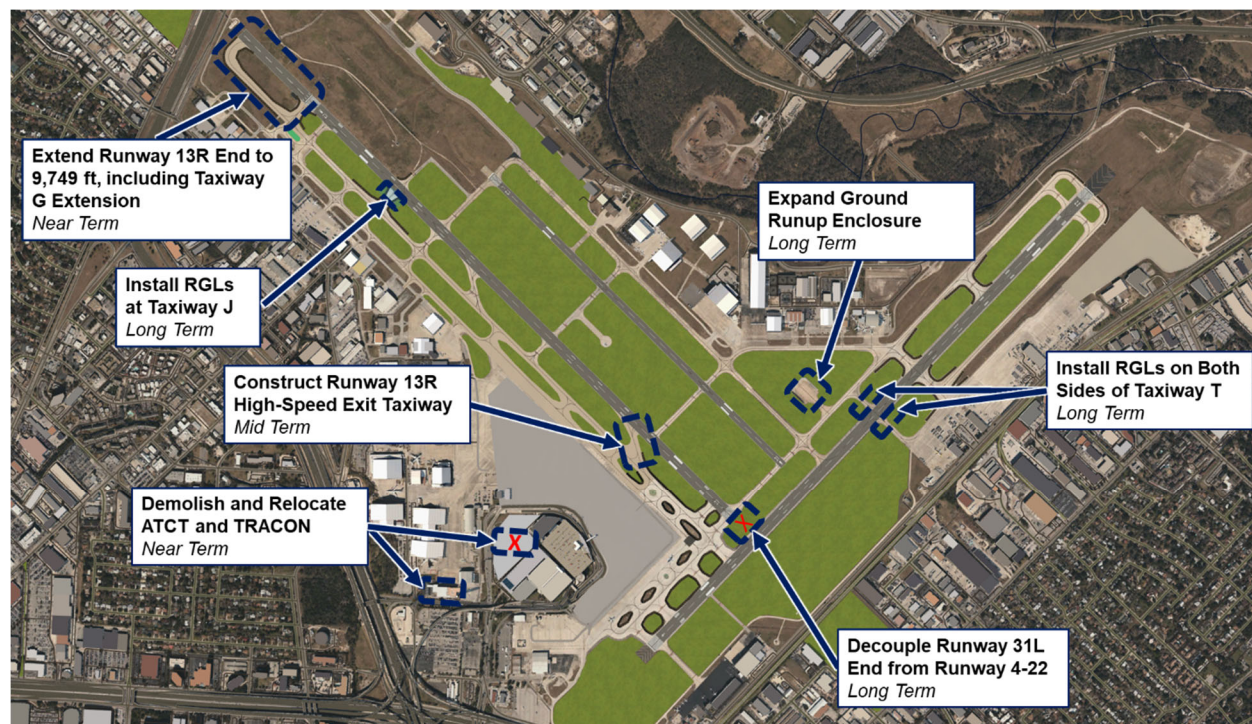
Note:

¹ Construction costs include costs for contingencies.

Sources: WSP USA and Connico, Inc.; Compiled by WSP USA, 2021

Figure 6.3-2 depicts the location of each airfield project.

Figure 6.3-2: Airfield Projects

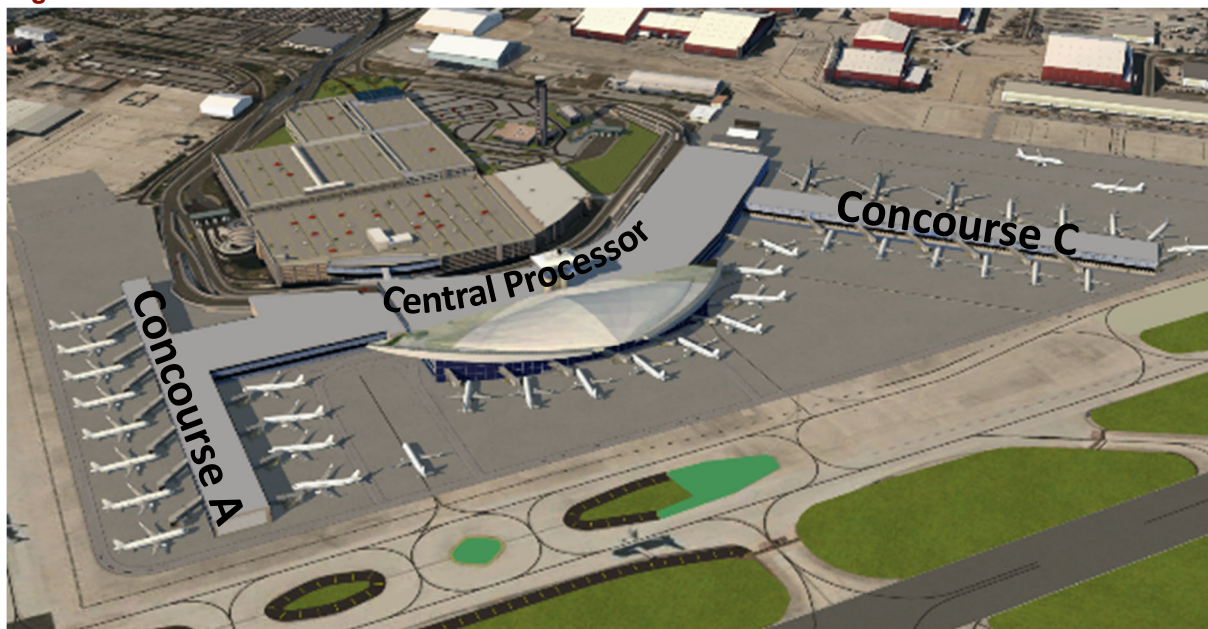


Source: WSP USA, 2021.

6.4 TERMINAL

This section presents individual terminal projects and associated timing developed during workshops with SAAS. **Figure 6.4-1** depicts the preferred terminal plan selected during the *Alternatives Development and Evaluation* process.

Figure 6.4-1: Preferred Terminal Plan



Source: WSP USA, 2021.

As discussed in *Chapter 5: Alternatives Development and Evaluation*, two phasing alternatives were identified for the preferred terminal plan. In both phasing alternatives, Terminal C is built first, consisting of the 17-narrowbody gate Concourse C and the necessary passenger processing functions to support this facility until a central processor is built. When other phases of the terminal complex are completed, passenger processing would be moved to the planned central processor, and Terminal C would be converted to Concourse C. This initial phase would provide sufficient new space and gates to allow some airlines to relocate during subsequent phases of the terminal complex implementation, as well as to accommodate growth.

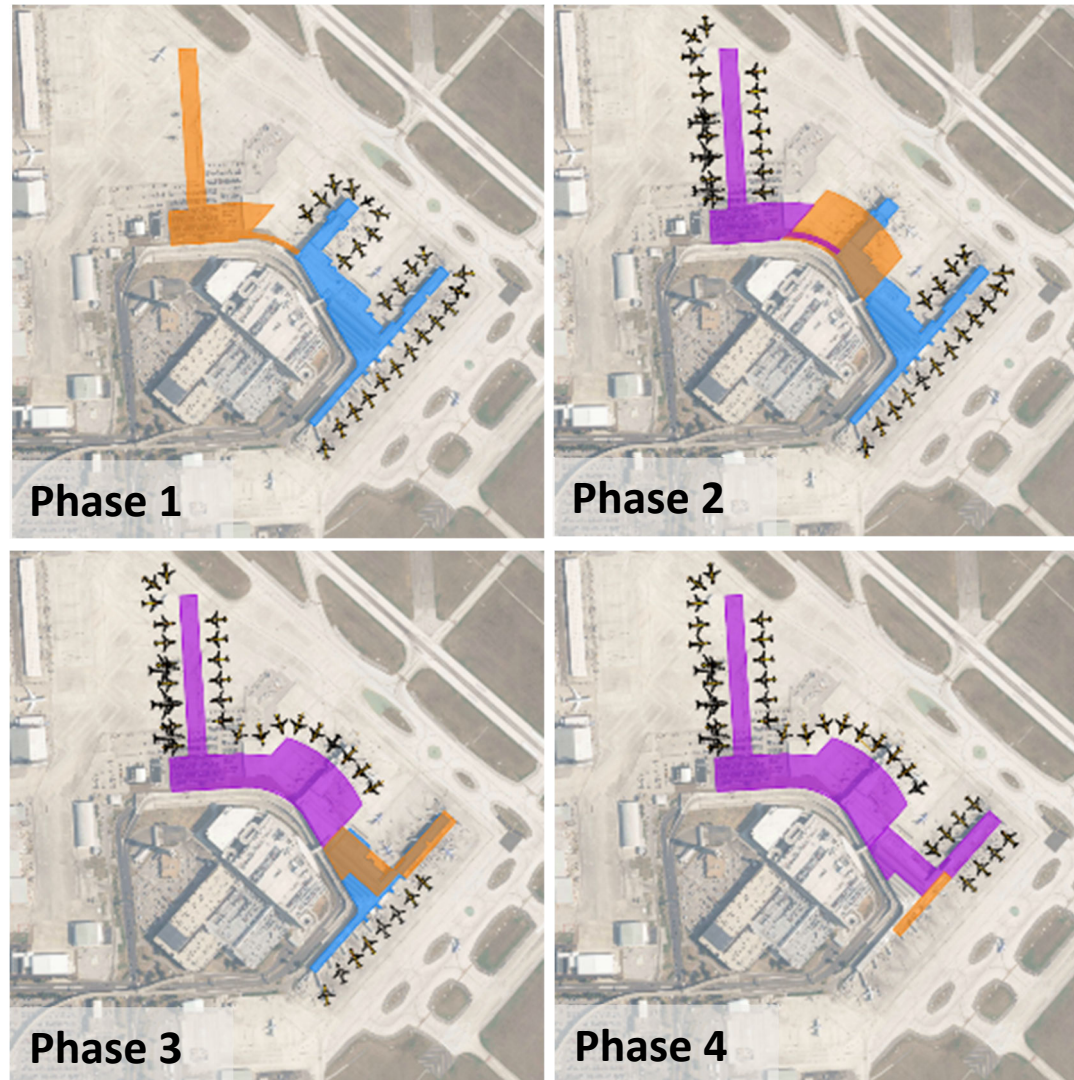
Upon completing construction of Terminal C (Phase 1), two phasing approaches were considered to implement the preferred terminal alternative:

- **Approach A** – This approach would immediately begin the demolition of Terminal B and construction of the central processor. When the central processor is completed, the interior of Processor C would then be partially converted to other functions. Terminal A would be renovated/reconstructed as a primarily airside concourse. Approach A is depicted on **Figure 6.4-2**.
- **Approach B** – If conditions and/or demands are different than anticipated, Terminal A could be kept as a full terminal longer, and the new central processor deferred. After completion of Terminal C, Terminal A would be renovated, and the gates reconstructed. As conditions change, the

demolition of Terminal B and construction of the central processor would proceed. After the central processor is completed, the interior of Processor C would then be partially converted to other functions. Terminal A would then be converted to an airside concourse. Approach B is depicted on **Figure 6.4-3**.

The relocation of the FIS could also occur during different sub-phases depending on the timing of construction and the need to expand beyond the capacity of the existing Terminal A FIS.

Figure 6.4-2: Terminal Phasing Approach A

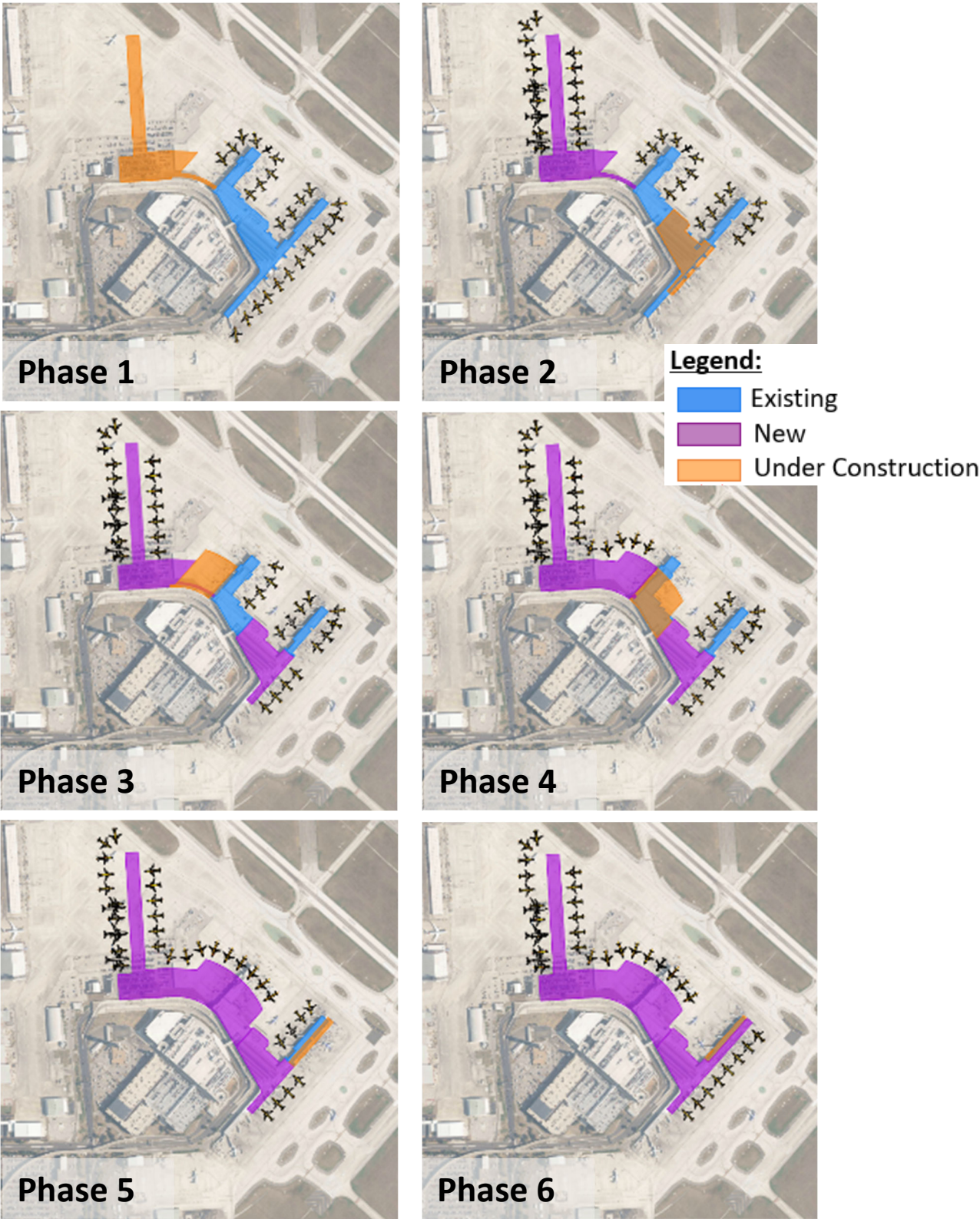


Legend:

- Existing
- New
- Under Construction

Sources: Hirsh Associates, 2020; WSP USA, 2020.

Figure 6.4-3: Terminal Phasing Approach B



Sources: Hirsh Associates, 2020; WSP USA, 2020

The following priorities were considered in selecting a preferred terminal phasing plan:

- Phase based on the remaining useful life of the asset
- Optimize passenger convenience
- Minimize airline relocation
- Prioritize affordability from “30,000-ft level”
- Complete revenue-producing space first

The objectives and implications of the two phasing approaches are compared in **Table 6.4-1**.

Table 6.4-1: Phasing Alternatives Comparison

	APPROACH A	APPROACH B
OBJECTIVE	Continuous construction projects to implement <i>central processor</i> as soon as possible	Continuous construction projects to <i>replace older and less desirable areas of the terminal first</i>
IMPLICATIONS	<ul style="list-style-type: none"> • Terminal A would operate in its current configuration with existing functional deficiencies until the end of Phase 2. • Replaces older facilities later (Terminal A) • Retains newer facilities longer (Terminal A FIS) 	<ul style="list-style-type: none"> • FIS will need to be moved to Terminal C sooner. • Replaces older facilities sooner (Terminal A system upgrades) • Allows lower curb congestion/column issue to be solved sooner • Retain newer facilities longer (Terminal B)

Source: WSP USA, 2021.

Approach B was selected as the preferred phasing alternative during the implementation planning process, as it fits the identified priorities better than Approach A. **Table 6.4-2** summarizes how the properties of Approach B fit those priorities.

Table 6.4-2: Phasing Approach B Properties

PRIORITIES	APPROACH B PROPERTIES
Logical phasing based on the remaining useful life of the asset	<ul style="list-style-type: none"> Replaces older Terminal A sooner than Phasing Approach A
Minimize passenger disruption/maximize passenger experience	<ul style="list-style-type: none"> Fixes narrow end of Terminal A earlier Replaces older facilities later (Terminal A) Retains newer facilities longer (Terminal A FIS)
Minimize airline relocation/disruption	<ul style="list-style-type: none"> Airlines move once
High-level affordability	<ul style="list-style-type: none"> More phases results in less incremental change to the cost per enplanement as phases are finished Allows more paying down of Terminal B debt before demolition/rebuilding Allows for potential accumulation of cash reserves to potentially offset costs toward the end of the program

Source: WSP USA, 2021.

Based on the selection of Approach B as the preferred phasing plan, the following projects were identified for the terminal area in the phased development plan. In addition to the distinct phases of the terminal complex development, development of RON parking was included in the terminal functional area, as it is a support function directly attributable to the terminal area and functions. Individual projects developed from the selected Phasing Approach B consist of:

- Terminal Complex Phase 1 – Construct Terminal C** – Construction of 17 narrowbody gates, convertible to 12 narrowbody plus 3 widebody gates, west of the existing Terminal B. Includes full Terminal C passenger processor with Federal Inspection Services (FIS) facility and link to Terminal B (both on the secure and non-secure sides of passenger screening). This project also includes construction of the apron areas around the terminal and hydrant fueling at each aircraft gate, as well as a tunnel and skybridge to a new parking facility. Because the Airport has no hydrant fueling currently, this project will include planning for the entire system and development of controls and distribution that can be expanded to the ultimate plan.
- Construct Waste Disposal Facilities** – Demolition of the exiting Airport police and the badging offices, as well as the construction of waste disposal facilities to serve the new Terminal/Concourse C operations (trash compactor and triturator) west of Terminal C around the Hangar 4 site.
- Expand RON Ramp Phase 1** — Construct Phase 1 of RON ramp expansion southwest of Terminal A. Phase 1 expansion can accommodate up to 7 RON positions; RON ramp expansion will include deicing pads and an aircraft wash rack.
- Terminal Complex Phase 2 – Renovate Terminal A and Demolish/Replace South End** – Rehabilitate Terminal A, including rearranging concessions and passenger screening. Demolish the existing south end of the concourse and rebuild with single-loaded concourse with four narrowbody gates equipped with hydrant fueling (includes apron works associated with this project). The existing FIS will be relocated to Terminal C prior to the demolition of the concourse area.

