NORTHWEST FLORIDA BEACHES INTERNATIONAL AIRPORT

MASTER PLAN UPDATE

Working Paper #4
Airport Development Alternatives

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DRAFT

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6 AIRPORT DEVELOPMENT CONCEPTS

To satisfy the facility requirements identified in **Chapter 5**, multiple concepts, site configurations, and development options were created and reviewed for the various components of the Airport. In many circumstances, several alternatives were identified but eliminated early in the planning process from further consideration. The concepts deemed most reasonable to support the long-term operational sustainability of the Airport were selected and carried forward in the evaluation.

This chapter includes separate alternative concepts and configurations for runways, taxiways, passenger terminal facilities, general aviation (GA), air cargo, and support facilities. The number of potential recommendations is substantial; however, it is emphasized that although projects may be desired, they may not necessarily be financially or environmentally feasible. As such, recommendations presented within this chapter were further modified or narrowed during the financial planning components of the Master Plan Study. The overall effort refined the final strategy into actionable recommended projects for implementation in phases.

6.1 CONCEPT EVALUATION

Regardless of timeframe or activity level, the overarching principles guiding facility recommendations are to provide an elevated level of customer service and promote regional economic wellbeing while accommodating the evolving business model of the airlines and airport tenants. For some functional areas, such as the airfield, the logical recommendations were distinctly apparent as they are driven largely by Federal Aviation Administration (FAA) design standards as well as by existing infrastructure and available property. In contrast, improvements related to the passenger terminal buildings and vehicle parking have variability in their configuration. This is due to potential financing and implementation challenges and their influence on surrounding Airport facilities.

During the identification of facility requirements, it became evident that the Master Plan would not consist of all-encompassing or competing alternatives for development of the Airport. Rather, the concepts and alternatives presented consist of a series of separate improvements that are assembled into the overall strategy. As such, individual components were reviewed and recommended separately to develop the preferred improvements program.

6.2 CURRENT AIRFIELD COMPLIANCES AND DEFICIENCIES

Northwest Florida Beaches International Airport (ECP) currently operates under a single-runway configuration (Runway 16/34) with a northwest/southwest orientation. The runway was evaluated based on its operational requirements, with the identified improvements provided below. To identify the best methods for improving airfield operations regarding the runway infrastructure, it was important to evaluate the strengths and weaknesses of the current configuration.

In addition to evaluating the efficiency and safety of the Airport's runway system, it was necessary to evaluate operational efficiency of the airfield in its entirety. To satisfy operational efficiency, access to and from the runway, improvements and expansions to the associated

taxiway systems, and FAA design standards were also identified. Concepts relating to runway standards and deficiencies are presented in **Sections 6.2.1**, while taxiway standards and deficiencies are discussed in **Section 6.2.2**.

6.2.1 Runway 16/34

Design Standards Satisfied

Based on the demand outline in **Chapter 5**, the current length, width, Runway Safety Areas (RSA), Runway Object Free Areas (ROFA), Runway Protection Zones (RPZ), and runway blast pads associated with Runway 16/34 are adequate and are anticipated to remain adequate throughout the forecast period; therefore, no development alternatives are needed for these elements. It is recommended that these fundamentals of Runway 16/34 be maintained throughout the planning period.

Design Standards Needing Improvements

Although most attributes of Runway 16/34 meet FAA design criteria, the runway shoulders do not, as they are absent on either side of the runway. Although the FAA requires 25-foot paved shoulders for runways accommodating aircraft designated Airplane Design Group IV (ADG-IV) or higher, they are recommended fur runways accommodating ADG-III aircraft, such as Runway 16/34; therefore, to adhere to the FAA's recommended standards, 25-foot wide paved shoulders are recommended on both sides of Runway 16/34 at ECP.

6.2.2 Taxiways

Design Standards Satisfied

The taxiway system at ECP was evaluated and compared to FAA standards for taxiway designs based on the Airport's Taxiway Design Group (TDG 3). Based on FAA standards, the following items are satisfactory:

- Width (minimum of 50 feet): Taxiways 'D', 'P', 'Q', 'S', 'T', 'U', and part of Taxiways 'J', 'K', and 'M'
- Distance of Taxiway Centerlines from Objects: All taxiways
- Taxiway Safety Area (TSA): All taxiways
- Taxiway Object Free Area (TOFA): All taxiways
- Taxiway Fillets: All taxiways

Design Standards Needing Improvements

Although many attributes of ECP's taxiway system meet FAA design criteria, some do not, including:

- Width (less than 50 feet): Taxiways 'E1', 'E2', and part of Taxiways J', 'K', and 'M' are only 35 feet wide
  - It is recommended that the taxiways be widened to 50 feet.
- Shoulders (20 feet): All Taxiways
  - It is recommended that 20-foot wide shoulders be added to both sides of all taxiways.

6.3 AIRFIELD DEVELOPMENT CONCEPTS

This section identifies and evaluates potential runway and taxiway improvements that will enhance the overall safety, efficiency, reliability, and capacity of ECP's airfield. Aircraft flows between the runway system and various functions (e.g., terminal area, air cargo, and general aviation) have been considered. To supplement this evaluation, an initial analysis was performed in **Chapter 5** for the design and construction of a new crosswind runway (Runway 3/21), resulting in the recommendation that the runway be constructed in the future.

The runway and taxiway concepts herein were developed through qualitative review of the following considerations:

- Construction and operating costs
- Spatial organization
- Technological and operational changes
- Construction impacts, including ease of phasing and construction
- Airfield delays and other operational factors
- Environmental impacts and considerations
- Operational benefit
- Capacity, safety, and reliability considerations
- Airspace considerations
- Implementation costs/feasibility
- Community acceptance

As discussed within the previous sections of the Master Plan, the Airport District's goal is to plan for a safe and operationally efficient airfield. This can be accomplished by meeting the following objectives:

- Adhere to FAA design standards, reducing/eliminating the need for Modifications of Standards
- Accommodate all existing and projected users
- Provide sufficient airfield capacity to meet demand, while minimizing airfield delays
- Reduce runway crossings (particularly in the middle third of runway) to improve safety
- Reduce risk of pilot confusion
    - Reducing the number of taxiways intersecting at a single location
    - Eliminating acute angle intersections
    - Increasing the pilot's situational awareness (proper signage and marking)
    - Avoiding wide expanses of pavement
    - Increasing visibility
- Determine the ultimate Airport Layout

6.3.1 Runway Development Concepts

For the purposes of this Study, development concepts were evaluated regarding the enhancement of the existing runway (Runway 16/34) and the potential new crosswind runway (Runway 3/21). Each of the runway development concepts herein were established following the FAA requirements and recommendations set forth in AC 150/5300-*13A [Chapter 3 (Runway Design)]*.

Enhancing Runway 16/34

As previously discussed in **Section 6.2.1**, Runway 16/34 adheres to FAA required design standards, with the exception of runway shoulders. It is recommended that 25-foot wide shoulders be added to both sides of the runway.

Future Crosswind Runway Alternative

In **Chapter 5**, a wind coverage analysis was performed on the existing runway (Runway 16/34). As indicated in FAA Advisory Circular (AC) 150/5300-13A, *Airport Design*, "a crosswind runway is recommended when the primary runway orientation provides less than 95.0 percent wind coverage." The FAA allowable crosswind component by runway design code (RDC) is shown in **Figure 6-1.**

Figure 6-1 – Allowable Crosswind Component

RDC	Allowable Crosswind Component
A-I and B-I *	10.5 knots
A-II and B-II	13 knots
A-III, B-III, C-I through D-III D-I through D-III	16 knots
A-IV and B-IV, C-IV through C-VI, D-IV through D-VI	20 knots
E-I through E-VI	20 knots

* Includes A-I and B-I small aircraft.

Source: FAA AC 150/5300-13A, *(Advisory Circular Table 3-1)*.

Although ECP's primary runway (Runway 16/34) provides wind coverage greater than 95 percent for the Airport's design aircraft [Boeing 737-800 (D-III)], the runway does not provide sufficient coverage 95 percent of the time at 10.5 knots, which can create complications for Group A-I and Group B-I aircraft attempting to operate on the runway during these conditions. In addition, at 13-knots, Group A-II and Group B-II aircraft operating on Runway 16/34 are also impacted; therefore, based on wind coverage, a crosswind runway is justifiable.

Table 6-1 – ECP Runway 16/34 Wind Coverage (Raw AWOS Data)

All-Weather	10.5 Knots	13 Knots	16 Knots	20 Knots
24 Hour Period	94.83%	97.30%	99.18%	99.76%
6:00 AM – 10:00 PM	91.04%	95.52%	98.89%	99.67%

Source: ECP AWOS/NOAA ISD, CHA, 2019.

The original planning, design, environmental approval and construction of the Airport accommodated future development of a 5,001-foot long by 100-foot wide crosswind runway in the 3/21 orientation (validated by wind coverage analyses). As discussed, those affected most by the wind coverage deficiency identified earlier are the smaller GA aircraft. AC 150/5325-4B states that the runway length for a crosswind runway serving non-scheduled operations should be at least equal to 100 percent of the recommended runway length determined for the lower crosswind airplanes using the primary runway. For ECP, this grouping includes the large number of based and transient, ARC A/B-I aircraft operating at the Airport. Subsequently, two crosswind runway alternatives were analyzed: a 3,600-foot long crosswind runway and a 7,500-foot long crosswind runway. Based on this, and the Airport's desired development plan, the crosswind runway is recommended in a phased approach.

At the request of the Federal Aviation Administration, an additional, third analysis of wind data was performed. As part of the refined analysis, new data was accessed via NOAA's Hourly/Sub-Hourly Observational Data system. The raw data set was sorted and special reports (SPECI), as well as summary of day (SOD) and summary of month (SOM) reports, were removed. The purpose of removing these reports was because they are not considered routine reports. Using this information, operational activity data was weighted for specific periods of peak operations (24-hours, and typical operational hours between 06:00 am and 21:00 pm) using a 10.5-knot crosswind component. With this method, crosswind coverage exceeded 95% for 24-hour, and daytime operations, for general aviation and commercial operations. Further analysis was performed during VFR weather conditions, also assuming a 10.5-knot crosswind component, which yielded approximately 95.4 percent coverage. It is important to note that only VFR conditions apply to the crosswind coverage analysis (as opposed to IFR/All Weather) as there would be no instrument approach procedures on the proposed runway. This third analysis is detailed in **Appendix M**.

If the crosswind coverage becomes lower than 95 percent in the future, smaller Group A and B-I aircraft will likely experience difficulties when landing or taking off. In these cases, a crosswind runway layout could provide a safe alternative for these aircraft; therefore, it is recommended that the Authority perform a biennial wind analysis to monitor wind activity and possible future changes.

Crosswind Runway Phase 1: (3,600 Feet)

Although previous Airport Plans recommended development of a crosswind runway measuring 5,001 feet long and 100 feet wide, the recommended length was further analyzed in this Study using guidance established in AC 150/5325-4B, *Runway Length Requirements for Airport Design*. Based on this guidance, Crosswind Runway Phase 1 focuses on determining the minimum design criteria for Runway 3/21, which included the evaluation of the following parameters: the critical design aircraft for the runway [in terms of approach speed, maximum takeoff weight (MTOW) and passenger seats], the airport elevation above mean sea level, and the mean daily maximum temperature of the hottest month at the Airport (depicted in **Table 6-2**).

Table 6-2 – Crosswind Runway Evaluation Parameters

Design Parameters for Evaluation	Parameters Specific to ECP
Critical Design Aircraft for Runway 3/21	King Air 200 (B-II)
Critical Design Aircraft Approach Speed (Knots)	128.7 kts.
MTOW (pounds)	12,500 lbs.
Critical Design Aircraft Passenger Seats	9 occupants
Airport Elevation (AGL)	68.8 feet
Mean Daily Maximum Temperature for the Hottest Month at the Airport	90.6° F

Note: Approach Speed = 1.3 x Stall Speed
Source: Beechcraft (a Textron Aviation brand), AirNav, National Oceanic and Atmospheric Administration, CHA, 2020.

When determining minimum runway length, further attention was given to design aircraft approach speed and the MTOW. When the critical design aircraft has an approach speed of 50 knots or more with a MTOW of 12,500 pounds or less (i.e., King Air 200). For aircraft with less than 10 seats, the FAA breaks down GA fleet mix to be accommodated into two categories, with airports being required to either serve 95 or 100 percent of the fleet mix[1].

Based on the amount of operations reported in the 2018 TFMSC, the small GA aircraft with the most operations at ECP are shown in **Table 6-3**.