- Terminal Complex Phase 3 – Construct West Central Processor** – Construct west side of the proposed central processor, including four single-loaded narrowbody gates with hydrant fueling. At end of this Phase, Central Processor will be used for Terminal B and Terminal C passenger processing.
- Expand RON Ramp Phase 2** – Construct Phase 2 of RON ramp expansion southwest of Terminal A. Phase 2 expansion will add another 6 RON positions. Phase 2 can be completed after employee parking is moved to the proposed land acquisition site along Jones-Maltsberger Rd. (see Figure 6.6-4).
- Terminal Complex Phase 4 – Demolish Terminal B, Complete Central Processor** – Demolish Terminal B and replace with remainder of central processor (east side) and four single-loaded narrowbody gates with hydrant fueling. At the end of this phase, the Central Processor is complete and will be used for all active gates.
- Terminal Complex Phase 5 – Demolish and Rebuild Northeast Portion of Concourse A** – Demolish northeast portion of Concourse A and rebuild with four narrowbody gates (includes hydrant fueling and apron works associated with this project).
- Terminal Complex Phase 6 – Demolish and Rebuild Northwest Portion of Concourse A** – Demolish northwest portion of Concourse A and rebuild with four narrowbody gates (includes hydrant fueling and apron works associated with this project).

Table 6.4-3 presents the sequence and construction cost of terminal projects in the phased airport development plan. Note that some projects are outside the planning period and are planned to begin outside the planning period, which ends in 2040.

Table 6.4-3: Terminal Projects Sequence

PROJECT NAME	PROJECT START	CONSTRUCTION COST (2021\$, MILLIONS) ^{1, 2}
Terminal Complex Phase 1 – Construct Terminal C	Near Term	\$643.9
Construct Waste Disposal Facilities	Near Term	\$6.0
Expand RON Ramp Phase 1	Near Term	\$4.2
Terminal Complex Phase 2 - Renovate Terminal A and Demolish/Replace South End	Mid-Term	\$83.3
Terminal Complex Phase 3 – Construct West Central Processor	Long Term	\$248.9
Expand RON Ramp Phase 2	Long Term	\$9.4
Terminal Complex Phase 4 – Demolish Terminal B and Complete Central Processor	Long Term	\$236.4
Terminal Complex Phase 5 - Demolish and Rebuild Northeast Portion of Concourse A	Long Term +	n/a
Terminal Complex Phase 6 - Demolish and Rebuild Northwest Portion of Concourse A	Long Term +	n/a

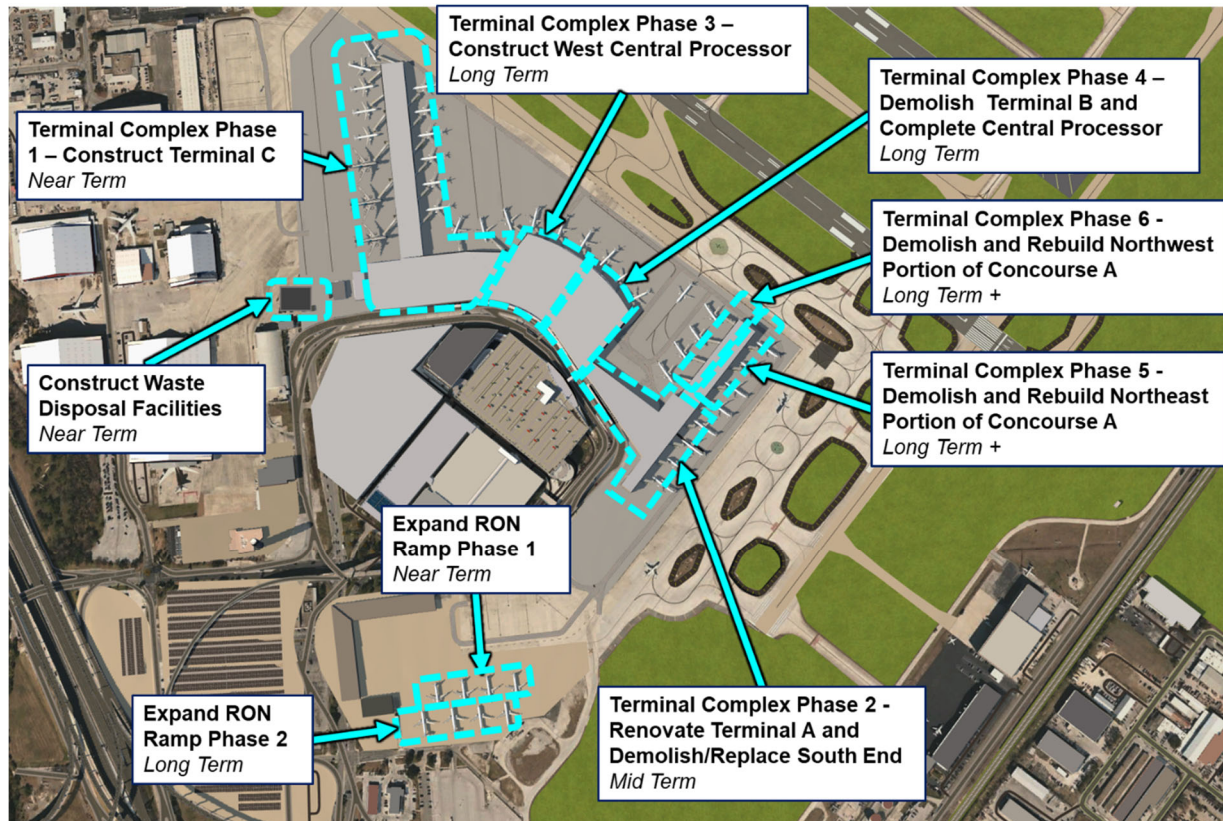
Notes: ¹ Construction costs include costs for contingencies.

² Project costs are not included for those projects outside of the planning period.

Source: WSP USA, 2021.

Figure 6.4-4 depicts the location of each terminal project.

Figure 6.4-4: Terminal Projects



Source: WSP USA, 2021.

6.5 MULTIMODAL ACCESS

Multimodal access includes both the roads and parking facilities at the Airport. This section discusses the roadway and parking facilities projects identified in the preferred development plan.

The primary objective with determining the sequencing of these projects was to create a logical order to enhance safety and correct existing issues to meet future demand. In addition, when specific sequencing of the projects was determined, some of them were complementary with other projects contained in the preferred development plan (specifically the terminal complex) and the timing was based on the implementation of those projects, which is discussed in further detail later in this chapter.

6.5.1 ROADS

Figure 6.5-1 depicts the preferred airport roadway alternative.

Figure 6.5-1: Preferred Airport Roadway Alternative



Source: WSP USA, 2021.

The preferred airport roadway alternative consists of these projects:

- **Realign Terminal Loop Road** - This project begins with the demolition of the existing Hangar 4 to allow for the realignment of the roadway. The project also includes shifting the upper and lower levels of Terminal Boulevard to the west, increasing turn radius to industry standards for increased driver safety and visibility to provide more space inside the tight loop road area, as well as incorporating exits to return to Terminal Loop Road (S. Terminal Drive) and Dee Howard Way.
- **Fix Terminal A Pinchpoint** – Fix existing geometry and pinchpoint approaching Terminal A, to allow for a safer turn radius and better visibility entering the arrivals level of the terminal curbside area.
- **Lower 281 N. Direct Connect Ramp** – Reduce the elevation of the U.S. 281 northbound flyover ramp connection with Terminal Boulevard. This will increase decision-making time and provide for safer egress into the terminal area from this airport entrance.
- **Separate Airport Blvd from Airport Loop Road** – This project includes the reconfiguration of the terminal roadway system, including connections from the new roundabout to Airport Blvd. and the lowered U.S. 281 N. direct connect ramp.

- **Construct Dee Howard Roundabout** - Construct roundabout at the Dee Howard Way and Airport Blvd. intersection.
- **Construct New Entrance from Loop 410** – Construction of new roadway access from East and West Loop 410 to Airport Blvd.

Table 6.5-1 presents the sequence and cost of roadway projects in the phased airport development plan, based on the objectives for multimodal access, keeping in mind the project sequencing/phasing already identified for other portions of the phased development plan. For instance, it was logical to phase both the lowering of the U.S. 281 N. direct-connect ramp and the separation of Airport Blvd. from the Airport Loop Road at the same time, since they are complementary projects. In addition, it seemed sensible to complete these projects after the completion of the Terminal A pinchpoint project, since it would be completed at around same time as the reconstruction of the southern end of the Terminal A concourse.

Table 6.5-1: Roadway Projects Sequence

PROJECT NAME	PROJECT START	CONSTRUCTION COST (2021\$, MILLIONS) ¹
Realign Terminal Loop Road	Near Term	\$15.7
Fix Terminal A Pinchpoint	Mid Term	\$53.1
Lower 281 N. Direct Connect Ramp	Mid Term	\$15.1
Separate Airport Blvd from Airport Loop Road	Mid Term	\$53.9
Construct Dee Howard Roundabout	Mid Term	\$11.0
Construct New Entrance from Loop 410	Long Term	\$12.4

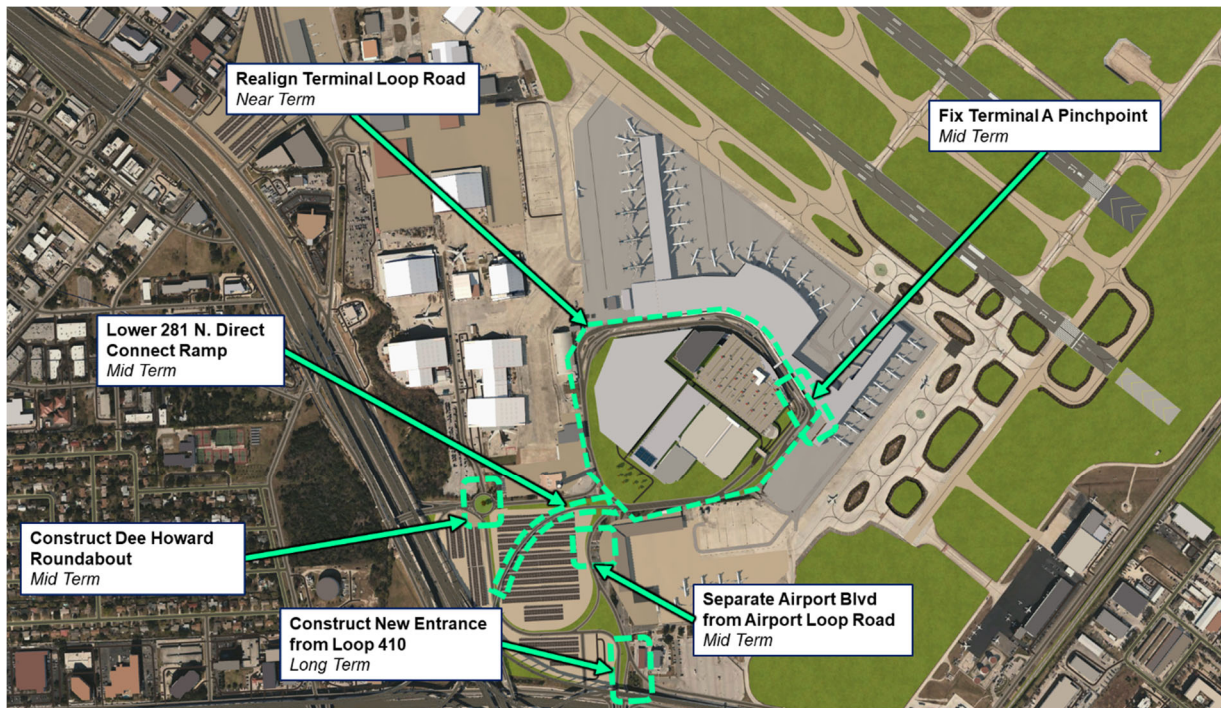
Note:

¹ Construction costs include costs for contingencies.

Source: WSP USA, Connico, Inc 2021; Compiled by WSP USA 2021.

Figure 6.5-2 depicts the location of the roadway projects.

Figure 6.5-2: Multimodal Access Projects - Roadways

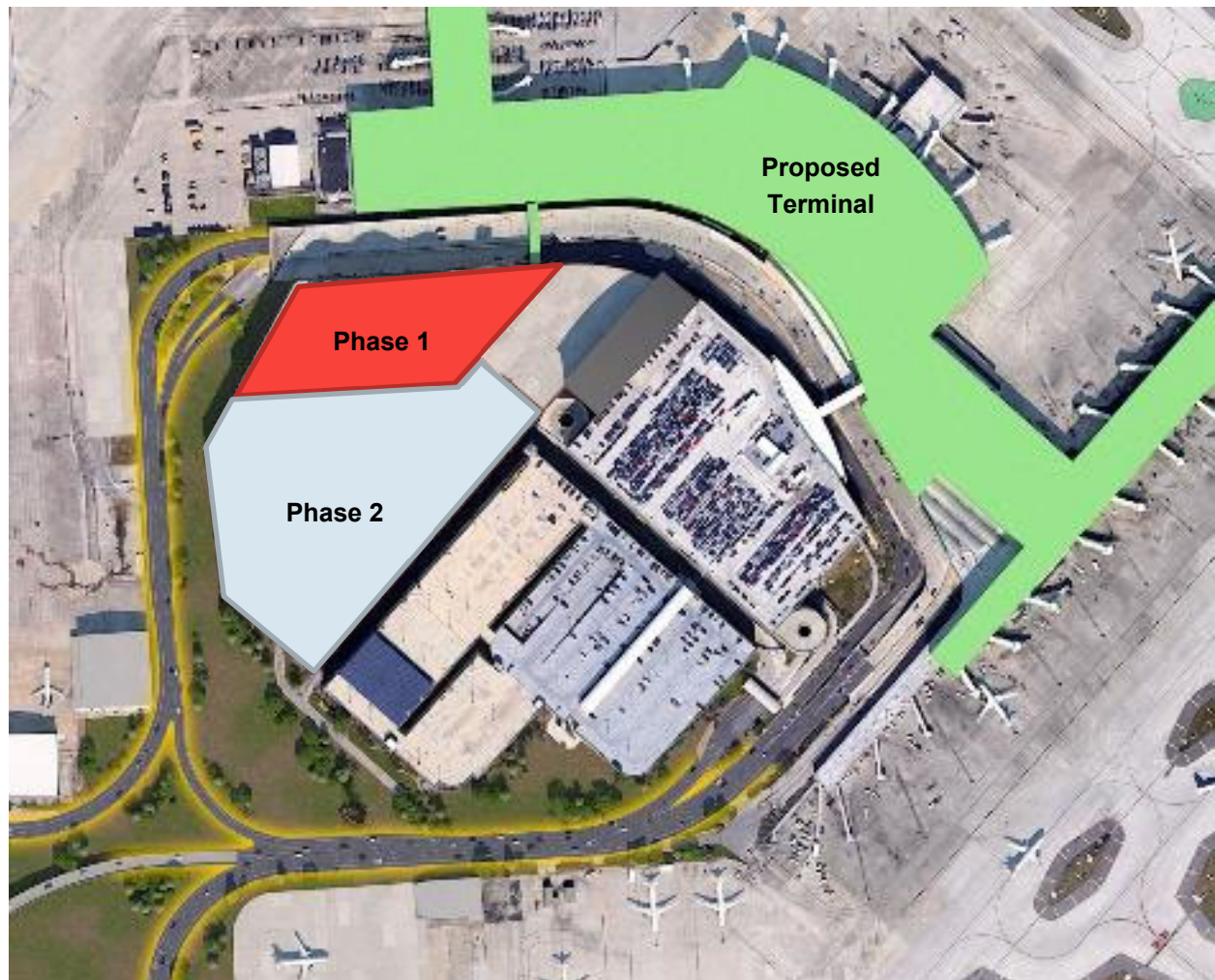


Source: WSP USA, 2022

6.5.2 PARKING

Figure 6.5-3 depicts the preferred parking alternative.

Figure 6.5-3: Preferred Parking Garage Alternative



Source: WSP USA, 2021.

The preferred parking alternative consists of these projects:

- **Relocate Employee Parking to Interim Location**– This project consists of relocating the Purple Lot (employee parking) to an interim site north of the Red Lot and Northern Blvd. This is an enabling project for the construction of Terminal C. The project will also include updating and expanding the access/revenue-control system in the existing Red Lot.
- **Construct Phase 1 GTC and 6-level Parking Garage at Terminal C** – Build a new parking garage and Ground Transportation Center (GTC) within the Terminal Loop Road, in the approximately 2-acre space west of the existing Consolidated Rent-a-Car (CONRAC)/parking garage and Quick-Turn-Around facility (QTA), and north of the ATCT.
- **Realign Green Lot Parking** – After the completion of the new terminal access road, the existing Green Lot Parking area will be reconfigured inside the new roadway system and continue to provide long-term parking options for airport customers.

- **Construct Phase 2 GTC and 6-level Parking Garage at Terminal C** – Construction of parking facility on the former ATCT site, which will result in an estimated 2,300 parking spaces to accommodate the long-term parking requirement.
- **Relocate Employee Parking to Permanent Location** – This project includes paving a planned land acquisition area to accommodate future employee parking needs. Parking will be relocated to a property that is planned for purchase as described in Section 6.6.3.

Table 6.5-2 presents the sequence and cost of parking projects in the phased airport development plan, based on the objectives for multimodal access, keeping in mind the project sequencing/phasing already identified for other portions of the phased development plan.

Table 6.5-2: Parking Projects Sequence

PROJECT NAME	PROJECT START	CONSTRUCTION COST (2021\$, MILLIONS) ¹
Relocate Employee Parking to Interim Location	Near Term	\$9.9
Construct Phase 1 GTC and 6-level Parking Garage at Terminal C	Near Term	\$55.1
Realign Green Lot Parking	Long Term	\$6.3
Construct Phase 2 GTC and 6-level Parking Garage at Terminal C	Long Term	\$201.5
Relocate Employee Parking to Permanent Location	Long Term+	n/a

Notes:

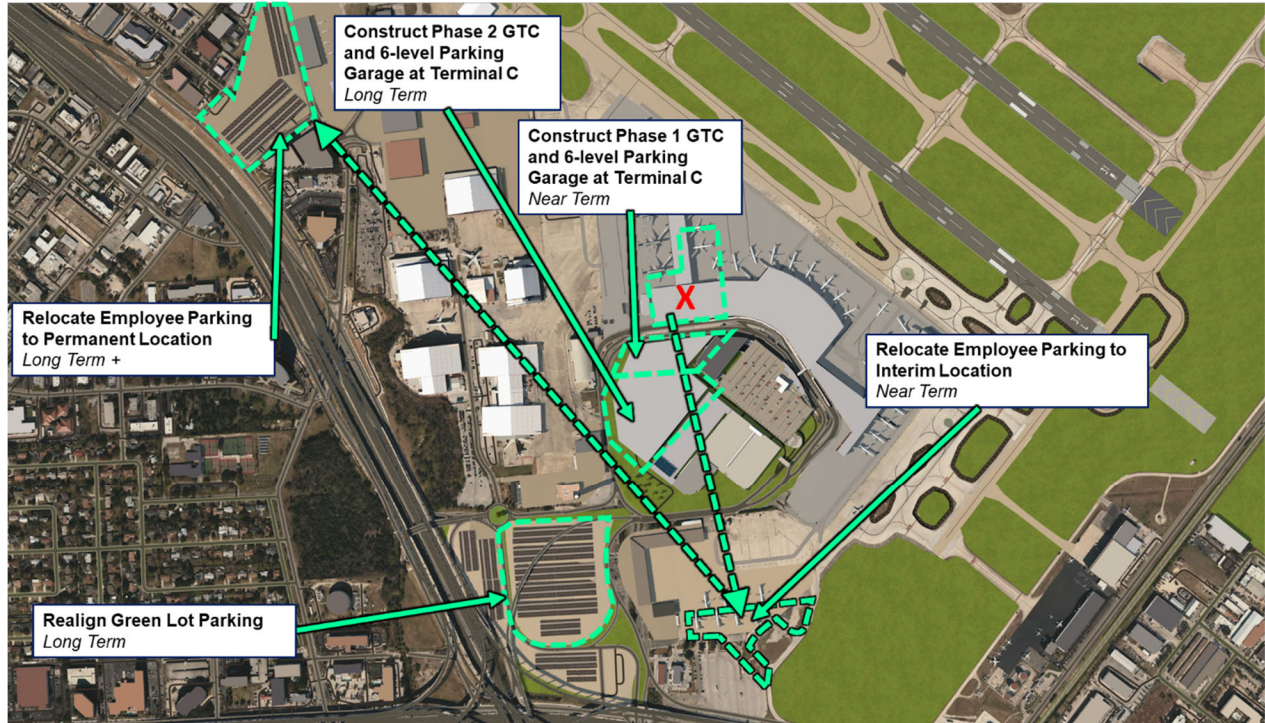
¹ Construction costs include costs for contingencies.