Table 6-3 – Group A and B Operations at ECP (2018 TFMSC)

Aircraft	Design Group	Total Operations
Cirrus SR 22	A-I	1,024
Cessna Citation I	B-I	1,088
Cessna Citation II	B-II	468
Beechcraft King Air 200	B-II	959
Beechcraft King Air 350	B-II	923

Source: 2018 FAA Traffic Flow Management System Count, CHA, 2019.

As discussed in **Chapter 5**, the percentage of the GA fleet mix that the airport must accommodate falls into is based on the following criteria:

- 95 percent – For airports that are primarily intended to serve medium size population communities with a diversity of usage and a greater potential for increased aviation activities.
- 100 percent – For airports that are primarily intended to serve communities located on the fringe of a metropolitan area or a relatively large population remote from a metropolitan area.

Given that ECP is located in the Panama City metropolitan area, and serves a large population of Florida's panhandle, the percentage of 100 was selected for the evaluation.

[1] The activity forecasts presented in **Chapter 4** indicate there were 104 based GA aircraft and 40,579 GA operations at ECP in 2018, with a large majority of these being comprised of A/B-I recreational and training aircraft.

Using these parameters, and the performance curves provided in AC 150/5325-4B (presented in **Chapter 5**, **Figure 5-7)** an estimated bare minimum crosswind runway length of 3,600 feet is needed to accommodate Group B-I aircraft; therefore, Crosswind Runway Phase 1 consists of a crosswind runway that is 3,600 feet long and 150 feet wide.

Crosswind Runway Phase 2: (7,500 Feet)

Crosswind Runway Phase 2 focuses on the necessary length to accommodate all aircraft operating at ECP, rather than just smaller GA aircraft, so that the crosswind runway may effectively accommodate the Airport's current and future critical design aircraft (B737-800) during times when Runway 16/34 may be closed due to maintenance/repair activities or in the unfortunate event of an incident that forces the closure of the primary runway. Based on the landing length requirements for the primary runway (previously determined in **Chapter 5**), the runway would need to be 6,700 feet long to accommodate the landing of the B737-800; however, based on discussions with airport staff and users of ECP, a 7,500-foot long runway is a common minimum operating preference. A 7,500-foot long runway would also be able to adequately accommodate the regional jet traffic and narrowbody aircraft [i.e., B737-800 (D-III)] during strong crosswinds.

Recommended Runway Development Plan

It is recommended that Runway 16/34 be enhanced with shoulders on both sides of the runway and that Crosswind Runway be adopted by the Airport, with development implemented in two phases.

Phase 1 would consist of the addition of 25-foot wide shoulders to each side of Runway 16/34, as well as the construction of a 3,600-foot long and 75-foot wide crosswind runway capable of supporting up to Group B-I aircraft. In Phase 2, the crosswind runway would be extended 3,900 feet and widened by 75 feet, resulting in an ultimate buildout of 7,500 feet by 150 feet. The Recommended Runway Development Plan is depicted in **Figure 6-2**.

It should be noted that, as a result of the previous Airport Master Plan, the Airport District has already begun the preparation of a site for development of a new crosswind runway, with the initial preparation being for a 5,001-foot long and 100-foot wide runway. It is recommended that the crosswind runway proposed herein (Runway 3/21) be developed in this predetermined location, with the site being further developed to support the additional length and width proposed in this rendition of the Master Plan. In addition, prior to preparing and developing the additional land needed to support the full 7,500-foot runway, further analysis will be necessary and further approval required to meet standards set forth by the FAA and the National Environmental Policy Act (NEPA).

AIP Eligibility

For the enhancements to Runway 16/34 and the construction of Runway 3/21 to be considered by the FAA Orlando Airports District Office (ADO) for Airport Improvement Program (AIP) funding, the projects must meet the 16 general requirements set forth in Chapter 3 of the FAA AIP Handbook (see **Table 6-4**).

Table 6-4 – General Requirements for AIP Funding Eligibility

General Requirements	AIP Handbook Ch. 3
a. Is the project eligible?	Section 2
b. Is the project justified?	Section 3
c. Is the project on airport property (with good title)?	Section 4
d. Is the project on the FAA approved airport layout plan?	Section 5
e. Has the sponsor satisfied the intergovernmental review and airport user consultation requirements?	Section 6
f. Has the FAA completed an environmental finding for the project?	Section 7
g. Will the project result in a usable unit of work?	Section 8
h. Will the project be planned, designed, and/or constructed to FAA standards?	Section 9
i. Has the project been procured correctly?	Section 10
j. Are the project costs allowable?	Section 11
k. Are the project costs necessary to accomplish the project (Allowable Rule #1)?	Section 12
l. Were the project costs incurred after the grant was executed (Allowable Rule #2)?	Section 13
m. Are the project costs reasonable (Allowable Rule #3)?	Section 14
n. Is this the only federal grant containing these project costs (Allowable Rule #4)?	Section 15
o. Are the project costs within the allowable federal share (Allowable Rule #5)?	Section 16
p. Can the project be completed without unreasonable delay?	Section 17

Source: FAA AIP Handbook, CHA, 2020.

Based on these criteria, it was determined that the 25-foot wide runway shoulders on both sides of Runway 16/34 would be AIP eligible; however, the crosswind runway development would not be eligible, as the project cannot be justified at this time. AIP eligibility and funding for these proposed projects will be further discussed and analyzed in a subsequent chapter (Financial Plan).

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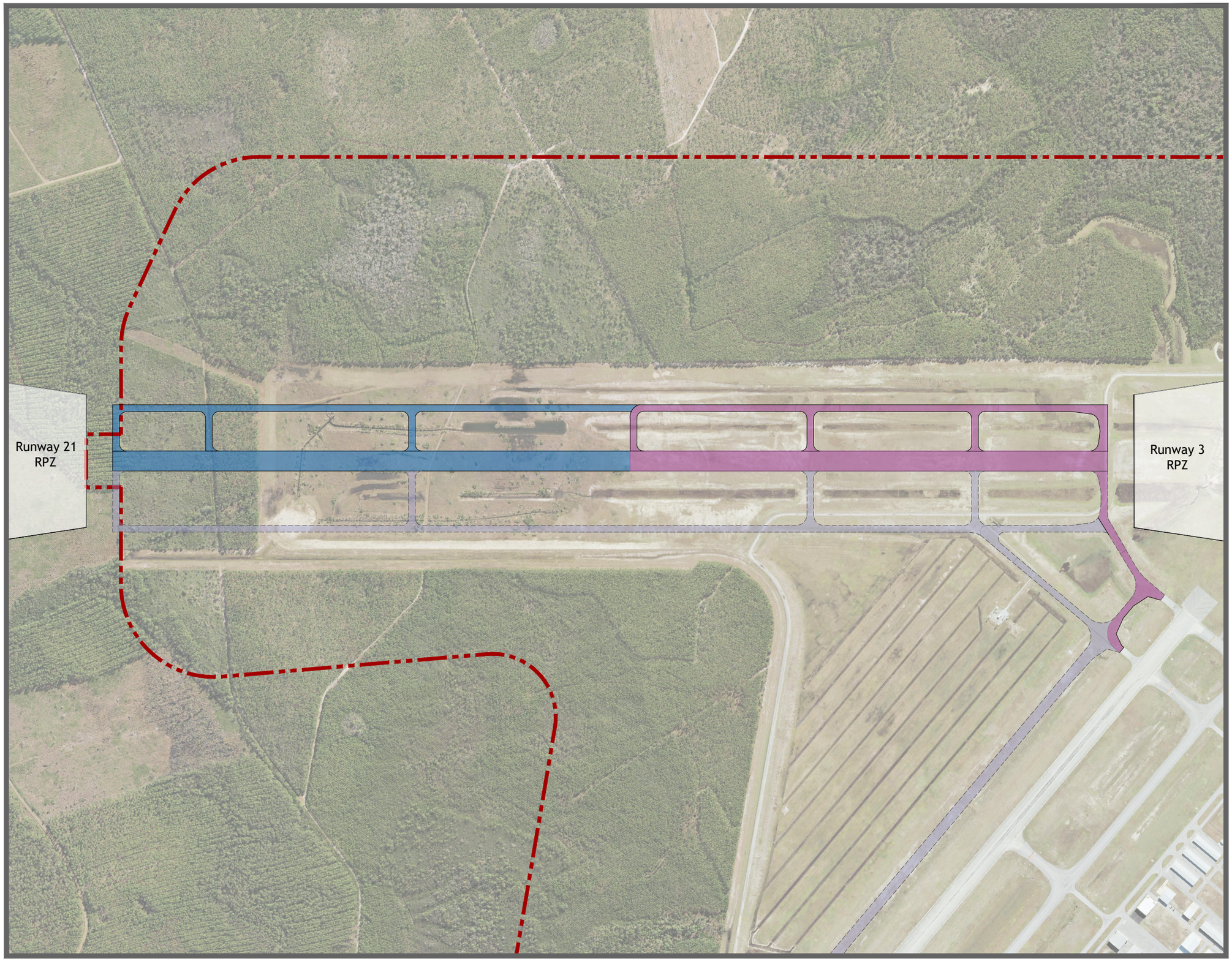

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LEGEND

- Phase One (3,600' x 150')
- Phase Two (7,500' x 150')
- Ultimate Development (Beyond Planning Period)
- Airport Property Line

Figure 6-2
Final Recommended Runway Development Plan

6.3.2 Taxiway Development Concepts

Aircraft ground movement at ECP is supported by a system of taxiways providing access to all portions of the airfield. Nevertheless, portions of the taxiway system are considered non-standard with current FAA design standards or are such that an improved configuration could reduce the risk of pilot confusion and thus a runway incursion. The following taxiway concepts were developed with the aforementioned considerations and adherence to all FAA design standards.

It is important to note that focus was given to the taxiway system associated with the current runway, Runway 16/34; however, one concept was developed regarding the taxiway system to support the proposed crosswind runway, Runway 3/21.

Taxiway Development Concept 1: Enhancing the Taxiway System

Taxiway Development Concept 1 addresses the non-standard attributes of the existing taxiway infrastructure at ECP. This includes widening of Taxiways 'E1', 'E2', 'F', and part of Taxiways 'J', 'K', and 'M' from 35 feet to 50 feet. In addition, this Concept includes the addition of 20-foot wide shoulders to all existing taxiways. The FAA design criteria that is not addressed in Taxiway Development Concept 1 includes the penetration of the TOFA, resulting from of a set of corporate and ECP hangars. It is recommended that the Airport District obtain a Modification of Standards to address these non-standard airfield designs.

To further enhance the existing taxiway system at ECP and improve efficiency of the airfield, Taxiway Development Concept 1 includes a new taxiway parallel to and east of Runway 16/34, thus supporting the runway with a dual taxiway system. The proposed taxiway would be categorized as TDG-3, measuring 75 feet wide. The taxiway would utilize the portion of Taxiway 'K' that is to the east of Runway 16/34, along with an extension of Taxiways 'U', 'G', and 'M' to the east of the runway, as points of access between the runway and taxiway.

Taxiway Development Concept 2: Taxiways for Proposed Crosswind Runway

The taxiway system indicated in Taxiway Development Concept 2 is dependent on the construction of Runway 3/21 and consists of two phases: the initial taxiway and ultimate buildout of the taxiway system.

Phase 1: Initial Taxiway

As discussed in **Section 6.3.1**, Phase 1 of the Recommended Runway Development Plan includes the construction of a 3,600-foot-by-150-foot crosswind runway. The initial taxiway needed to support this runway will be 50 feet wide, with two taxiway connectors to the east of the runway providing ingress and egress between the taxiway and crosswind runway. In addition, the new taxiway will be integrated into the existing taxiway system via taxiway connectors extending between the new taxiway and existing Taxiway 'K' and 'J' extensions on the east side of Runway 16/34. The new taxiway will also provide access to a new run-up pad/aircraft holding bay at the approach end of Runway 3/departure end of Runway 21. See **Figure 6-2**.

Phase 2: Ultimate Taxiway Buildout

The ultimate taxiway buildout associated with the proposed 7,500-foot long crosswind runway consists of dual parallel taxiways, with both taxiways being categorized as TDG-3 and measuring 7,500 feet in length and 50 feet wide. In Phase 2, construction of the taxiway to the west of

Runway 3/21 would consist of a 6,480-foot extension, since the first segment of the taxiway would have been developed simultaneously with Phase 1 of the crosswind runway construction. In addition to the run-up pad/aircraft holding bay constructed during Phase 1 at the approach end of Runway 3/departure end of Runway 21, Phase 2 would consist of the construction of three additional run-up pads/aircraft holding bays, with one located adjacent to the end of each dual parallel taxiway. Three taxiway connectors would provide access between Runway 3/21 and the parallel taxiway to the east. In addition, Phase 2 would consist of construction of additional taxiway connectors between Runway 3/21 and the parallel taxiway to the west. To provide access between the parallel taxiway west of Runway 3/21 and the new taxiway parallel to Runway 16/34, a 50-foot wide TDG-3 taxiway is recommended.