² Project costs are not included for those projects outside of the planning period.

Source: WSP USA, Connico, Inc 2021; Compiled by WSP USA 2021.

Figure 6.5-4 depicts the location of the parking projects.

Figure 6.5-4: Multimodal Access Projects - Parking



Source: WSP USA, 2021.

6.6 SUPPORT FACILITIES

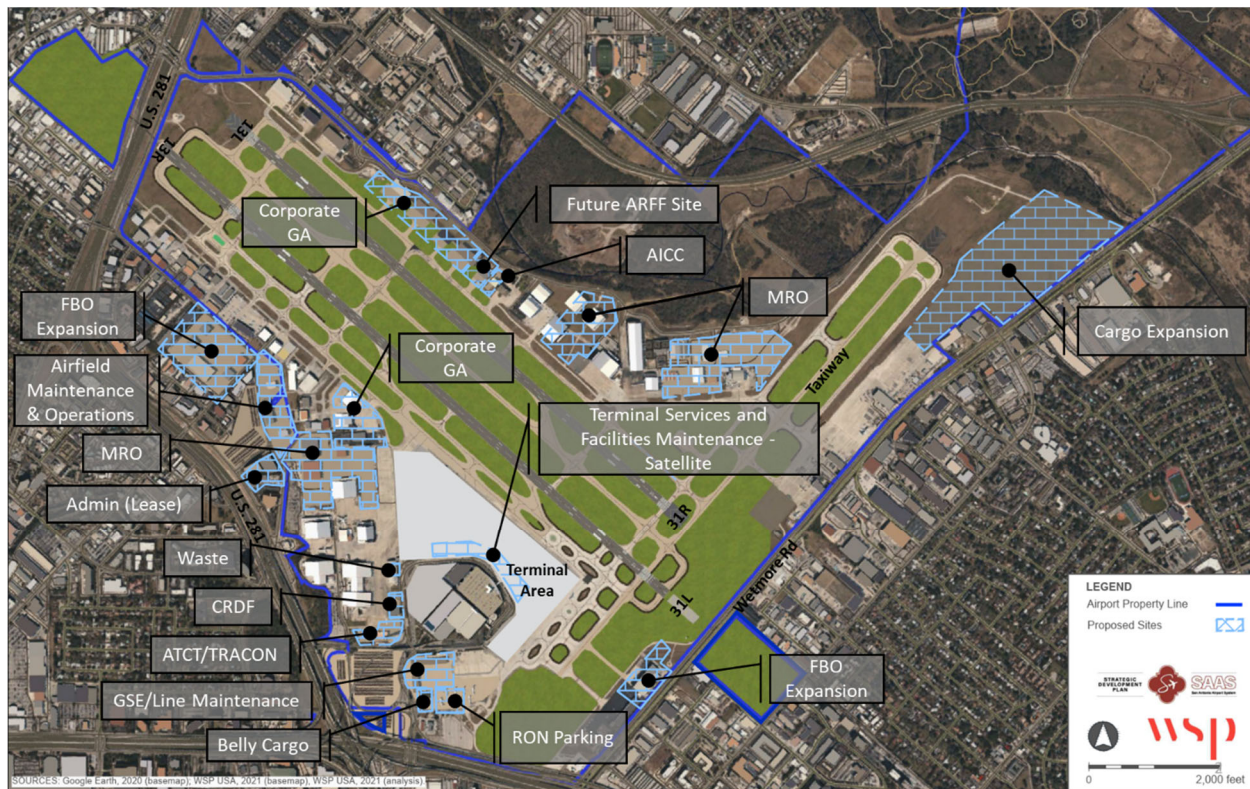
In general, the development of the support facilities (cargo and other aviation support) phased development plans were based on tenant needs and SAAS goals. The general timing and sequencing presented is based on interviews with current tenants during the Inventory of Existing Conditions process, and existing conditions at the Airport.

A key objective for revenue-producing support facilities projects (i.e., cargo, MRO, and general aviation facilities) is that the SDP provides a recommendation for timing of the project; however, the actual implementation of these projects is flexible based on tenant needs. For instance, the SDP may recommend a project be implemented in the mid term; however, if there is no tenant to lease the improved land, the project can be deferred. Conversely, these projects can be brought forward in the plan based on tenant need. In the case of airport support facilities such as the Airport Operations and Maintenance facility consolidation and relocation, the SDP recommends the sequencing of these projects; however, the plan is flexible and SAAS can implement them as soon as possible.

One exception to this flexibility is land acquisition. While some parcels included in the plan for purchase are in the longer term, it is recommended that SAAS begin a plan to purchase these parcels as soon as possible, as they will eventually be needed for tenant expansion, the runway extension(s), or other strategic reasons in the future.

Figure 6.6-1 depicts the preferred support facilities plan, including cargo, general aviation, MRO, and airport support facilities.

Figure 6.6-1: Preferred Support Facilities Plan



Source: WSP USA, 2021.

The remainder of this section describes the identified projects for cargo, other support facilities, and land acquisitions. In addition, it provides the overall sequencing for these projects determined by the objectives for each functional area.

6.6.1 CARGO

The projects identified for cargo expansion in the preferred development plan are depicted in **Figure 6.6-2**. They consist of:

- **Expand East Cargo Strategic – Phase 1** - This project includes site prep of 18 acres in the northeast corner of the airport property, for long-term cargo facilities development. This project is of a strategic nature and can be deferred if there is no imminent need for it.
- **Expand East Cargo Strategic – Phase 2** - This project includes site prep of 18 acres in the northeast corner of the airport property adjacent to Phase 1 of this project, for long-term cargo facilities development. This project is of a strategic nature and can be deferred if there is no imminent need for it.
- **Expand East Cargo North - Phase 2** - This project includes site prep and apron construction of up to 21 acres adjacent and northeast of the existing cargo apron.
- **Relocate Belly Cargo** – Construction of a new belly cargo facility to the south of Terminal/Concourse A, adjacent to the future RON apron aircraft parking.

Figure 6.6-2: Cargo Projects



Source: WSP USA, 2021.

Table 6.6-1 presents the phasing and cost assumed in the SDP for the cargo projects based on the overall implementation objectives for support facilities.

Table 6.6-1: Cargo Projects Sequence

PROJECT NAME	PROJECT START	CONSTRUCTION COST (2021\$, MILLIONS) ¹
Expand East Cargo Strategic - Phase 1 (18 acres)	Near Term	\$0.7
Expand East Cargo Strategic – Phase 2 (18 acres)	Near Term	\$0.7
Expand East Cargo North - Phase 2 (21 acres)	Mid Term	\$38.5
Relocate Belly Cargo	Mid Term	\$7.8

Note:

¹ Construction costs include costs for contingencies.

Source: WSP USA, Connico, Inc 2021; Compiled by WSP USA 2021.

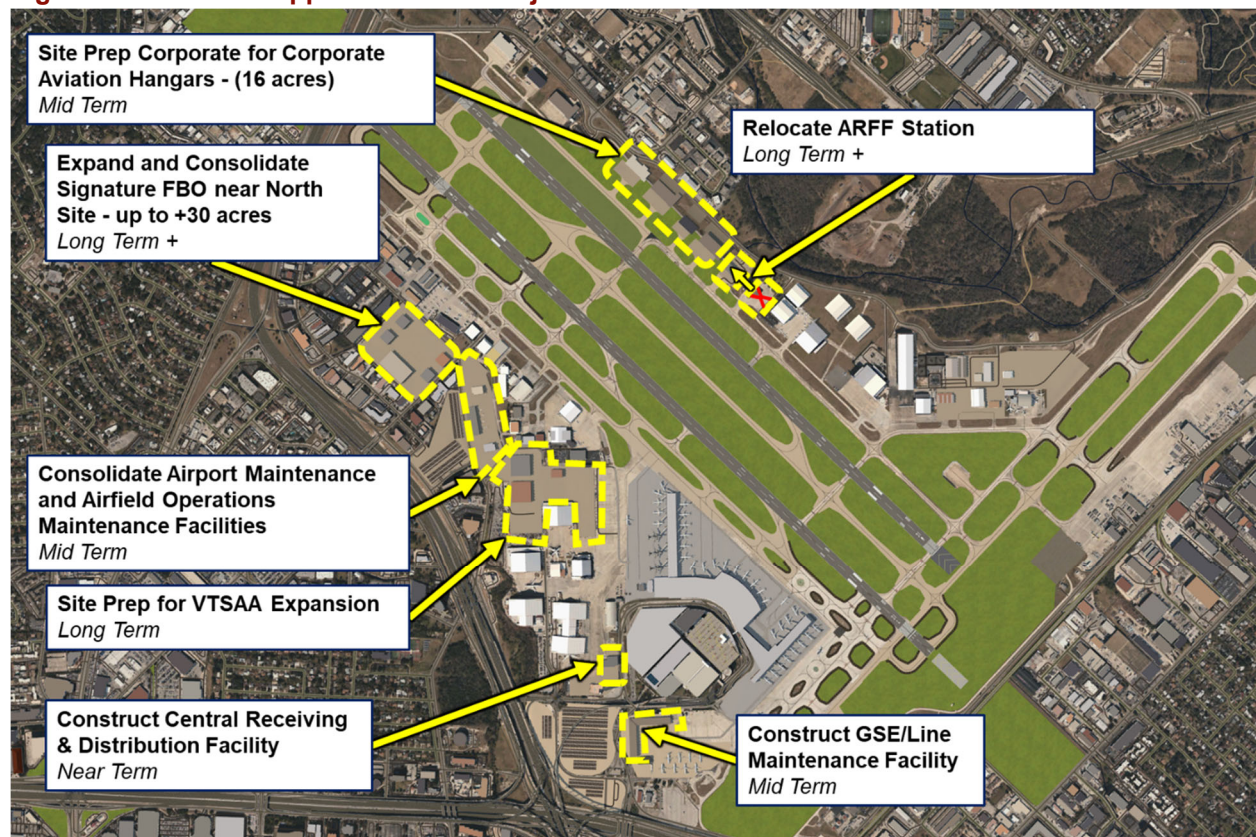
6.6.2 OTHER SUPPORT FACILITIES

Other support facilities projects included in the preferred development plan are depicted in **Figure 6.6-3**, and consist of:

- **Construct Central Receiving & Distribution Facility (CRDF)** – Construction of a central receiving and distribution facility located within proximity to the terminal building to allow for large truck deliveries from the landside, and airside access for efficient delivery of goods for concessionaires to the terminal facilities. Includes demolition of existing facilities on site (Hangar 6/Building 1312), construction of an approximately 22,000 sq. ft. facility with loading docks, as well as automobile and truck parking and access roadway. The project would likely be developed by a concessions logistics operator so procured following a Design-Bid/Build/Operate/Maintain process or as a land lease with tenant improvements that revert back to the Airport after the lease term is expired.
- **Site Prep for Corporate Aviation Hangars** – Excavation and site prep of a 16-acre site for future development of corporate aviation hangar facility.
- **Consolidate Airport Maintenance and Airfield Operations Maintenance Facilities** – Relocate airport maintenance and airfield maintenance and operations on an 8-acre site. Includes demolition of existing buildings, as well as new pavement and facilities, including areas for offices, warehousing, and equipment storage. This project cost does not include the required land acquisition (discussed in the Section 6.6.3).
- **Construct GSE/Line Maintenance Facility** – Development of an eight-acre site to construct a new GSE/line maintenance facility. The facility will include a building with GSE wash rack and maintenance bays, outdoor equipment staging, automobile parking, and roadways access.
- **Site Prep for VTSAA Expansion** – Demolition of rental car facilities on the site and site preparation for a future land lease by the MRO to expand its operation at the airport.
- **Expand and Consolidate Signature FBO near North Site** – Site preparation for future FBO expansion, including demolition of existing facilities. This project cost does not include the land acquisition required for this project (see Section 6.6.3).
- **Relocate ARFF Station** – construction of a new ARFF facility

Table 6.6-2 presents the phasing and cost for the other support facilities projects, based on the overall implementation objectives for support facilities.

Figure 6.6-3: Other Support Facilities Projects



- Source: WSP USA, 2021.

Table 6.6-2: Other Support Facilities Projects Sequence

PROJECT NAME	PROJECT START	CONSTRUCTION COST (2021\$, MILLIONS) ^{1, 2}
Construct Central Receiving & Distribution Facility	Near-Term	\$17.7
Site Prep for Corporate Aviation Hangars - (16 acres)	Mid-Term	\$1.9
Consolidate Airport Maintenance and Airfield Operations Maintenance Facilities	Mid-Term	\$67.0
Construct GSE/Line Maintenance Facility	Mid-Term	\$61.1
Site Prep for VTSAA Expansion	Long-Term	\$9.8
Expand and Consolidate Signature FBO near North Site - up to +30 acres	Long-Term +	n/a
Relocate ARFF Station	Long-Term +	n/a

Notes: ¹ Construction costs include costs for contingencies.

² Project costs are not included for those projects outside of the planning period.

Source: WSP USA, Connico, Inc 2021; Compiled by WSP USA 2021.

6.6.3 LAND ACQUISITION

Several land acquisitions were identified for future airport expansion or because they were strategic in nature. They are:

- **Land Acquisition L10 for Maintenance Facilities** – Purchase of approximately 11 acres to allow for the future consolidation/relocation of airport maintenance and airfield operations and maintenance functions.
- **Land Acquisition for Runway 13R Runway Protection Zone (RPZ)** – Acquisition of approximately 2 acres for the future Runway 13R RPZ.
- **Strategic Land Acquisition L11** – Acquisition of 2.5 acres that is currently a “notch” out of the existing airport property boundary along Loop 410.
- **Land Acquisition L2 for FBO Expansion** – Purchase of 35 acres to allow for future FBO expansion.
- **Land Acquisition for Employee Parking** – Purchase of approximately 10 acres on Jones-Maltsberger Rd. to allow for the future expansion of employee parking.
- **Land Acquisition for Runway 31L RPZ** - Acquisition of approximately 17 acres for the future Runway 31L RPZ.

As previously mentioned, it is recommended that the timing of proposed land acquisitions be completed as soon as practical. **Table 6.6-3** presents the recommended sequence of the land acquisitions required for the phased development plan. The costs provided below are for land acquisition only, any disposition of existing facilities or construction of new ones is included in the project costs for the project that will be located on these sites.

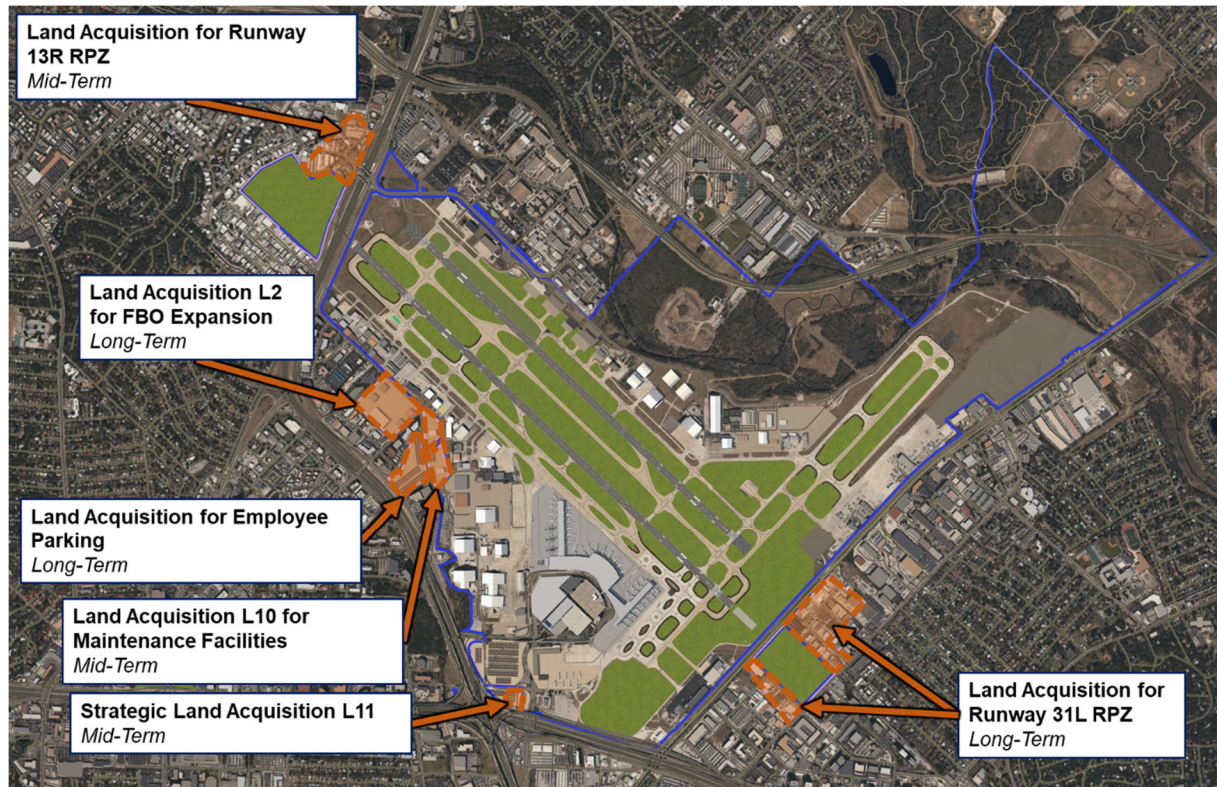
Table 6.6-3: Recommended Land Acquisition Sequence

PROJECT NAME	PROJECT START	CONSTRUCTION COST (2021\$, MILLIONS)
Land Acquisition L10 for Maintenance Facilities	Mid Term	\$8.3
Land Acquisition for Runway 13R RPZ	Mid Term	\$1.7
Strategic Land Acquisition L11	Mid Term	\$1.9
Land Acquisition L2 for FBO Expansion	Long Term	\$26.3
Land Acquisition for Employee Parking	Long Term	\$7.4
Land Acquisition for Runway 31L RPZ	Long Term	\$28.4

Source: WSP USA, Connico, Inc 2021; Compiled by WSP USA 2021.

Figure 6.6-4 depicts the location of recommended land acquisitions.

Figure 6.6-4: Recommended Land Acquisitions



Source: WSP USA, 2021.

6.7 COMPOSITE PLAN

This section presents the composite plan, combining all the projects described herein into one unified plan that phases projects based on the timing and need of complementary projects. This section focuses on the construction phase of the projects.

6.7.1 PROJECTS BY TERM

This section summarizes and illustrates SDP projects by term, based on construction dates.

NEAR-/MID-TERM PROJECTS

The near-/mid-term projects are projects anticipated to be constructed between 2023 and 2025 (near term) and 2026 and 2030 (mid term). **Table 6.7-1** presents these projects by order of construction start and end date and **Figure 6.7-1** depicts general project areas for these projects.

LONG-TERM PROJECTS

The long-term projects are projects anticipated to be constructed between 2031 and 2040. **Table 6.7-2** presents the construction timelines by order of start and end date and **Figure 6.7-2** depicts general project areas for these projects.

Table 6.7-1: Near-/Mid-Term Project Construction Timeline

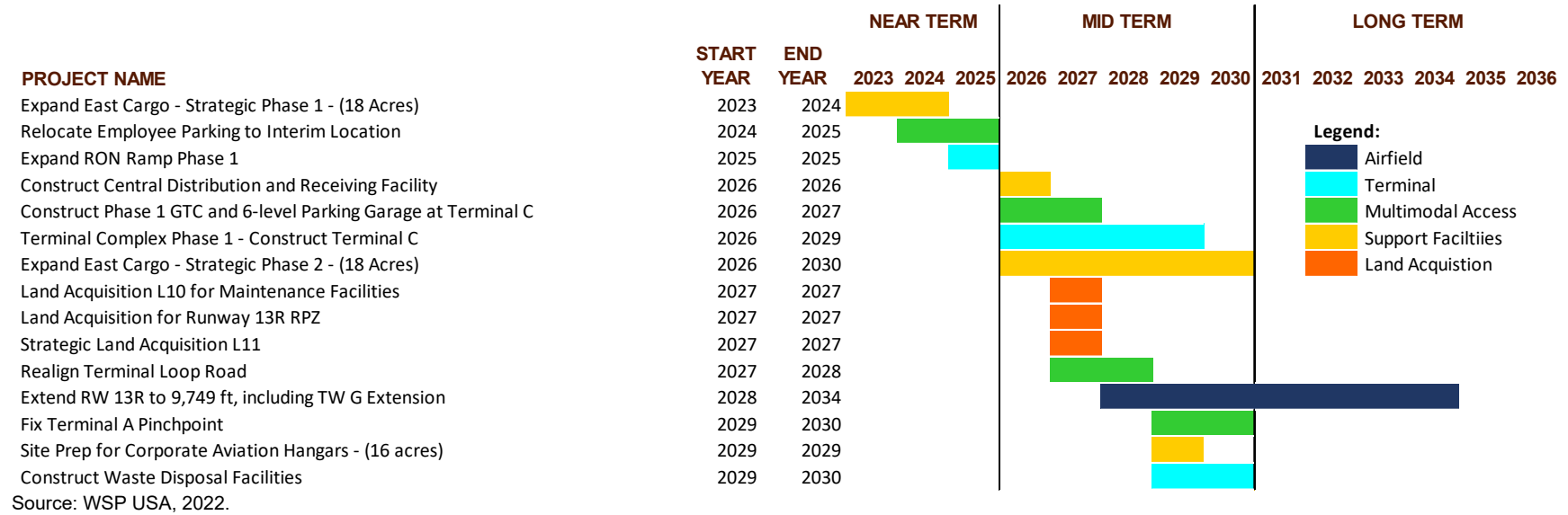
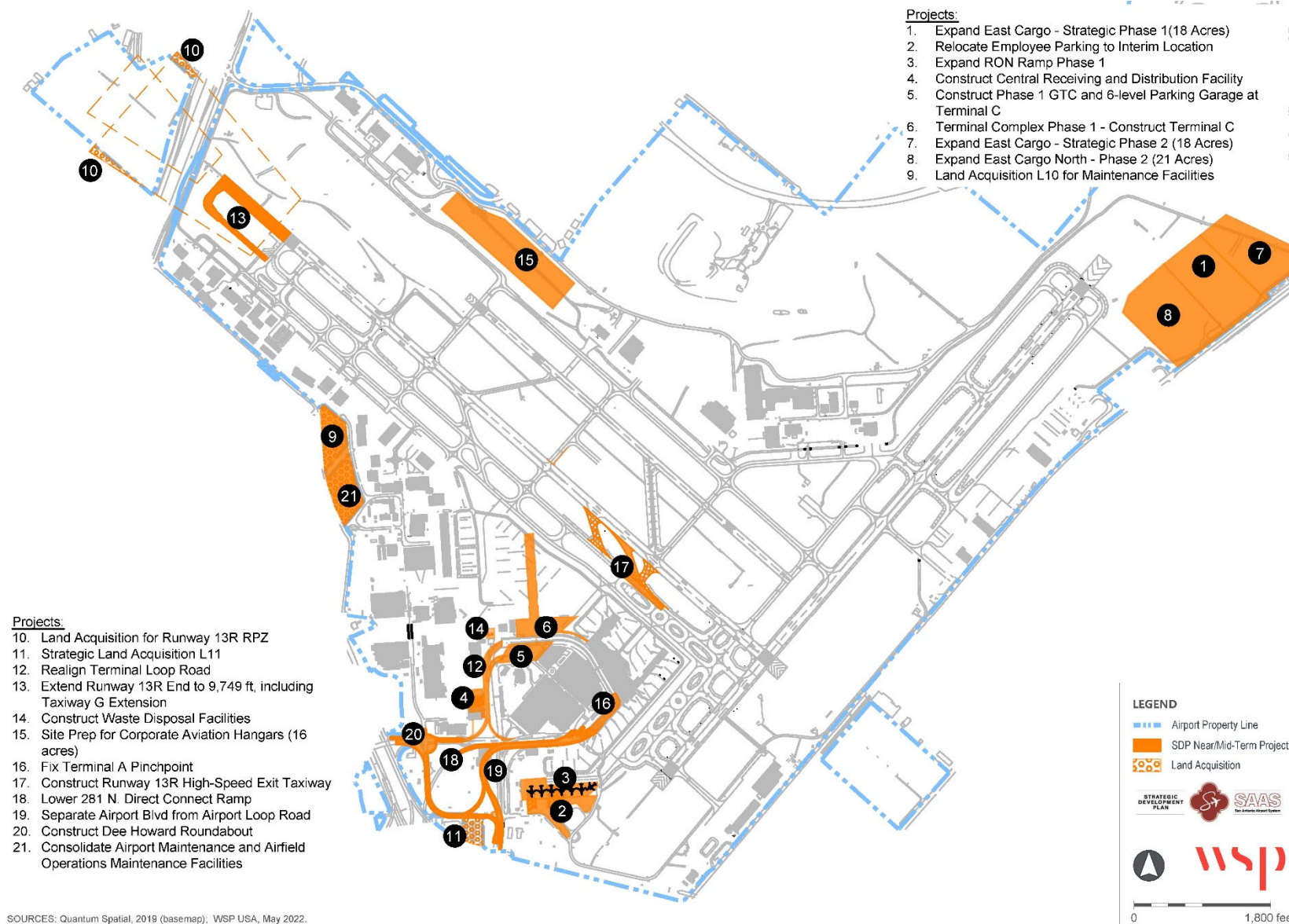


Figure 6.7-1: Near-/Mid-Term Projects



SOURCES: Quantum Spatial, 2019 (basemap); WSP USA, May 2022.

Table 6.7-2: Long-Term Project Construction Timeline

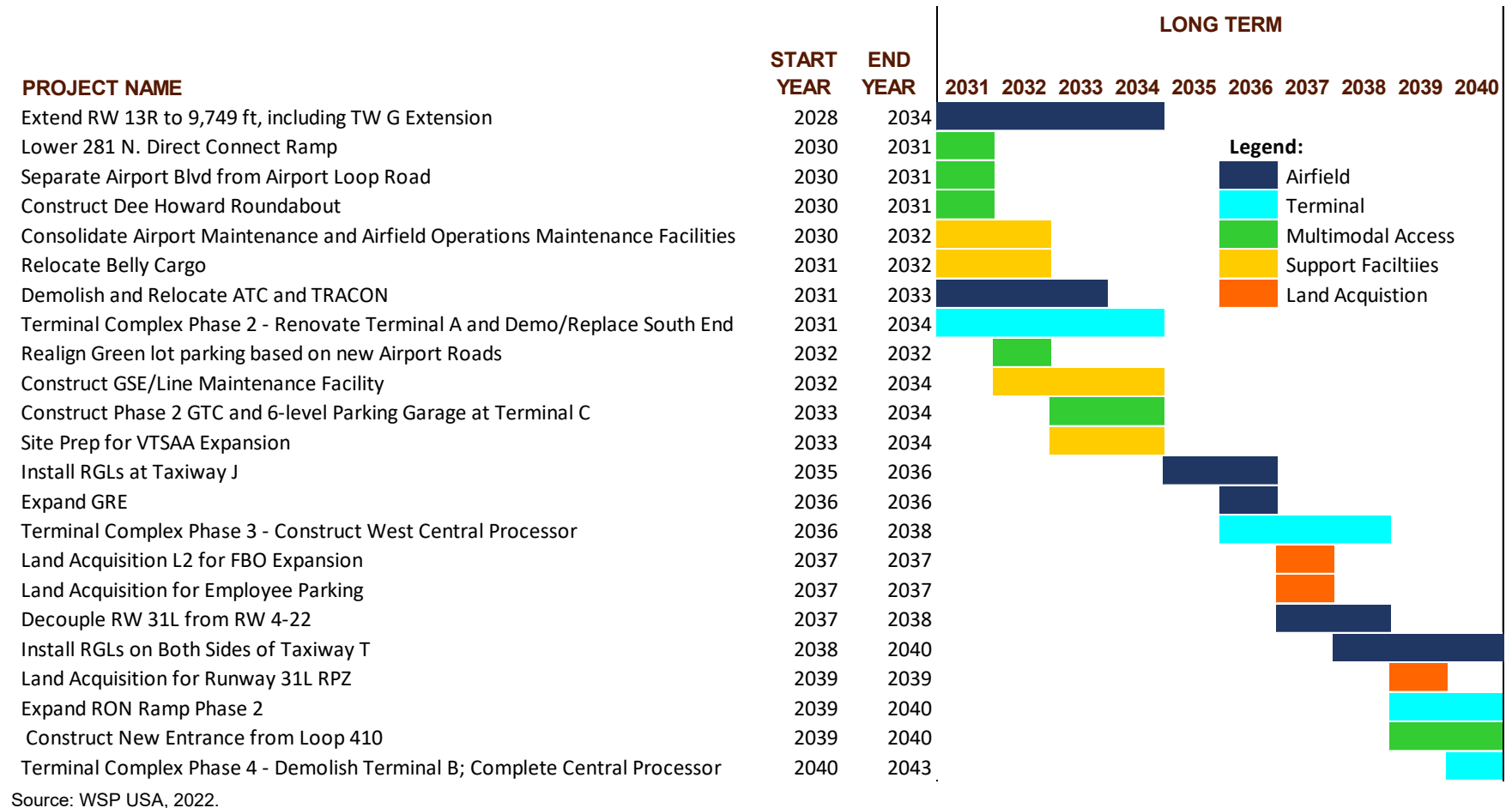
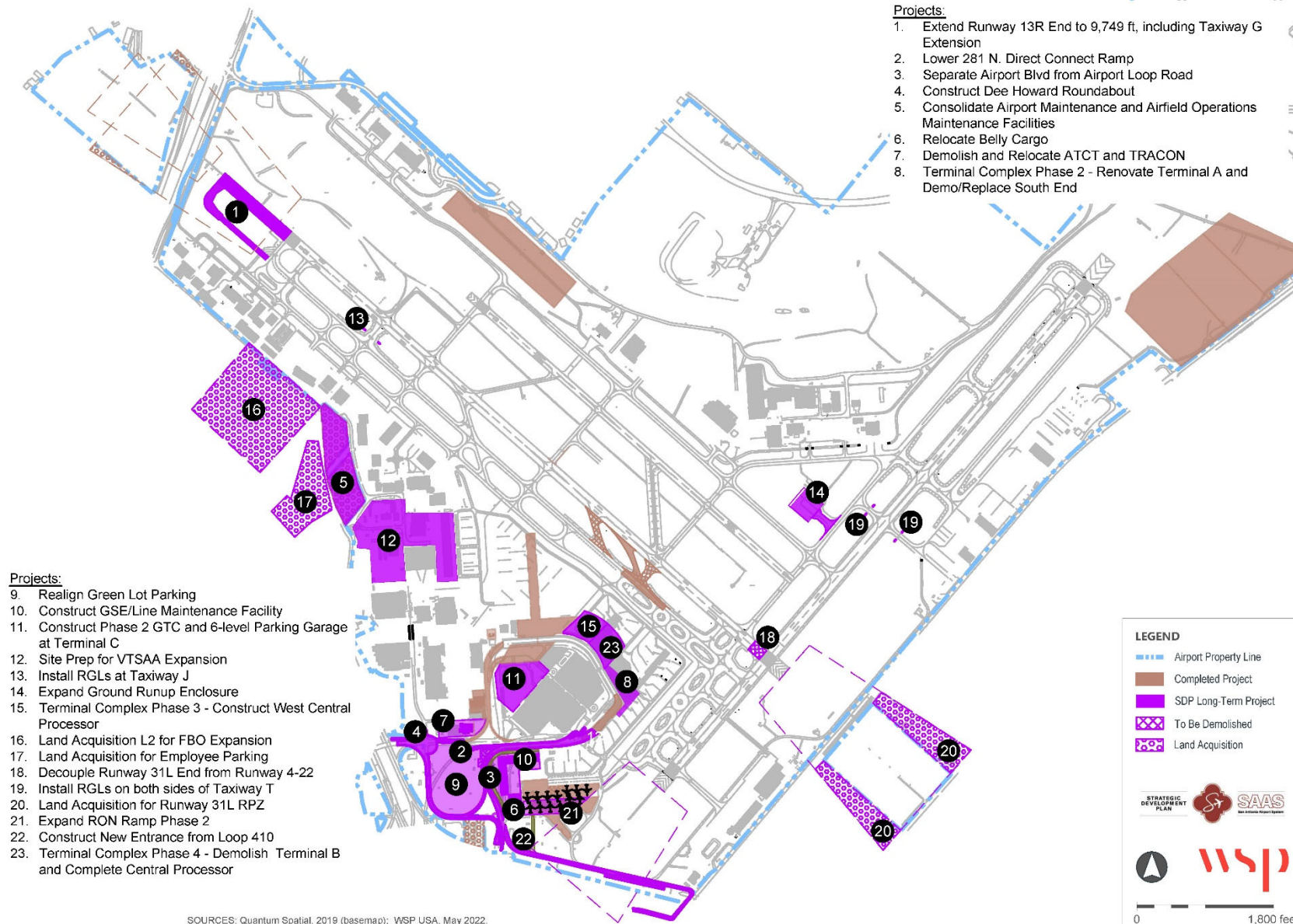


Figure 6.7-2: Long-Term Projects



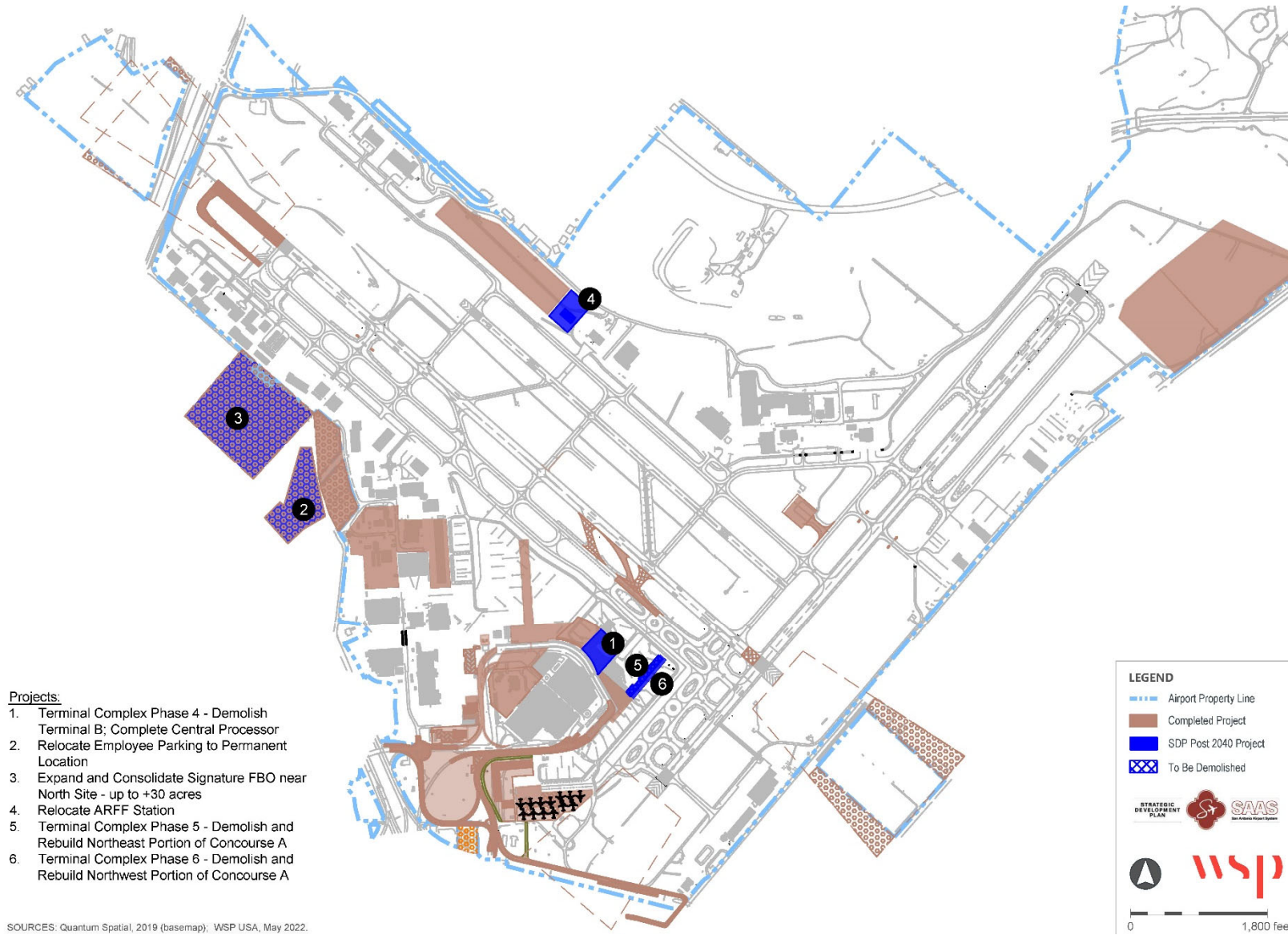
POST-2040 PROJECTS

The Post-2040 projects are projects anticipated to be constructed beyond the SDP planning horizon (after 2040). The list provides information on the projects that are planned for beyond the planning horizon.