6.4 PASSENGER TERMINAL FACILITY DEVELOPMENT CONCEPTS

The development of architectural concepts for terminal planning first starts with the process of gathering or developing all the available data, goals and needs, and limitations related to the terminal at ECP. The data gathered serves to inform the development of concept alternatives in weighing their efficacy within the master planning timeframe. The subsequent recommendations outline the development of the data utilized by the planning team as part of the development of terminal alternatives.

6.4.1 Review/Overview of the Passenger Terminal Facility

Inventory

An inventory was conducted throughout the terminal to identify existing functions and operational issues at the terminal. The results of the inventory may be found in **Chapter 2**. The primary existing operational deficiencies found centered around several areas in the terminal facility, including: 1) passenger processing and queuing; 2) security screening checkpoint (SSCP) and queuing; 3) gates and holdroom sizes; 4) concessions; and 5) outbound baggage makeup area.

The passenger processing issue stems from the high volume of baggage check-in within a limited window of time for some airlines that results in the queue line extending to the back of the check-in lobby, thus preventing circulation around it.

Similarly, the SSCP is currently restricted from expansion on three sides, leaving only the lobby for extended queues during high volume periods. This results in security queues that extend nearly to the ticketing area, which blocks visibility and access to restrooms and the administrative offices entrance.

The existing gate holdrooms were sized for smaller aircraft than those in use today by the airlines serving ECP. Several of the gates were sized for regional jets rather than the currently utilized Aircraft Design Group (ADG) Group III aircraft (i.e., Boeing 737-800), thus resulting in overcrowding in the concourse.

The footprint of the secure side concourse limits the available area for non-aeronautical revenue producing areas, such as concessions or airline clubs. Amenities such as these have a direct impact on the passenger experience, customer/user convenience, and financial position of the Airport.

The outbound baggage make-up area is restricted on all four sides. It is bounded by the checked baggage inspection system (CBIS) to the north, the airline operations and ticket office areas to the west, the cooling tower and Air Traffic Control Tower (ATCT) to the south, and aircraft gate and taxiing area to the east. As stated above, larger aircraft than anticipated at the time the Airport was constructed have been utilized, adding additional passengers. Considering that the Airport's service market is a leisure destination, it has a higher number of bags per passenger ratio than some other airports, thus putting an added strain on the outbound baggage system capacity.

The Airport was opened in 2010. Given that the terminal facility is over 10 years old, the condition of the terminal building reveals no major issues to address; therefore, reuse of as much of the existing terminal as possible will be beneficial in terms of initial capital costs, construction phasing, and environmental considerations. Concept alternatives herein seek to preserve existing structural layouts and components of the existing terminal rather than demolition and construction of a new facility.

Facility Requirements

The development of facility requirements is based on the forecast of aviation demand provided in **Chapter 4.** The findings of the forecasting exercise provided the data that was analyzed and summarized in **Chapter 5.** The results of these studies have been used to develop the concept alternatives by recommending the number of aircraft contact gates that will be needed, how many ticket counter positions are warranted, the number of lanes for the SSCP, and other components of the future terminal at ECP.

The planning team has reviewed the operational requirements of the existing terminal and those recommended for the current passenger levels to establish which operations are beyond recommended capacities and, therefore, appear to be deficient and require short-term investment to maintain the current operation. Concurrently, the data for the planning horizon was reviewed to identify the long-term requirements and configuration; however, ECP is unique in that it experiences "super peaks" on weekends in the summer months where passenger counts far exceed a normal peak hour, peak day situation. As such, consideration must be made to address cost effective solutions for the majority of the year while accommodating the "super peak" loads within the narrow windows of occurrence.

Existing Conditions and Limitations

Expansion of the terminal to meet the identified future needs outlined in the Terminal Facility Requirements necessitates review of the available areas for terminal expansion. Restrictions to expansion include cost prohibitive changes to the airfield configuration, fixed structures, geo-political boundaries, land ownership, existing rights of way, and FAA regulations. An analysis of these restrictions was performed to identify preferred areas for expansion.

Expansion to the south is restricted by the existing ATCT and cooling tower located at the end of the terminal building, which effectively block all but a limited expansion of the ticket lobby. The CBIS and the outbound baggage make-up area are located immediately behind the airline ticket offices, effectively blocking off the area south of the SSCP for any other purpose. A cargo building and an aircraft rescue and firefighting (ARFF) facility are located south of the concourse area.

The airfield and runway are located east of the terminal and concourse. FAA restrictions for spacing from taxiways and airspace safety restrictions contained in Title 14 Code of Federal Regulations (CFR) Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace*, make expansion opportunities of the existing concourse or other construction to the west minimal. A recent ground-level extension of the existing concourse that opened in August of 2020 has further constrained these spatial limits. Additionally, there is a primary stormwater drainage trench that runs along Taxiway X that would require relocation.

The area west of the terminal consists of the landside arrivals and departures roadway, public parking, and rental car parking areas. The terminal is currently located 300 feet from the parking area per FAA post-September 11th mandate. Relocation of the terminal to the west would result in a significant reconfiguration of the roadway system and parking area, which would result in a challenging and expensive phasing and construction program.

The north end of the apron is limited for expansion only by an existing fence, a ramp for remain overnight (RON) aircraft parking, and a future east/west taxiway that is over 2,000 feet north of the existing terminal and is planned for a time period beyond the planning horizon of this Study.

Expansion of the terminal to the north would avoid significant capital expenditure associated with relocating existing facilities and would avoid the potential challenges of agency approvals that would represent a risk to the schedule for a construction program. Further, the original plan for expansion of the passenger terminal complex at ECP called for this to occur to the north of the existing passenger facilities.

Goals and Objectives

Since its opening in 2010, ECP has experienced growth significantly beyond expectations and has outgrown the planning of the original terminal. The Airport's need to upgrade facilities and enhance the passenger experience to support continued growth is becoming a more pressing issue. Primary goals and objectives for the development of Concept Alternatives are as discussed below:

- Provide additional gate capacity for a total of 12 aircraft contact gates by the end of the 20-year planning horizon. Growth should be incremental to coincide with increases in customer demand and airline service. This includes providing larger holdrooms in keeping with larger Group III aircraft. Providing more restrooms and amenities throughout the concourse will also enhance the passenger experience at ECP.
- To alleviate the lobby crowding and passenger circulation issues currently being experienced at the SSCP, increase the area available for passenger screening and for queuing. Additional area will provide for additional screening lanes to reduce passenger wait times and to reduce the area required for queuing. Without the SSCP queue, passenger circulation within the terminal lobby would also be enhanced.
- Expansion of the CBIS and outbound baggage make-up area is critical to maintaining the orderly growth of the Airport. The current make-up area is essentially at capacity and will require reconfiguration and expansion to provide the necessary frontage to load and

deliver outbound bags to the aircraft. The significant costs for replacing the existing CBIS suggest that any CBIS expansion would be contiguous to the current system.

- Expansion of airport administrative and office space is needed in the short-term.

Key Considerations: Non-Aeronautical Revenue, Aircraft Movement, and Phasing

It is important for the Airport to maximize non-aeronautical revenue. By expanding the footprint of the existing terminal, additional concessions area can be incorporated. By providing opportunities for concessions in the most favorable locations, revenues will likely be increased. Increased concessions revenue is one component for managing a competitive cost per enplaned passenger (CPE) for airline tenants. In turn, a competitive CPE will maximize the potential growth of airline service.

The efficiency of airside aircraft movement is an important component of terminal planning. The availability and configuration of taxilanes and taxiways to allow freedom of movement and access to the airfield enables aircraft to efficiently move to and from contact gates for faster turns. Shorter taxiing distances also provides a positive environmental impact by limiting the amount of fuel burned in the taxi to runway process.

Phasing considerations for all three schemes revealed that there is no availability within the footprint of the existing terminal to relocate aircraft for construction purposes. Therefore, in every alternative, it is assumed that initial steps in the expansion process necessitates the construction of additional contact gates to the north to support the required renovations.

6.4.2 Passenger Terminal Facility: Preliminary Development Alternatives - Workshop No. 1

At the Airport Board meeting held on March 12, 2020, the Authority discussed three preliminary alternatives that were developed in response to the goals and objectives outlined above. The alternatives that were discussed are provided below.

Terminal Facility Alternative 1

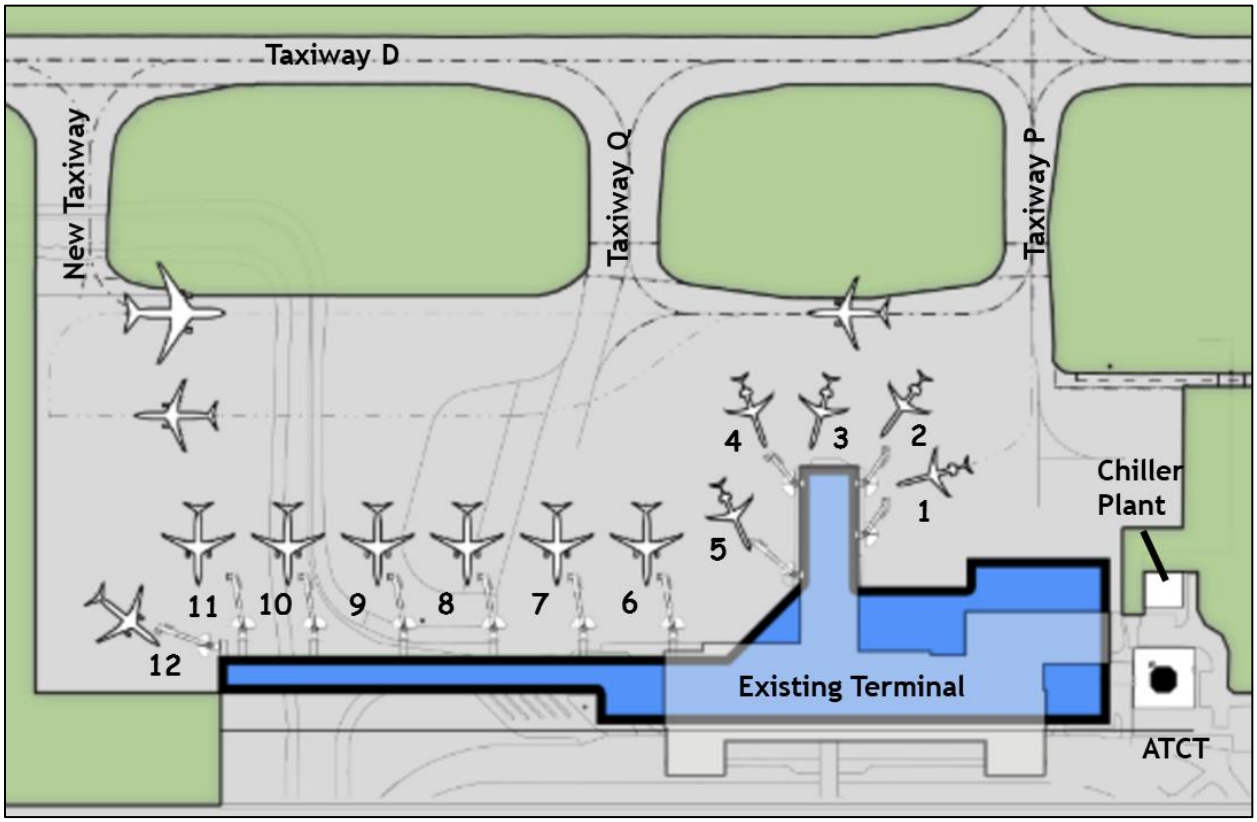
Alternative No. 1 (see **Figure 6-3**) provides for a new linear, two-level, one-sided, 750-foot-long, 50-foot-wide concourse expansion directly north along the existing fence line, with the capability to accommodate seven aircraft contact gates. The lower level would provide additional operational, building systems and ground service equipment (GSE) parking space. PAL 4 calls for 12 aircraft contact gates; therefore, the other five gates would be located on the existing concourse. The existing concourse would primarily serve smaller regional jet traffic during normal operations but maintain the flexibility to accommodate ADG Group III aircraft during "super peak" times. One of the new aircraft positions will accommodate an ADG Group V aircraft as an irregular operating (IROP) condition. Dual taxilanes would be provided behind the aircraft parking to minimize the need to wait for push-back at the gates, thus expediting movement to the taxiway. A new connection to Taxiway D would be constructed to provide two options for access to the taxiway. The expanded apron also provides opportunities for RON parking at the existing south end and in the area of the new pavement and to the north of the aircraft apron shown. The existing Gate 1 position would be deactivated in favor of an expanded SSCP and outbound baggage make-up area on the south side of the existing concourse.