Figure 6.7-3 depicts general project areas for these projects:

- Relocate Employee Parking to Permanent Location (2041-2043)
- Expand and Consolidate Signature FBO Near North Site – up to 30+ acres (2044-2044)
- Relocate ARFF Station (2044-2045)
- Terminal Complex Phase 5 – Demolish and Rebuild Northeast Portion of Concourse A (2045-2047)
- Terminal complex Phase 6 – Demolish and Rebuild Northwest Portion of Concourse A (2048-2051)

Figure 6.7-3: Post-2040 Projects



SOURCES: Quantum Spatial, 2019 (basemap); WSP USA, May 2022.

6.7.2 PROCUREMENT ASSUMPTION

It is assumed all projects would be procured using design-bid-build methods, rather than a potentially more efficient method such as design-build. As part of the SDP, WSP prepared a white paper (**Appendix 6A**) that compared methods of procurement available to SAAS for the implementation of projects in the phased development plan. In addition, costs were developed for individual project phases: programming, environmental, design, construction.

Details of the phasing of individual project phases is provided in **Appendix 6B**.

6.7.3 TERMINAL C PROGRAM

During the development of the sequencing and detailed timing for the projects in the plan, recommendations were made for the development of larger capital programs - projects that could be combined for the efficiency of implementation or because the timing of them was such that the combination could result in improved coordination during the implementation process. The first program identified was the Terminal C Program. The projects identified for this program include the following:

- Relocate Employee Parking to Interim Location
- Expand RON Apron Phase 1
- Terminal Complex Phase 1 – Construct Terminal C
- Construct Waste Disposal Facilities
- Realign Terminal Loop Road
- Construct Phase 1 GTC and 6-level Parking Garage at Terminal C
- Construct Central Distribution and Receiving Facility

The environmental studies for these projects were combined into the Terminal Complex Phase 1 environmental study, as well as the next two phases of the terminal complex. In addition, programming for these projects was also combined to create efficiencies as design and construction were completed.

6.8 FUNDING SOURCES AND ASSUMPTIONS

This section presents information regarding the funding sources, the assumptions used to apply/allocate those funding sources to the projects in the phased development plan, and the funding as it is applied to each of the projects in the phased development program.

6.8.1 FUNDING SOURCES

The projects included in the Airport's CIP are expected to be funded from various sources: federal grants (discretionary, entitlement, noise discretionary, FAA VALE), state grants (TxDOT), PFC revenues, Aviation department funds (Airport Improvement and Contingency Fund, Stinson Revolving Fund, and Interim

Airport Financing), prior and new bond proceeds and other grants. This section provides an overview of the major funding sources used in the process.

FEDERAL GRANTS

AIRPORT IMPROVEMENT PROGRAM

Eligible capital projects are federally funded through the Airport Improvement Program (AIP). This program provides grants for the planning and development of public-use airports that are included in the National Plan of Integrated Airport Systems (NPIAS). For SAT, a medium-hub airport, the federal grant covers 75 percent of eligible costs or 80 percent for noise-related projects.

The FAA provides federal grants in three forms, based on the appropriation received from Congress each year:

- Entitlement grants - based on annual enplaned passenger levels
- Discretionary grants - based on availability and project priorities, including:
 - Letter of Intent (LOI) grants – multi-year commitment based on availability and project priorities
 - Noise discretionary grants - specific to noise compatibility planning and noise mitigation-related projects
 - Voluntary Airport Low Emissions (VALE) grants - improve airport air quality by funding projects such as alternative fuel vehicles, gate electrification, remote ground power, and other airport air quality improvements.

Eligible projects for federal funding are defined as projects that enhance the safety of the airport and improve capacity, security, and environmental concerns. In general, most airfield capital and rehabilitation projects are eligible for AIP funds.

ECONOMIC STIMULUS GRANTS

Considering the Coronavirus (COVID-19), various economic stimulus relief packages were passed and used for capital expenditures and to cover maintenance and operating expenses at airports. The economic stimulus relief packages are summarized below:

- The Coronavirus Aid, Relief, and Economic Security (CARES) Act included a total of \$10 billion in funds to increase the federal share to 100% for AIP and supplemental discretionary grants already planned for FY 2020.
- The Coronavirus Response and Relief Supplemental Appropriation Act (CRRSAA) included a total of \$2 billion in funds awarded to eligible U.S. airports and eligible concessions at those airports to respond to the COVID-19 pandemic and provide relief from rent and minimum annual guarantees to airport tenants.
- The American Rescue Plan Act (ARPA) of 2021 included a total of \$8 billion in funds awarded for additional economic assistance and concession relief.

Additionally, the Infrastructure Investment and Jobs Act (IIJA), passed into law on November 15, 2021, provides \$25 billion in new funding for airports above baseline levels. Funds from the IIJA will be used to

address, among other areas, airports' aging infrastructure and create a new competitive grant program for airport terminal development projects.

To be conservative, the calculation of rates and charges did not include economic stimulus grants beyond FY 2022.

STATE GRANTS

State funding assistance through the State of Texas Department of Transportation (TxDOT) may be used on federally funded projects or to fund projects not eligible for federal funding at publicly owned facilities. While Stinson Municipal Airport may receive state grants from TxDOT Aviation, it is assumed that SAT will not receive state grants to fund the SDP CIP because Texas, as a block grant state, uses its aviation funds for general aviation airports. It is possible, however, that state transportation grants could be made available to fund connecting and interstate roadway projects.

PASSENGER FACILITY CHARGES

The Passenger Facility Charge (PFC) Program, initially authorized by the Aviation Safety and Capacity Expansion Act of 1990, allows the collection of PFC fees for every eligible enplaning passenger at commercial airports managed by public agencies. PFCs collected at SAT by the airlines and remitted to the Airport are capped at \$4.50 per flight segment, to fund FAA-approved projects that enhance safety, security, or capacity; reduce noise; or enhance air carrier competition.

CUSTOMER FACILITY CHARGES

SAAS collects a rental car customer facility charge (CFC) at SAT to pay for the Consolidated Rental Car facility and other debt issued that is backed by CFC revenues, to support rental car operations at the Airport. The CFC is currently assessed at \$5.50 per transaction-day collected by rental car companies and remitted to the Airport.

BOND PROCEEDS

A significant portion of the capital improvement and the strategic development plan programs are funded with proceeds from General Airport Revenue Bonds (GARBs) and PFC-backed bonds, assumed to be issued in the future. The amount of debt issuance is determined by, among other factors, cash flow needs to fund future terminal, multimodal and support projects. Debt service issued in addition to existing debt is repaid with Airport revenues and available PFC revenues.

AIRPORT IMPROVEMENT AND CONTINGENCY FUND

The fund is established by the City for the Airport and used to pay the costs of constructing, equipping, or otherwise acquiring any enlargements, extensions of, or any other improvements to the Airport System, or to provide for the early retirement of Bonds. The objective behind this fund is to preserve, enhance, or protect the Airport. In addition, capital improvements funded with Airport reserves with a net cost of \$300,000 or more are recovered through amortization.

6.8.2 FUNDING ASSUMPTIONS

Based on the identified SDP CIP projects and their associated costs, a proposed plan was developed to fund these projects by maximizing the use of external funding resources. **Table 6.8-1** summarizes the overall funding plan assumptions for SDP CIP projects.

Table 6.8-1: Funding Plan Assumptions

PROJECT	FUNDING PLAN ASSUMPTIONS
Airfield	75% AIP 25% Airport Reserves
Terminal	65% PFC Bonds to the extent PFCs are available to pay annual debt service 35% or remainder is funded with GARBS
Multimodal Access	100% Airport Reserves Larger projects of \$20 million or more are funded with GARBs
Cargo/ Support Facilities	100% Airport Reserves Larger projects of \$20 million or more are funded with GARBs

Source: WSP USA, 2022.

6.8.3 PROJECT COSTS/FUNDING

Table 6.8-2 presents the project costs and the allocated funding sources assumed for each of the projects contained in the phased development plan. The allocations were based on project eligibility for each of the funding sources.

Table 6.8-2: Project Costs and Funding

PROJECT NAME	CATEGORY	TOTAL COST (2021\$, MILLIONS)	POTENTIAL FUNDING SOURCE ALLOCATION				
			AIP	PFC BONDS	GARBS	AIRPORT RESERVES	PRIVATE / TENANT
RW 13R Extension to 9,749 ft, including TW G Extension	Airfield	\$116.1	75%			25%	
Demolish and Relocate ATC and TRACON	Airfield	\$132.9	87.5%			12.5%	
Terminal Complex Phase 1 - Construct Terminal C	Terminal	\$839.7		65%	35%		
Construct Waste Disposal Facilities	Terminal	\$7.7		65%	35%		
Relocate Employee Parking to Interim Location	Multimodal Access	\$12.5				100%	
Realign Terminal Loop Road	Multimodal Access	\$19.6			100%		
Construct Phase 1 GTC and 6-level Parking Garage at Terminal C	Multimodal Access	\$69.6			100%		
Construct Central Distribution and Receiving Facility	Support Facilities	\$22.6					100%
Expand East Cargo - Strategic Phase 1 - (18 Acres)	Support Facilities	\$1.1				100%	
Expand RON Ramp Phase 1	Terminal	\$5.5		65%	35%		
Expand East Cargo - Strategic Phase 2 - (18 Acres)	Support Facilities	\$0.7				100%	
Land Acquisition L10 for Maintenance Facilities	Land Acquisition	\$8.3	75%			25%	

PROJECT NAME	CATEGORY	TOTAL COST (2021\$, MILLIONS)	POTENTIAL FUNDING SOURCE ALLOCATION				
			AIP	PFC BONDS	GARBS	AIRPORT RESERVES	PRIVATE / TENANT
Land Acquisition for Runway 13R RPZ	Land Acquisition	\$1.7	75%			25%	
Strategic Land Acquisition L11	Land Acquisition	\$1.9	75%			25%	
Terminal Complex Phase 2 - Renovate Terminal A and Demo/Replace South End	Terminal	\$107.7		65%	35%		
Fix Terminal A Pinchpoint	Multimodal Access	\$67.2			100%		
Lower 281 N. Direct Connect Ramp	Multimodal Access	\$19.1				100%	
Separate Airport Blvd from Airport Loop Road	Multimodal Access	\$68.2			100%		
Site Prep Corporate Aviation Hangars - (16 acres)	Support Facilities	\$2.4					100%
Consolidate Airport Maintenance and Airfield Operations Maintenance Facilities	Support Facilities	\$85.3			100%		
Expand East Cargo North - Phase 2 - (21 Acres)	Support Facilities	\$49.0			100%		
Construct Runway 13R Highspeed Exit Taxiway	Airfield	\$10.9	75%			25%	
Construct Dee Howard Roundabout	Multimodal Access	\$14.0				100%	

PROJECT NAME	CATEGORY	TOTAL COST (2021\$, MILLIONS)	POTENTIAL FUNDING SOURCE ALLOCATION				
			AIP	PFC BONDS	GARBS	AIRPORT RESERVES	PRIVATE / TENANT
Construct GSE/Line Maintenance Facility	Support Facilities	\$77.7					100%
Relocate Belly Cargo	Support Facilities	\$9.9				100%	
Realign Green lot parking based on new Airport Roads	Multimodal Access	\$7.9				100%	
Construct Phase 2 GTC and 6-level Parking Garage at Terminal C	Multimodal Access	\$254.7			100%		
Site Prep for VTSAA Expansion	Support Facilities	\$12.5					100%
Install RGLs at Taxiway J	Airfield	\$2.0	75%			25%	
Expand GRE	Airfield	\$26.4	80%			20%	
Terminal Complex Phase 3 - Construct West Central Processor	Terminal	\$321.8		65%	35%		
Decouple RW 31L from RW 4-22	Airfield	\$12.5	75%			25%	
Install RGLs on both sides of Taxiway T	Airfield	\$11.2	75%			25%	
Expand RON Ramp Phase 2	Terminal	\$12.3		65%	35%		
Terminal Complex Phase 4 - Demo Terminal B; Complete Central Processor	Terminal	\$308.3		65%	35%		
Land Acquisition L2 for FBO Expansion	Land Acquisition	\$26.3	75%			25%	

PROJECT NAME	CATEGORY	TOTAL COST (2021\$, MILLIONS)	POTENTIAL FUNDING SOURCE ALLOCATION				
			AIP	PFC BONDS	GARBS	AIRPORT RESERVES	PRIVATE / TENANT
Land Acquisition for Employee Parking	Land Acquisition	\$7.4	75%			25%	
Construct New Entrance from Loop 410	Multimodal Access	\$15.9				100%	
Land Acquisition for Runway 31L RPZ	Land Acquisition	\$28.4	75%			25%	
Expand and Consolidate Signature FBO near North Site - up to +30 acres	Support Facilities	n/a					
Relocate ARFF Station	Support Facilities	n/a					
Terminal Complex Phase 5 - Demo and Rebuild Northeast Portion of Concourse A	Terminal	n/a		65%	35%		
Terminal Complex Phase 6 - Demo and Rebuild Northwest Portion of Concourse A	Terminal	n/a		65%	35%		

Source: WSP USA, 2022.

6.9 NEXT STEPS

Figure 6.9-1 presents the next steps for project implementation, as presented during the final public engagement rollout of the phased development plan. As shown in the figure, after the completion of the master plan documentation, it is recommended that SAAS complete advanced planning/programming for the Terminal C Program that is discussed earlier in this chapter. This would include refining the terminal and parking requirements, up to 15% design. At this point, enough information will be available to complete the environmental study needed to proceed with design and construction of the project. This same type of process will be required, depending on the project, for the remaining projects and programs in the phased airport development plan.

Figure 6.9-1: Next Steps for Project Implementation



Source: WSP USA, 2021.

San Antonio Airport System Strategic Development Plan

2021 AIRPORT MASTER PLAN

MASTER PLAN UPDATE

CHAPTER 6 – IMPLEMENTATION AND FUNDING PLAN

APPENDIX A – ALTERNATIVE DELIVERY STRATEGIES FOR AIRPORT PROJECTS

DECEMBER 2021





MEMO

TO: Ryan N. Hall, C.M., Debbie Drew, C.M.
CC: Susan St. Cyr, P.E., C.M.
FROM: John van Woensel and Tracy Beach
SUBJECT: Task 14.03 – White Paper: Alternative Delivery and Implementation Strategies for Airport Projects
DATE: December 6, 2021

The purpose of this white paper is to provide an overview of public-private partnerships (P3) and alternative project delivery methods to inform the San Antonio Airport System's (SAAS) implementation strategy for the projects in the Strategic Development Plan (SDP) Airport Capital Improvement Program (ACIP) and other capital projects included in the SAAS ACIP.

Below is an overview of the information covered in this memo:

- Description of the various alternative delivery methods that could be available to implement certain projects in the SDP ACIP.
- Identification of the risks associated with the project delivery methods described and the entity, either public or private, that bears the risk for each method.
- Review of the Texas regulatory environment related to P3s and present the parameters under which the private sector can partner with SAAS related to projects in the SDP ACIP.
- Assessment of characteristics that make a project viable for alternative delivery/P3 procurement.
- Discussion of various airport P3 projects, including methods used to implement them and timelines associated with procuring and negotiating with private investors to get to “financial” close of a project.
- Examples of P3 timelines for full project implementation and terminal project implementation timelines.

ALTERNATIVE DELIVERY METHODS

A P3 occurs when a private entity or consortium of investors commits to deliver a project for a public-sector owner in exchange for a revenue stream from the public-sector entity that the completed facility is anticipated to generate, or revenue derived from other sources. P3s can be structured in several ways related to both the financing of the private and public-sectors' participation in the project, as well as the mechanism for how the project revenue generated is transferred to the private sector for its participation in the project.

The following paragraphs provide an overview of several methods used in the delivery of infrastructure projects and which are used in the implementation of a P3.

- **Design-Bid-Build (DBB)** – This is the most traditional method of project delivery in the public sector. Once a decision regarding project implementation is made, contracts are awarded to the selected design/build firm/consortium to design and construct the project. The engineering firm/designer develops the complete design plans for the project (referred to as 100% design) and sets a clear understanding for the bidders/constructors related to the potential materials and equipment and schedule that will be required to implement the project. The constructor will then be selected by the owner through solicitation of competitive bids on the project. In the U.S., the construction contract for the project is typically awarded to the lowest bidder without regard to innovation or the quality of previous work. In addition, the project schedule has already been established while design is being completed. Under this scenario, the public-sector usually finances/funds all required steps of the process. The benefit of a DBB process is that it is highly familiar to all parties involved. The disadvantages include a lengthy process, little opportunity for contractors to recommend improvements or have some ownership in the project, and the government entity retains most of the project risks; however, in many cases the cost and the time to complete the project are longer with DBB.
- **Construction Manager at Risk (CM@R, CMR, CMaR, or CM/GC)** – This contract vehicle is an alternative to design-bid-build under which a private party holds the construction contracts and self-performs or subcontracts the work, meaning the contract holder is responsible for both the construction work and the total cost. The CM@R is procured prior to design and the contract is structured in phases: the first being pre-construction services and the second being that of a general contractor during construction. Design is a separate contract and is the responsibility of the project sponsor/government entity and in the case of U.S. airports that are using AIP funds for projects procurement for the designer is qualifications based. The design contract will bring the project to 100% design and with the CM@R working side by side with the owner during this phase they are able to provide a well-informed guaranteed minimum price. The project owner's responsibility in the construction of the project is limited but can be defined in the CM@R contract, which essentially guarantees the cost of the project upfront alleviating the cost of potential change orders/cost overruns to the owner.
- **Design-Build (DB)** – This methodology is similar to design-bid build; however, it can have a faster timeline than traditional DBB. The public sector is responsible for financing/funding the project. However, the design and construction contracts are combined, which may allow for a compressed project schedule, which ultimately saves in the overall costs to the public sector. A variation of DB is Progressive Design-Build (PDB). For PDB the design-build team is involved in the early stages of project development with the owner. This differs from a typical design-build procurement, where a project is at least 35% design before the design-builder is involved and a guaranteed minimum price is issued at 100% design. In PDB, the design-builder is a part of the owner's team earlier in the process with the guaranteed minimum price being issued at somewhere between 50% and 75% design stage.
- **Build-Operate-Transfer (BOT)**– Under this arrangement, the public sector is responsible for the financing/funding of the project, as well as design, while the private entity constructs and operates the project. This is also known as a turnkey operation, because after a specified amount

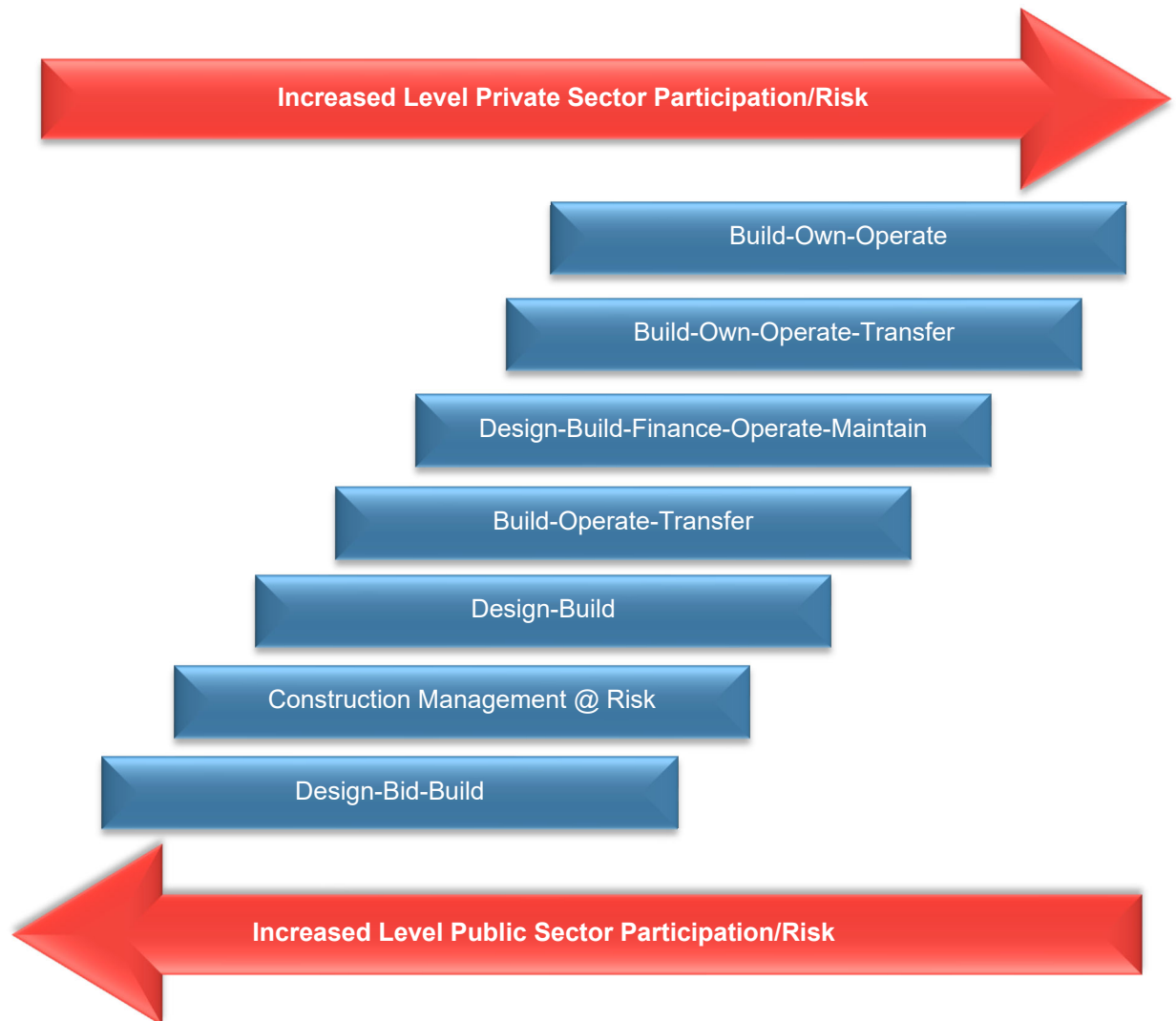
of time the public sector takes over the responsibility for the infrastructure. This delivery method has been used as a P3 to develop airports in both Egypt and Turkey.

- **Design-Build-Finance-Operate-Maintain (DBFOM)** – This is a delivery method that requires the private sector to design, build, operate, and maintain the infrastructure using their own financing; however, the ownership remains with the public sector, and the private sector essentially leases the facility for a long period of time during which it operates and maintains the infrastructure. There is flexibility in the sharing of the risk/financing of the project as because the funds to finance the project could come from a combination of both the public and private sectors. There are many ways for the public sector to participate in the development of the project, including providing funding and/or the land needed to construct the project. In addition, either the public sponsor (in an availability payment structure) or private sector could take traffic demand risk, meaning they would benefit if the activity that is the revenue- driver exceeds forecasts, and are not protected if traffic is below forecast. Recent examples of DBFOM P3s include the terminals at Paine Field in Everett, Washington and the South Terminal at Austin-Bergstrom International Airport in Austin, Texas.
- **Build-Own-Operate-Transfer (BOOT)** – This is a combination of build-operate-transfer and design-build-finance-operate-maintain. The private sector designs, builds, owns, and operates the project under a long-term lease. After the lease ends, control will transfer the ownership of project to the public sector. This differs from DBFOM in that the public sector likely also participates in the funding/financing of the project with the provision of land or other capital funding sources.
- **Build-Own-Operate-Maintain (BOOM or Concession)** – Under this arrangement the public-sector involvement is limited to the development of the legal documents and ensuring the private sector complies with the terms of the long-term contract to develop and operate an infrastructure asset, also known as a concession. The public sector will provide a portion of the financing for a greenfield project and the private sector is responsible for all aspects of project implementation including design through operation and maintenance of the asset. For brownfield project (i.e., an already- constructed project), this is also known as a concession. An example of this P3 strategy is the privatization of the Luis Munoz Marin International Airport in San Juan Puerto Rico.

IDENTIFYING AND MITIGATING RISKS ASSOCIATED WITH ALTERNATIVE DELIVERY METHODS

The motivation for the implementation of a P3 typically relates to the transfer of risk from the public sector to the private sector. The type of arrangement that is pursued is also a factor of what the amount of control the private sector is willing to relinquish to mitigate the risk they bear. **Figure 1** presents a depiction of the continuum of the risk, along with the level of participation of the public-sector versus the private sector for the various P3 arrangements described above. Table 1 illustrates where the risks typically reside in the P3 options listed above.

Figure 1 | Delivery Method Risk Continuum



As shown above, design-bid-build requires the highest level of public sector control/involvement with the highest amount of risk. As additional risk is transferred to the private sector (e.g., build-own-operate/concession), the public sector's participation and risk decrease.

Among the most important decisions a public project sponsor can make is the selection of the appropriate contracting vehicle, along with and which of the corresponding risks that should be shifted from the public sector to the private sector and which of the risks should be shared. In theory, each risk should be assigned to the party best able to manage it. For example, environmental and geotechnical risks are likely to be largely unknown at the outset of a project. For private sector entities to hold these risks, they will include substantial contingency in the price to deliver the project. Therefore, it may be more efficient for the public sector to retain these risks. On the other hand,

private developers are used to giving guaranteed prices for construction work, so private parties might not consider the construction costs to be substantial risks.

Table 1 shows the risks that are typically assigned to each party in the various types of P3s.

Table 1 | Risk Sharing Matrix

	Design	Construction	Operate	Maintain	Financing	Traffic
Design-Bid-Build	Public	Public	Public	Public	Public	Public
Construction Manager @ Risk	Public	Shared	Public	Public	Public	Public
Design-Build	Private	Private	Public	Public	Public	Public
Build-Operate-Transfer	Private	Private	Private	Public	Public	Public
Design-Build-Finance-Operate Maintain (Availability Payment)	Private	Private	Private	Private	Private	Public
Build-Own-Operate-Transfer	Private	Private	Private	Private	Private	Shared
Concession	Private	Private	Private	Private	Private	Private

AIRPORT-SPECIFIC RISK

For any airport, a major risk related to project implementation is the predictability of aviation demand. Aviation demand at SAT includes many factors outside a contractor's and/or private investor's control, such as the strength of the national and local economy, the development of non-airport infrastructure to facilitate access and other infrastructure at the airport, as well as competing facilities. Therefore, a private party will attach a high price to demand risk in any alternative delivery/concession bid. However, in the case of SAT, the fact that it is primarily an origin and destination market, has a good balance of air traffic on multiple airlines and has fairly equal distribution of both business and leisure travelers results in less aviation demand risk compared to an airport such as Dallas Love Field, that is a "focus" city for Southwest Airlines or any airport where traffic is dominated by one specific carrier.

The Los Angeles International Airport's Landside Access Modernization Program, which includes the development of a people-mover to connect a new rental car facility, as well as the light rail station with the airport's terminal complex. The primary goal of this P3 procurement was to develop the

project as quickly as possible. Since this project does not have the usual revenue source(s) that is typically included as part of a P3 arrangement, an availability payment structure is being utilized to attract private participation in the project. In addition, availability payments can be used as a portion of the payment to the private sector to mitigate demand risk. An availability payment structure (as described above) guarantees an annual minimum payment to the private investor.

BENEFIT-COST ANALYSIS

Similarly, a benefit-cost analysis (BCA) of contracting and P3 options should be conducted to identify and quantify the impact of the risks up front. A BCA requires the identification of all key project risks, determining which party is best equipped to manage that risk, and assigning a value to the risk to the extent possible.

VALUE-FOR-MONEY

Typically, public project sponsors conduct value-for-money analyses on various P3 options and at multiple stages in the P3 procurement process to ensure that the community will be benefiting from the P3. The difference between the net costs to the public of the proposed project and the project developed by the public sponsor, expressed in present value terms, is often referred to as the “value-for-money.” Value for money is the additional economic benefit derived from utilizing a P3 over developing the project through a public entity. This is usually reflected through lower estimated costs or reduced risk.

TEXAS/LOCAL P3 GOVERNANCE

This section presents a summary of the legislative status for P3 procurements in the State of Texas. There have been a number of public projects within the state that have been implemented utilizing P3. Below are some key legislative factors, identified by the Association for the Improvement of American Infrastructure, for consideration in making the decision to use if a P3 is used to implement a project at SAT. In addition, the City of San Antonio is a home rule charter city, which means that under the Texas State Constitution, the City Charter (established in 1951) provides for the form of City government. In the same way that an “Approval Certificate” from the City’s Chief Financial Officer is required under the Airport’s Bond Ordinance to issue bonds, the same type of approval authority would likely be required from City Council for an Airport capital project to be implemented utilizing a P3.

Overall, Texas legislation allows for a broad range of facilities that can be implemented with a P3, as well as a variety of funding and financing options that can be utilized as part of the business deal of the transaction.

- Texas employs Dillon’s Rule¹ to all municipalities, which allows the State legislature to govern a local government’s method of financing its activities and procedures.

¹ Dillon’s Rule is a legal theory that localities should wield no more authority than that specifically delegated to them by state statutes. Except for home rule charter cities, which includes the City of San Antonio, Texas is, to a great extent, a Dillon’s Rule state. As a home rule charter city, the City has the authority to enact an

- Legislation allows for a broad range of eligible infrastructure including transportation, municipal facilities and environmental projects.
- Texas Department of Transportation (TxDOT) is the centralized resource for transportation projects in the Texas. The Texas Center for Alternative Finance and Procurement (“CAP”) is a statewide resource for pre-solicitation advisory services in support of procurement at the state agency level, as well as in support of regional authorities, counties and municipalities.
- P3 authority extends to any ferry, mass transit facility, vehicle parking, port facility, power generation, fuel supply, oil and gas pipeline, water supply, public works, waste treatment, hospital, school, medical or nursing care facility, recreational facility, public building, as well as TxDOT highways and roads are all eligible categories of projects that can be implemented using a P3.
- While legislation does not allow for the submittal of private proposals for municipal facilities, there are some exceptions for the submission of unsolicited proposals for certain transportation asset classes in eligible project categories, (e.g., an airport terminal building).
- Certain sources of public fund participation require compliance with MWDBE participation (i.e., AIP grants and PFCs) and Davis-Bacon prevailing wage compliance is required for certain categories of labor.
- State law allows for the combination of Federal funding sources and municipal funding/financing, along with private funding to implement projects; however, Transportation Finance and Innovation Act (TIFIA) loans are not identified as a financing source.

PROJECT VIABILITY FOR P3 INVESTMENT

Several conditions are typically needed for a public-private partnership (PPP) to be viable. These include the following:

- **Commercial viability of the project.** Based on reasonable assumptions, financial forecasts should demonstrate an expected rate of return on private capital invested in line with the risk the private party will assume, such as demand risk. Typically, a commercially viable project will have an associated net revenue stream. This could mean the project itself produces revenue or the public entity commits to an annual payment to the private entity (an “availability payment”, i.e., regular fixed payments, regardless of demand) to support the operation of the project.
- **Proper alignment of risks.** A P3 does not mean that project construction and financial risk is completely transferred to the private sector. Rather, the project sponsor and private sector entity assume those risks they are best able to manage. In the case of U.S. P3 projects, the NEPA process is either complete or well underway for greenfield projects alleviating any risk that the project would not move forward because of environmental concerns. Another way to speed up the implementation of the process is to allow the private sector to lead the development of NEPA

ordinance that could allow or prohibit the ability to utilize a P3 for a City-funded project, which could potentially include the City’s enterprise fund for the Airport.

documentation that is then formally submitted by the project owner. Further, a portion of the design should be complete, which should be between 20% to 30% complete.

- **Commitment of public resources for the project.** The level of this financial commitment depends upon the project's fiscal outlook and risk profile. Some P3s require little public investment. More commonly, the public sponsor provides equity, guarantees a minimum level of revenue and/or costs, and provides some level of investment in ancillary projects to support the P3 (e.g., providing land, utilities, connecting transportation infrastructure, etc.). An example of this type of commitment is the PANYNJ's commitment to providing financing specifically for roadways and the commitment of PFCs for the development of the Central Terminal Building at LaGuardia Airport.

As the funding plan for the SDP ACIP is developed, the viability of the utilization for P3 to implement each individual project will be assessed, as well as the identification of what specific P3 method(s) could be used for each project.

ALTERNATIVE DELIVERY/P3 CASE STUDIES

There are airport projects that have been recently implemented utilizing a P3 in the U.S. **Table 2** below provides the highlights for a number of transactions.

Table 2 | Summary of Airport P3 Transactions

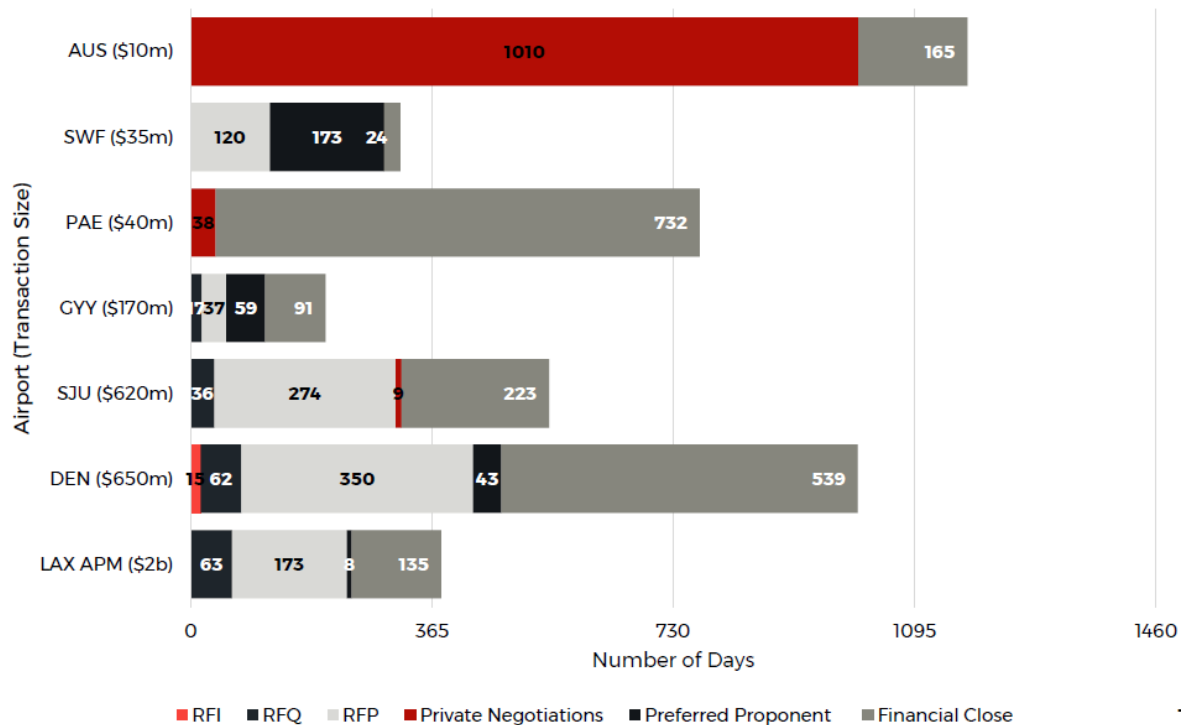
		2017 EPAX (millions)	Primary Purpose	P3 Delivery Model ¹	Transaction Size ²	Current Status
1	Austin South Terminal	6.8	New Facility	DBFOM	\$10M	In Operation
2	Denver Great Hall	29.8	Renovation	DBFOM/ Availability Payment	\$650M	Under Construction
3	Everett Paine Field Terminal	N/A	New Facility	DBFOM	\$40M	In Operation
4	Gary Airport Management and Development	N/A	Development	Private Operation	\$170M	In Operation
5	LaGuardia Terminal B	14.6	Renovation	DBFOM	\$4B	Under Construction
6	LAX Automated People Mover	41.2	New Facility	DBFOM/ Availability Payment	\$2B	Under Construction
7	San Juan Privatization	4.2	Monetization	APPP	\$620M	In Operation

¹ The following abbreviations are used: DBF (Design Building Finance), DBFOM (Design Building Finance Operate Maintain), APPP (The Airport Privatization Pilot Program).

² Transaction size is capital value of project at time of project's current status

In the case of greenfield projects (projects on previously unused land, including Paine Field, Austin South Terminal, and the LAX APM above), where construction of a facility is a part of the P3, the primary motivation for utilizing a P3 is to tap into resources the municipality or public entity does not have access to. This allows for a faster implementation of the project, compared to traditional design-bid-build implementation. **Figure 2** below provides an overview of the timelines for negotiations of the airport P3s.

Figure 2 | Procurement Timelines (Organized by Project Capital Value, Smallest to Largest)



Key:

- AUS (Austin-Bergstrom International; Austin, TX)
- SWF (New York Stewart International Airport)
- PAE (Paine Field; Everett, WA)
- GYG (Gary International Airport; Gary, IN)
- SJU (Luis Munoz Marin San Juan International; San Juan, PR)
- DEN (Denver International Airport; Denver, CO)
- LAX (Los Angeles International; Los Angeles, CA)

Note that with SWF and DEN, while the projects were initially a P3, SWF while initially privatized under the FAA's Airport Privatization Pilot Program (APPP) the airport the Port Authority of New York and New Jersey acquired the remaining term under the lease after seven years due to local opposition, and in at DEN, the airport reclaimed control from the private sector during construction of the Great Hall Project due to performance issues prior to the project being complete.

Details for some of the P3 projects listed above are presented in the paragraphs below.

- Austin-Bergstrom International Airport's original terminal facility was built for a capacity of 11 million passengers, but in recent years, demand has significantly outpaced capacity, reaching nearly 16 million in 2018. The South Terminal is a new terminal project that increases total terminal capacity to 15 million passengers. The South Terminal was implemented under a design-build-finance-operate-maintain (DBFOM) structure, with a transaction value of \$10

million. The new South Terminal began operations in February 2019 and is separate from the original terminal complex. The South Terminal has nine new gates serving Frontier Airlines and Allegiant, as well as its own entrance, parking, security checkpoint, baggage claim, and an outdoor patio for travelers. This facility was designed to meet the needs of the ultra-low cost carriers that are located within the South Terminal and doesn't include design enhancement or frills that might be included in a larger terminal complex developed for mainline air carriers. It has been reported recently that Lone Star Holdings, LLC who has a 40-year lease to operate the South Terminal at AUS, has been looking to sell its interest in facility, which could be purchased by the City of Austin Aviation Department.