The existing concourse would be reconfigured, leveraging the available Gate 1 holdroom space, to expand the restrooms and the remaining holdrooms to be more in keeping with their

respective design aircraft type. A core of concessions would be added at the intersection of the new and existing concourses, providing additional food and beverage options and seating. Amenities would be added to include a children's play area and a mother's nursing room. The ticketing lobby would be expanded to the south to add capacity and baggage claim would be relocated into the new terminal construction to the north, providing space for the SSCP expansion north of its existing location and removing the queue area from the ticketing lobby. The outbound baggage area would be relocated north of the existing CBIS, providing space for the CBIS to expand to the south and east while retaining their direct physical relationship. This alternative also provides an opportunity for significant reuse of the existing terminal building and limited interior renovations.

A primary advantage to Alternative No. 1 is the potential to add growth incrementally from PAL 1 to PAL 4 by constructing additional gates based on growth in passenger demand and available funding. In addition, this scheme provides the opportunity for continued expansion northward and could potentially be connected to a new terminal that could be constructed beyond the planning horizon along the connecting taxiway between the existing and future runway.; however, continued expansion by more than two to three gates would likely require the addition of power walks due to the length of travel from the existing ticketing lobby.

Figure 6-3 – Terminal Facility Alternative 1



Source: Leo Daly, 2020.

Terminal Facility *Alternative 2*

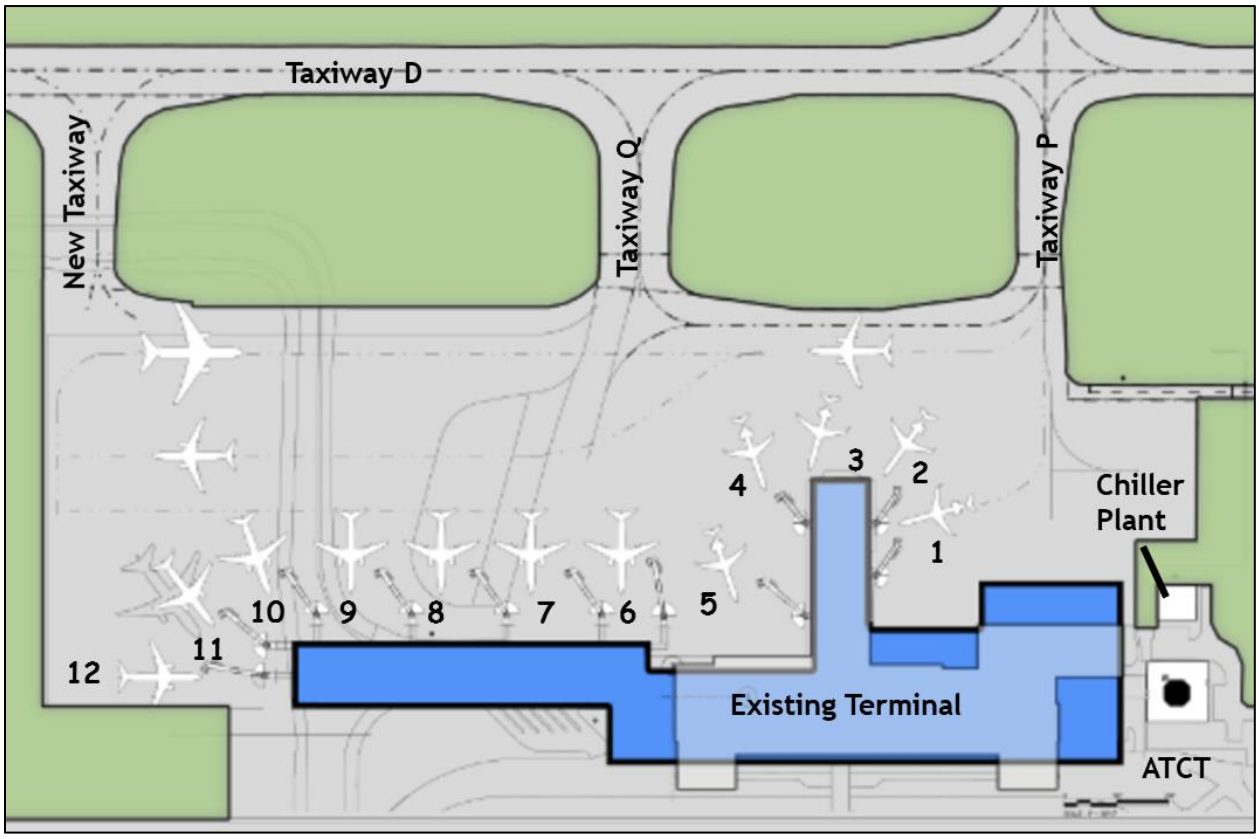
Alternative No. 2 (see **Figure 6-4**) provides for a new linear, two-level, 600-foot-long, 100-foot-wide concourse expansion directly north along the existing fence line, with the capability of accommodating seven aircraft contact gates. The lower level would provide additional operational, building systems and GSE parking space. As previously mentioned, PAL 4 calls for 12 aircraft contact gates. As in Alternative No. 1, the other five gates would be located on the existing concourse. Again, the existing concourse would primarily serve smaller regional jet traffic during normal operations but would maintain the flexibility to accommodate ADG Group III aircraft during "super peak" times. One of the new aircraft positions will accommodate an ADG Group V aircraft as an IROP condition. Dual taxilanes would be provided and a new connection to Taxiway D would be constructed to provide multiple options for access to the taxiway. The existing Gate 1 position would be deactivated in favor of an expanded SSCP and outbound baggage make-up area on the south side of the existing concourse.

As in Alternative No. 1, the existing concourse would be reconfigured, leveraging the available Gate 1 holdroom space, to expand the restrooms and the remaining holdrooms to be more in keeping with their respective design aircraft type. Added concessions would be focused along the concourse to be located within sight of the aircraft gates. Amenities would be added to include a children's play area and mother's nursing room. The ticketing lobby would be expanded to the north to add capacity for passenger processing. The baggage claim area would be expanded to the north. The CBIS and outbound baggage area would be expanded to the east while retaining their direct physical relationship.

Alternative No. 2 also has the potential to add growth incrementally from PAL-1 to PAL-4 by constructing additional gates based on passenger growth and available funding. However, the width of the concourse would result in higher construction costs for any expansion. These costs may be offset by increased tenant revenue areas for concessions and/or airline operations. It should be noted that revenue producing tenant areas are not eligible for AIP and PFC funding.