- Everett Paine Field is a new commercial passenger terminal facility north of Seattle that began operations in March 2019. The terminal is a 30,000-square foot facility, which includes two gates which serve Alaska Airlines and United Airlines. The new facility was built to provide additional capacity to the greater Seattle area, which primarily relies on the increasingly-congested Seattle-Tacoma International airport. Per the environmental assessment, the FAA projected the Everett Paine Field terminal to support 656,000 enplanements in 2019, which are expected to increase to 736,000 enplanements in five years. Any growth beyond the built gates and agreed-to flights would require a new environmental approval. The new facility was financed through a DBFOM delivery model, with a transaction value of \$40 million. The facility includes its own entrance and check-in area, as well as security check point, parking, and baggage claim.
- San Juan International Airport has thus far been the only successful privatization of an entire existing airport facility in the United States. The Puerto Rico Port Authority's (PRPA) primary objective was to obtain a one-time payment for the long-term concession of the facility with the funds being used to fund much needed infrastructure improvements for other modes of transportation. The PRPA issued a request for qualifications solicitation to obtain the information about interested consortiums, which often included multiple entities to handle both the infusion of capital and the financing of the initial concession payment, as well as entities with airport operations expertise. The consortiums that were qualified then moved on to the request for proposal stage, in which the final financial bids were developed. These consortiums then spent approximately nine months developing their plans for the airport and determining final bids for the concession. At the time of bid submittal, only two consortiums remained in the running for the concession. Since the deal closed, the winning bidder has made improvements to the concessions areas of the terminal building, and plans to demolish portions of the terminal facility, which is no longer needed due to American Airlines focusing their Latin American and Caribbean hub at Miami International Airport.

ALTERNATIVE DELIVERY/P3 TIMELINES

The SDP ACIP contains a phased terminal development program that results in the expansion, rebuilding, renovating and/or replacing of the entire terminal complex at SAT. Figure 3Figure 4 presents a comparison of typical timelines for project implementation depending on the delivery method. As shown, traditional implementation of design-bid-build can take as long as nine years, while design-build implementation can take as little as five years. The other methods can be



accelerated if the owner overlaps some of the steps, such as environmental and design. Examples of terminal projects and the timelines (actual or estimated) are presented in Figure 4.

Figure 3 | Comparison of Project Implementation Timelines by Delivery Method

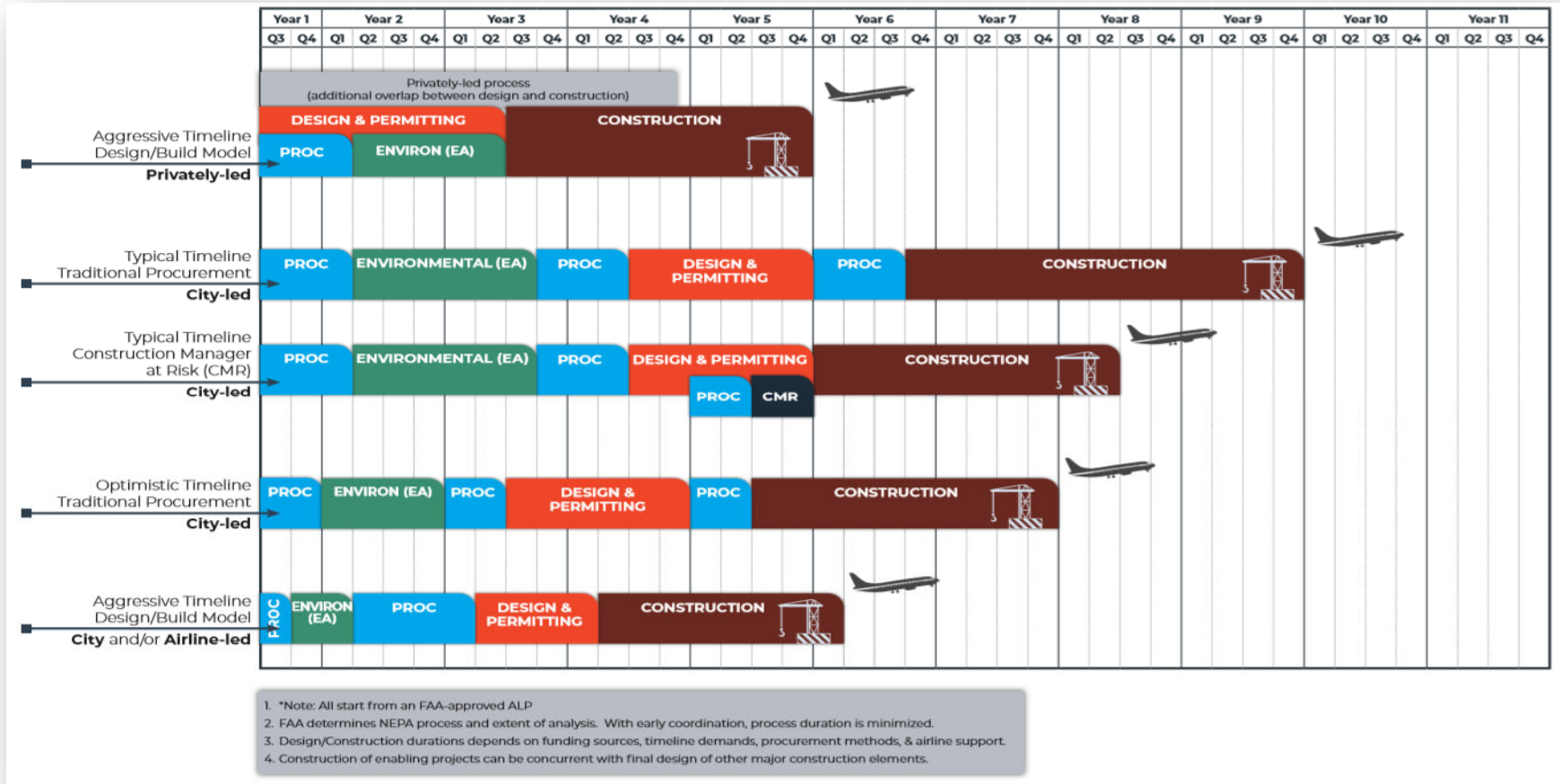
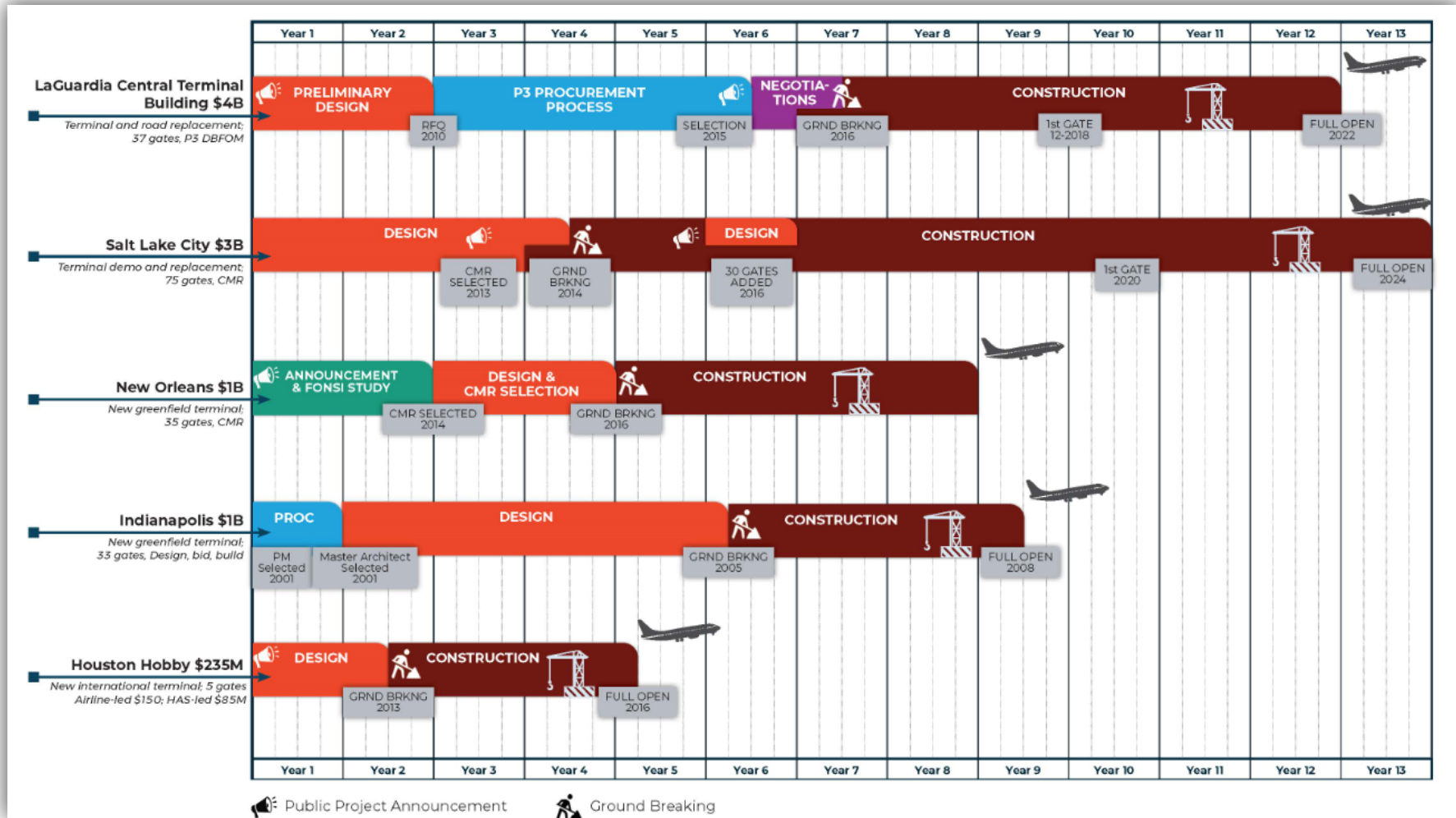


Figure 4 | Terminal Project Timelines



San Antonio Airport System Strategic Development Plan

2021 AIRPORT MASTER PLAN

MASTER PLAN UPDATE

CHAPTER 6 – IMPLEMENTATION AND FUNDING PLAN

APPENDIX B – DETAILED PROJECT COSTS AND PHASING

AUGUST 2022



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B. DETAILED PROJECT COSTS & PHASING

B.1 INTRODUCTION

This appendix focuses on presenting detailed project costs and phasing for the SDP phased development plan discussed in the chapter

B.2 ASSUMPTIONS

The following assumptions were used in developing the phased airport development plan timeline and costs.

- All projects would be procured using design-bid-build methods, rather than a potentially more efficient method such as design-build. As part of the SDP, WSP prepared a white paper (**Appendix 6A**) that compared methods of procurement available to SAAS for the implementation of projects in the phased development plan.
- For each project, costs were developed for individual project phases: environmental, design, construction. These costs were then adjusted to include costs related to advanced planning and programming of the projects.
- Individual project phases were also assigned a duration. The durations were vetted with SAAS and adjusted based on SAAS experience.
- If projects are combined to create a larger program, the environmental costs for the lower cost projects were assumed to be covered by the environmental costs for the larger project. In addition, for the Terminal, it was assumed that the first environmental study would cover the first three phases of the complex, and the second environmental study would encompass the last three phases.

Table B.2-1 summarizes the composite phased development plan, with projects organized by planning/programming start date. Functional areas, end dates and costs are also provided.

Table B.2-2 depicts a combined timeline of all SDP projects.

Tables B.2-3 and **B.2-4** depict more details related to the timing and sequencing of the projects combining the near-term and mid-term, as well as the long-term phased airport development plan. The tables include project start and end dates, including the timing identified for each component of an individual project (programming, environmental, design, and construction), as well as project cost information. Projects that are scheduled after the planning horizon of 2040 are not included in these figures.

Table B-2-1: Composite Phased Development Plan

PROJECT NAME	FUNCTIONAL AREA	TOTAL COST (2021\$, MILLIONS) ¹	START YEAR	END YEAR
Extend RW 13R to 9,749 ft, including TW G Extension	Airfield	\$116.1	2023	2034
Planning/Programming		\$1.7	2023	2026
Environmental		\$0.6	2024	2026
Design		\$24.4	2026	2028
Construction		\$89.4	2028	2034
Demolish and Relocate ATC and TRACON	Airfield	\$132.9	2023	2033
Planning/Programming		\$1.9	2023	2028
Environmental		\$1.1	2023	2028
Design		\$24.8	2026	2031
Construction		\$105.2	2031	2033
Terminal Complex Phase 1 - Construct Terminal C	Terminal	\$839.7	2023	2029
Planning/Programming		\$13.2	2023	2029
Environmental		\$7.1	2024	2025
Design		\$175.5	2024	2026
Construction		\$643.9	2026	2029
Construct Waste Disposal Facilities	Terminal	\$7.7	2023	2030
Planning/Programming		\$0.1	2023	2029
Environmental		\$0.1	2024	2025
Design		\$1.5	2029	2029
Construction		\$6.0	2029	2030
Relocate Employee Parking to Interim Location	Multimodal Access	\$12.5	2023	2030
Planning/Programming		\$0.2	2023	2030
Environmental		\$0.0	2024	2025
Design		\$2.3	2024	2024
Construction		\$9.9	2024	2025
Realign Terminal Loop Road	Multimodal Access	\$19.6	2023	2029
Planning/Programming		\$0.3	2023	2029
Environmental		\$0.0	2024	2025
Design		\$3.7	2026	2027
Construction		\$15.7	2027	2028
Construct Phase 1 GTC and 6-level Parking Garage at Terminal C	Multimodal Access	\$69.6	2023	2030
Planning/Programming		\$1.0	2023	2030
Environmental		\$0.0	2024	2025
Design		\$13.5	2025	2026
Construction		\$55.1	2026	2027
Construct Central Distribution and Receiving Facility	Support Facilities	\$22.6	2023	2029
Planning/Programming		\$0.3	2023	2029
Environmental		\$0.2	2024	2025
Design		\$4.3	2026	2026
Construction		\$17.7	2026	2026
Expand East Cargo - Strategic Phase 1 - (18 Acres)	Support Facilities	\$1.1	2023	2024
Planning/Programming		\$0.0	2023	2023
Environmental		\$0.0	2023	2023
Design		\$0.4	2023	2023
Construction		\$0.7	2023	2024
Expand RON Ramp Phase 1	Terminal	\$5.5	2024	2028

PROJECT NAME	FUNCTIONAL AREA	TOTAL COST (2021\$, MILLIONS) ¹	START YEAR	END YEAR
Planning/Programming		\$0.1	2024	2028
Environmental		\$0.1	2024	2024
Design		\$1.1	2025	2025
Construction		\$4.2	2025	2025
Expand East Cargo - Strategic Phase 2 - (18 Acres)	Support Facilities	\$0.7	2026	2030
Planning/Programming		\$0.0	2023	2023
Environmental		\$0.0	2023	2023
Design		\$0.0	2023	2023
Construction		\$0.7	2026	2030
Land Acquisition L10 for Maintenance Facilities	Land Acquisition	\$8.3	2027	2027
Land Acquisition for Runway 13R RPZ	Land Acquisition	\$1.7	2027	2027
Strategic Land Acquisition L11	Land Acquisition	\$1.9	2027	2027
Terminal Complex Phase 2 - Renovate Terminal A and Demo/Replace South End	Terminal	\$107.7	2028	2034
Planning/Programming		\$1.7	2028	2032
Environmental		\$0.0		
Design		\$22.7	2030	2031
Construction		\$83.3	2031	2034
Fix Terminal A Pinchpoint	Multimodal Access	\$67.2	2028	2032
Planning/Programming		\$0.9	2028	2032
Environmental		\$0.7	2028	2028
Design		\$12.5	2029	2029
Construction		\$53.1	2029	2030
Lower 281 N. Direct Connect Ramp	Multimodal Access	\$19.1	2028	2032
Planning/Programming		\$0.3	2028	2032
Environmental		\$0.2	2028	2028
Design		\$3.6	2029	2030
Construction		\$15.1	2030	2031
Separate Airport Blvd from Airport Loop Road	Multimodal Access	\$68.2	2028	2032
Planning/Programming		\$1.0	2028	2032
Environmental		\$0.7	2028	2028
Design		\$12.7	2029	2030
Construction		\$53.9	2030	2031
Site Prep for Corporate Aviation Hangars - (16 acres)	Support Facilities	\$2.4	2028	2029
Planning/Programming		\$0.0	2029	2029
Environmental		\$0.0	2028	2028
Design		\$0.4	2029	2029
Construction		\$1.9	2029	2029
Maintainance Facilities	Support Facilities	\$85.3	2028	2033
Planning/Programming		\$0.5	2029	2030
Environmental		\$0.7	2028	2028
Design		\$17.1	2029	2030
Construction		\$67.0	2030	2032
Expand East Cargo North - Phase 2 - (21 Acres)	Support Facilities	\$49.0	2028	2031
Planning/Programming		\$0.7	2029	2030
Environmental		\$0.4	2028	2028

PROJECT NAME	FUNCTIONAL AREA	TOTAL COST (2021\$, MILLIONS) ¹	START YEAR	END YEAR
Design		\$9.4	2029	2030
Construction		\$38.5	2030	2030
Construct Runway 13R Highspeed Exit Taxiway	Airfield	\$10.9	2029	2031
Planning/Programming		\$0.2	2030	2030
Environmental		\$0.1	2029	2029
Design		\$2.2	2030	2030
Construction		\$8.5	2030	2030
Construct Dee Howard Roundabout	Multimodal Access	\$14.0	2029	2033
Planning/Programming		\$0.2	2029	2033
Environmental		\$0.1	2029	2029
Design		\$2.6	2030	2030
Construction		\$11.0	2030	2031
Construct GSE/Line Maintenance Facility	Support Facilities	\$77.7	2030	2034
Planning/Programming		\$1.1	2031	2032
Environmental		\$0.7	2030	2031
Design		\$14.9	2031	2032
Construction		\$61.0	2032	2034
Relocate Belly Cargo	Support Facilities	\$9.9	2030	2032
Planning/Programming		\$0.1	2031	2031
Environmental		\$0.1	2030	2030
Design		\$1.9	2031	2031
Construction		\$7.8	2031	2032
Realign Green Lot Parking Based on New Airport Roads	Multimodal Access	\$7.9	2031	2033
Programming		\$0.1	2032	2032
Environmental		\$0.1	2031	2031
Design		\$1.5	2032	2032
Construction		\$6.3	2032	2032
Construct Phase 2 GTC and 6-level Parking Garage at Terminal C	Multimodal Access	\$254.7	2032	2034
Programming		\$3.7	2033	2033
Environmental		\$0.2	2032	2032
Design		\$49.3	2033	2033
Construction		\$201.5	2033	2034
Site Prep for VTSAA Expansion	Support Facilities	\$12.5	2032	2034
Programming		\$0.2	2033	2033
Environmental		\$0.1	2032	2032
Design		\$2.4	2033	2033
Construction		\$9.8	2033	2034
Install RGLs at Taxiway J	Airfield	\$2.0	2033	2036
Programming		\$0.1	2033	2035
Environmental		\$0.1	2033	2035
Design		\$0.3	2034	2035
Construction		\$1.6	2035	2036
Expand GRE	Airfield	\$26.4	2033	2037
Programming		\$0.4	2033	2034
Environmental		\$0.1	2035	2035
Design		\$5.2	2036	2036
Construction		\$20.6	2036	2036

PROJECT NAME	FUNCTIONAL AREA	TOTAL COST (2021\$, MILLIONS) ¹	START YEAR	END YEAR
Terminal Complex Phase 3 - Construct West Central Processor	Terminal	\$321.8	2034	2038
Programming		\$5.1	2034	2036
Environmental		\$0.0		
Design		\$67.8	2034	2036
Construction		\$248.9	2036	2038
Decouple RW 31L from RW 4-22	Airfield	\$12.5	2035	2038
Programming		\$0.1	2035	2037
Environmental		\$0.1	2035	2036
Design		\$2.4	2036	2037
Construction		\$9.9	2037	2038
Install RGLs on Both Sides of Taxiway T	Airfield	\$11.2	2035	2040
Programming		\$0.3	2035	2037
Environmental		\$0.2	2036	2037
Design		\$1.8	2037	2038
Construction		\$9.0	2038	2040
Expand RON Ramp Phase 2	Terminal	\$12.3	2035	2040
Programming		\$0.2	2035	2038
Environmental		\$0.1	2036	2038
Design		\$2.6	2038	2039
Construction		\$9.4	2039	2040
Terminal Complex Phase 4 - Demolish Terminal B; Complete Central Processor	Terminal	\$308.3	2037	2043
Programming		\$4.8	2038	2040
Environmental		\$2.6	2037	2038
Design		\$64.4	2038	2040
Construction		\$236.4	2040	2043
Land Acquisition L2 for FBO Expansion	Land Acquisition	\$26.3	2037	2037
Land Acquisition for Employee Parking	Land Acquisition	\$7.4	2037	2037
Construct New Entrance from Loop 410	Multimodal Access	\$15.9	2037	2040
Programming		\$0.0	2037	2039
Environmental		\$0.4	2037	2037
Design		\$3.1	2038	2038
Construction		\$12.4	2039	2040
Land Acquisition for Runway 31L RPZ	Land Acquisition	\$28.4	2039	2039
Relocate Employee Parking to Permanent Location	Multimodal Access	n/a	2041	2043
Expand and Consolidate Signature FBO near North Site - up to +30 acres	Support Facilities	n/a	2041	2044
Relocate ARFF Station	Support Facilities	n/a	2041	2045
Terminal Complex Phase 5 - Demolish and Rebuild Northeast Portion of Concourse A	Terminal	n/a	2044	2047
Terminal Complex Phase 6 - Demolish and Rebuild Northwest Portion of Concourse A	Terminal	n/a	2048	2051

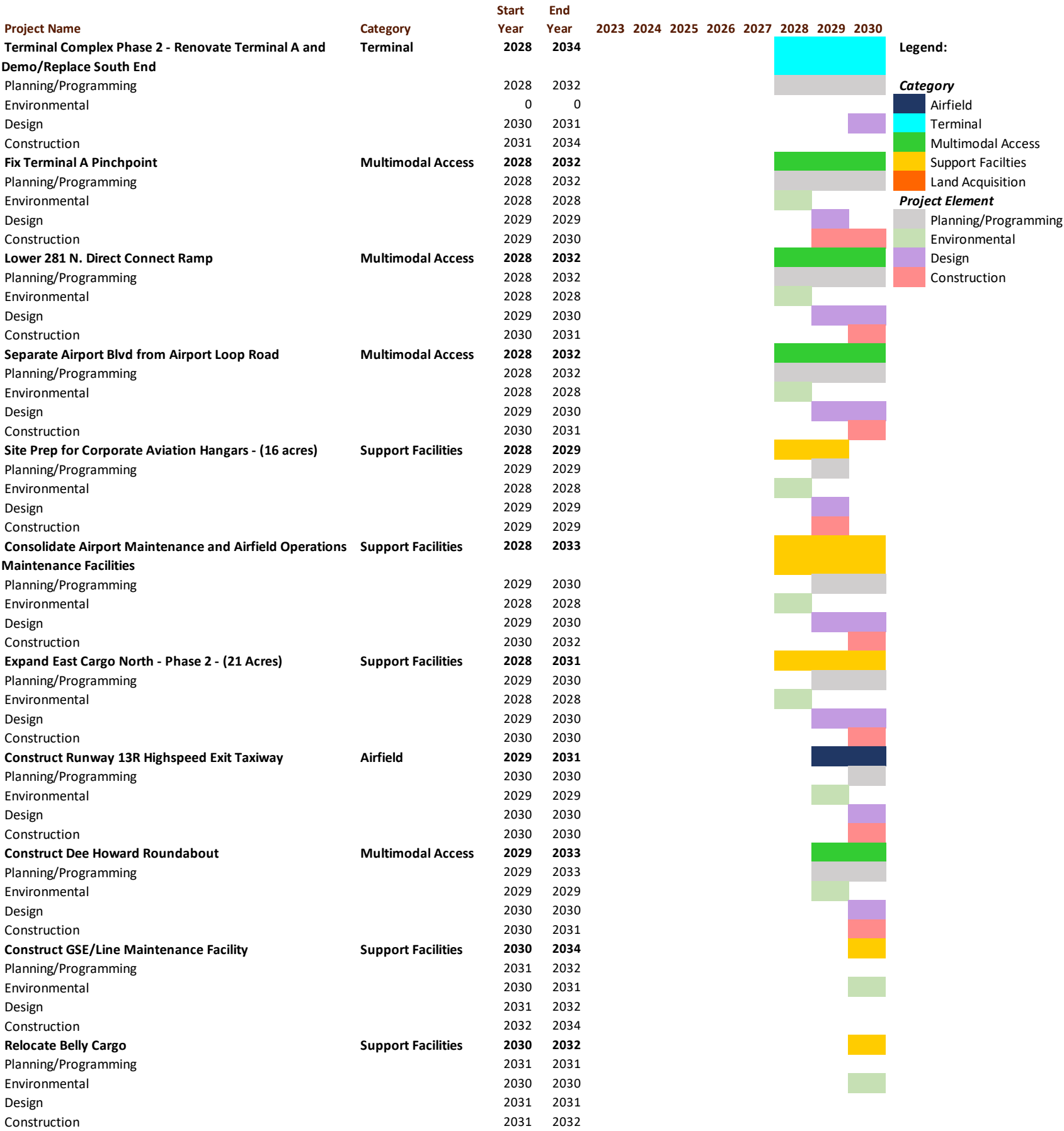
Source: WSP USA, 2022

PROJECT NAME	START YEAR	END YEAR	NEAR TERM			MID TERM					LONG TERM										POST-2040												
			2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051		
Extend RW 13R to 9,749 ft, including TW G Extension	2023	2034																															
Demolish and Relocate ATC and TRACON	2023	2033																															
Terminal Complex Phase 1 - Construct Terminal C	2023	2029																															
Construct Waste Disposal Facilities	2023	2030																															
Relocate Employee Parking to Interim Location	2023	2030																															
Realign Terminal Loop Road	2023	2029																															
Construct Phase 1 GTC and 6-level Parking Garage at Terminal C	2023	2030																															
Construct Central Distribution and Receiving Facility	2023	2029																															
Expand East Cargo - Strategic Phase 1 - (18 Acres)	2023	2024																															
Expand RON Ramp Phase 1	2024	2028																															
Expand East Cargo - Strategic Phase 2 - (18 Acres)	2026	2030																															
Land Acquisition L10 for Maintenance Facilities	2027	2027																															
Land Acquisition for Runway 13R RPZ	2027	2027																															
Strategic Land Acquisition L11	2027	2027																															
Terminal Complex Phase 2 - Renovate Terminal A and Demo/Replace South End	2028	2034																															
Fix Terminal A Pinchpoint	2028	2032																															
Lower 281 N. Direct Connect Ramp	2028	2032																															
Separate Airport Blvd from Airport Loop Road	2028	2032																															
Site Prep for Corporate Aviation Hangars - (16 acres)	2028	2029																															
Consolidate Airport Maintenance and Airfield Operations Maintenance Facilities	2028	2033																															
Expand East Cargo North - Phase 2 - (21 Acres)	2028	2031																															
Construct Runway 13R Highspeed Exit Taxiway	2029	2031																															
Construct Dee Howard Roundabout	2029	2033																															
Construct GSE/Line Maintenance Facility	2030	2034																															
Relocate Belly Cargo	2030	2032																															
Realign Green lot parking based on new Airport Roads	2031	2033																															
Construct Phase 2 GTC and 6-level Parking Garage at Terminal C	2032	2034																															
Site Prep for VTSAA Expansion	2032	2034																															
Install RGLs at Taxiway J	2033	2036																															
Expand GRE	2033	2037																															
Terminal Complex Phase 3 - Construct West Central Processor	2034	2038																															
Decouple RW 31L from RW 4-22	2035	2038																															
Install RGLs on Both Sides of Taxiway T	2035	2040																															
Expand RON Ramp Phase 2	2035	2040																															
Terminal Complex Phase 4 - Demolish Terminal B; Complete Central Processor	2037	2043																															
Land Acquisition L2 for FBO Expansion	2037	2037																															
Land Acquisition for Employee Parking	2037	2037																															
Construct New Entrance from Loop 410	2037	2040																															
Land Acquisition for Runway 31L RPZ	2039	2039																															
Relocate Employee Parking to Permanent Location	2041	2043																															
Expand and Consolidate Signature FBO near North Site - up to +30 acres	2041	2044																															
Relocate ARFF Station	2041	2045																															
Terminal Complex Phase 5 - Demolish and Rebuild Northeast Portion of Concourse A	2044	2047																															
Terminal Complex Phase 6 - Demolish and Rebuild Northwest Portion of Concourse A	2048	2051																															

Source: WSP USA, 2022.

Table 6.7-2: Near- and Mid-Term Projects Phasing

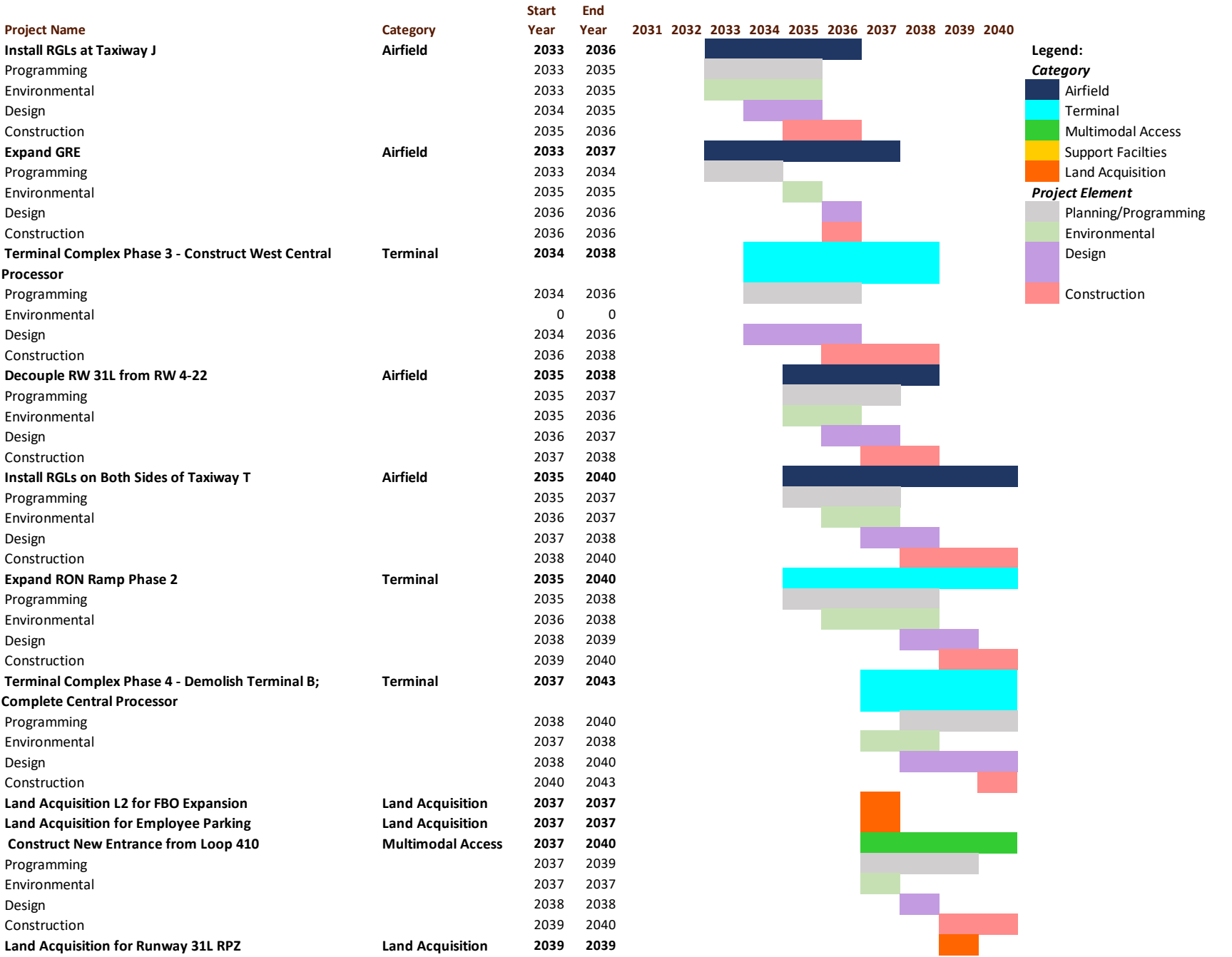
Project Name	Category	Start Year	End Year	2023	2024	2025	2026	2027	2028	2029	2030
Extend RW 13R to 9,749 ft, including TW G Extension	Airfield	2023	2034								
Planning/Programming		2023	2026								
Environmental		2024	2026								
Design		2026	2028								
Construction		2028	2034								
Demolish and Relocate ATC and TRACON	Airfield	2023	2033								
Planning/Programming		2023	2028								
Environmental		2023	2028								
Design		2026	2031								
Construction		2031	2033								
Terminal Complex Phase 1 - Construct Terminal C	Terminal	2023	2029								
Planning/Programming		2023	2029								
Environmental		2024	2025								
Design		2024	2026								
Construction		2026	2029								
Construct Waste Disposal Facilities	Terminal	2023	2030								
Planning/Programming		2023	2029								
Environmental		2024	2025								
Design		2029	2029								
Construction		2029	2030								
Relocate Employee Parking to Interim Location	Multimodal Access	2023	2030								
Planning/Programming		2023	2030								
Environmental		2024	2025								
Design		2024	2024								
Construction		2024	2025								
Realign Terminal Loop Road	Multimodal Access	2023	2029								
Planning/Programming		2023	2029								
Environmental		2024	2025								
Design		2026	2027								
Construction		2027	2028								
Construct Phase 1 GTC and 6-level Parking Garage at Terminal C	Multimodal Access	2023	2030								
Planning/Programming		2023	2030								
Environmental		2024	2025								
Design		2025	2026								
Construction		2026	2027								
Construct Central Distribution and Receiving Facility	Support Facilities	2023	2029								
Planning/Programming		2023	2029								
Environmental		2024	2025								
Design		2026	2026								
Construction		2026	2026								
Expand East Cargo - Strategic Phase 1 - (18 Acres)	Support Facilities	2023	2024								
Planning/Programming		2023	2023								
Environmental		2023	2023								
Design		2023	2023								
Construction		2023	2024								
Expand RON Ramp Phase 1	Terminal	2024	2028								
Planning/Programming		2024	2028								
Environmental		2024	2024								
Design		2025	2025								
Construction		2025	2025								
Expand East Cargo - Strategic Phase 1 - (18 Acres)	Support Facilities	2023	2024								
Planning/Programming		2023	2023								
Environmental		2023	2023								
Design		2023	2023								
Construction		2023	2024								
Land Acquisition L10 for Maintenance Facilities	Land Acquisition	2027	2027								
Land Acquisition for Runway 13R RPZ	Land Acquisition	2027	2027								
Strategic Land Acquisition L11	Land Acquisition	2027	2027								



Source: WSP USA, 2021.

Table 6.7-3: Long-Term Projects Phasing

Project Name	Category	Start Year	End Year	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Terminal Complex Phase 2 - Renovate Terminal A and Demo/Replace South End	Terminal	2028	2034										
Planning/Programming		2028	2032										
Environmental		0	0										
Design		2030	2031										
Construction		2031	2034										
Fix Terminal A Pinchpoint	Multimodal Access	2028	2032										
Planning/Programming		2028	2032										
Environmental		2028	2028										
Design		2029	2029										
Construction		2029	2030										
Lower 281 N. Direct Connect Ramp	Multimodal Access	2028	2032										
Planning/Programming		2028	2032										
Environmental		2028	2028										
Design		2029	2030										
Construction		2030	2031										
Separate Airport Blvd from Airport Loop Road	Multimodal Access	2028	2032										
Planning/Programming		2028	2032										
Environmental		2028	2028										
Design		2029	2030										
Construction		2030	2031										
Site Prep for Corporate Aviation Hangars - (16 acres)	Support Facilities	2028	2029										
Planning/Programming		2029	2029										
Environmental		2028	2028										
Design		2029	2029										
Construction		2029	2029										
Consolidate Airport Maintenance and Airfield Operations Maintenance Facilities	Support Facilities	2028	2033										
Planning/Programming		2029	2030										
Environmental		2028	2028										
Design		2029	2030										
Construction		2030	2032										
Expand East Cargo North - Phase 2 - (21 Acres)	Support Facilities	2028	2031										
Planning/Programming		2029	2030										
Environmental		2028	2028										
Design		2029	2030										
Construction		2030	2030										
Construct Runway 13R Highspeed Exit Taxiway	Airfield	2029	2031										
Planning/Programming		2030	2030										
Environmental		2029	2029										
Design		2030	2030										
Construction		2030	2030										
Construct Dee Howard Roundabout	Multimodal Access	2029	2033										
Planning/Programming		2029	2033										
Environmental		2029	2029										
Design		2030	2030										
Construction		2030	2031										
Construct GSE/Line Maintenance Facility	Support Facilities	2030	2034										
Planning/Programming		2031	2032										
Environmental		2030	2031										
Design		2031	2032										
Construction		2032	2034										
Relocate Belly Cargo	Support Facilities	2030	2032										
Planning/Programming		2031	2031										
Environmental		2030	2030										
Design		2031	2031										
Construction		2031	2032										
Realign Green lot parking based on new Airport Roads	Multimodal Access	2031	2033										
Programming		2032	2032										
Environmental		2031	2031										
Design		2032	2032										
Construction		2032	2032										
Construct Phase 2 GTC and 6-level Parking Garage at Terminal C	Multimodal Access	2032	2034										
Programming		2033	2033										
Environmental		2032	2032										
Design		2033	2033										
Construction		2033	2034										
Site Prep for VTSAA Expansion	Support Facilities	2032	2034										
Programming		2033	2033										
Environmental		2032	2032										
Design		2033	2033										
Construction		2033	2034										



Source: WSP USA, 2022.