Alternative No. 2 provides the opportunity for continued expansion northward and could potentially marry up with a new terminal that could be constructed beyond the planning horizon. However, with some reconfiguration of landside components, the width of the concourse could provide for future gates on the west face of the concourse.

Figure 6-4 – Terminal Facility Alternative 2



Source: Leo Daly, 2020.

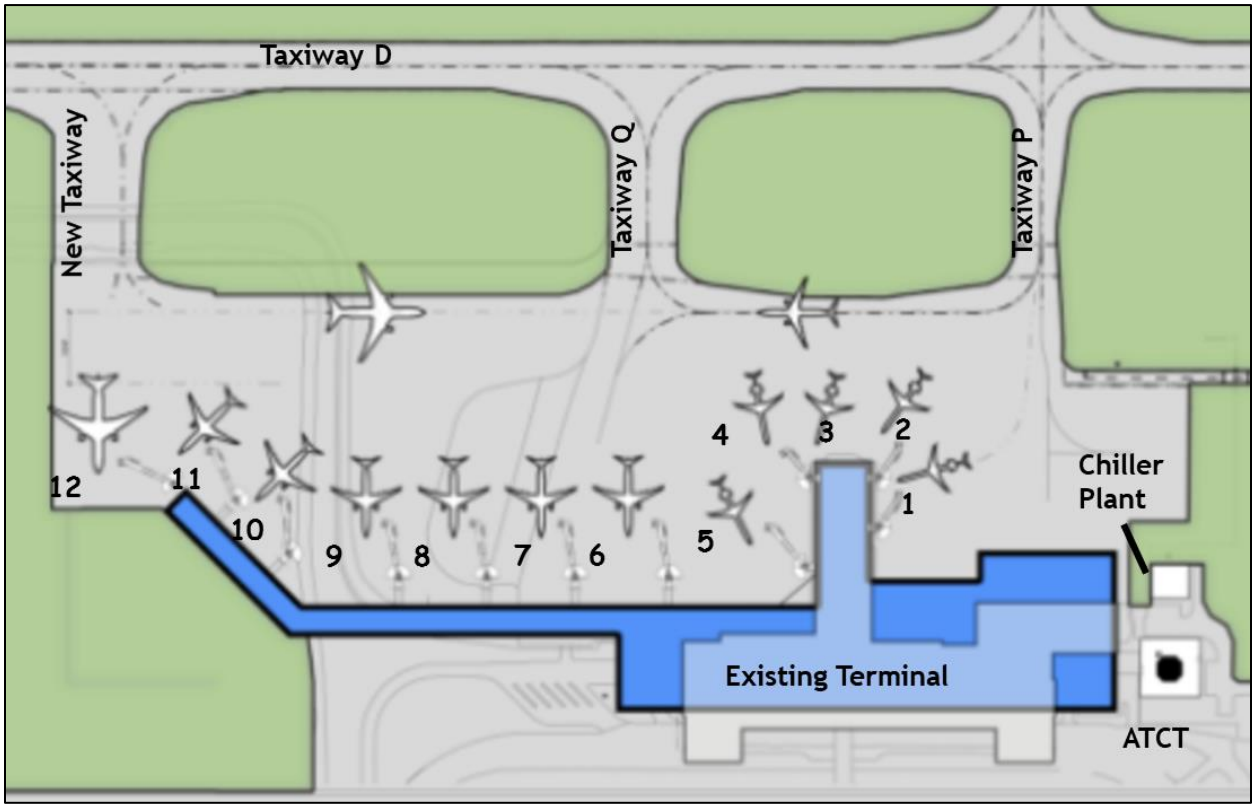
Terminal Facility Alternative 3

Alternative No. 3 (see **Figure 6-5**) provides for a new linear, two-level, one-sided, 950-foot-long, 50-foot-wide concourse expansion directly north along the existing fence line, with an eastward 45-degree bend at the final three gates and with the capability of accommodating seven aircraft contact gates. The lower level would provide additional operational, building systems, and GSE parking space. Five additional gates would be located on the existing concourse, thus bringing the Airport's gate count to 12 (as previously discussed). Like the previous two alternatives, the existing concourse would primarily serve smaller regional jet traffic during normal operations but maintain the flexibility to accommodate ADG Group III aircraft during "super peak" times, while one of the new aircraft positions will accommodate an ADG Group V aircraft as an IROP condition. The bend in the concourse would serve to minimize the area of aircraft pavement required to support the gate layout. A single taxilane would be provided behind the aircraft parking area. A new connection to Taxiway D would be constructed to provide two options for accessing the taxiway. With the new taxiway connection, the single taxiway should not provide a significant impediment to aircraft movement; however, the aircraft at the bend in the concourse could not push back simultaneously. The smaller apron area does not provide opportunities for RON parking at the area of the new pavement on the north end. The existing Gate 1 position would be deactivated in favor of an expanded SSCP and outbound baggage make-up area on the south side of the existing concourse.

As with the other schemes, the existing concourse would be reconfigured, leveraging the available Gate 1 holdroom space, to expand the restrooms and the remaining holdrooms to be more in keeping with their respective design aircraft type. Additional concessions would be added along the new concourse, which would include a children's play area and a nursing mother's room. The existing terminal would be renovated per Alternative Nos. 1 and 2.

Alternate No. 3 provides for incremental growth but, by introducing the bend in the concourse, provides the opportunity to introduce an additional node for separate Flight Information Systems (FIS), unit terminal, or retail concessions court in line with the concourse. Continued expansion northward may prove more costly but, with a reduced pavement area, may reduce airside costs. It should be noted that the bend in the concourse results in a longer concourse based on the geometry of the gates; therefore, the overall costs to add the PAL 4 gates may be higher. In addition, with over 1,000 feet from the ticketing lobby to the end of the concourse, there may need to be consideration for power walks or other means of assistance for some passengers.

Figure 6-5 – Terminal Facility Alternative 3



Source: Leo Daly, 2020.

Summary of Initial Terminal Facility Alternatives

Several considerations were offered by Board members during the Board meeting, including the following:

1. Consider a "finger" layout for the additional concourse. It was noted that dual taxilanes between concourses could extend future expansion northward, resulting in long travel distances. With single taxilanes between concourses, there could be operational conflicts

between aircraft. It was also noted that each finger would be limited to approximately seven gates before conflicts with the CFR Part 77 safety clearances. The planning team will provide a layout showing the concourse geometry.

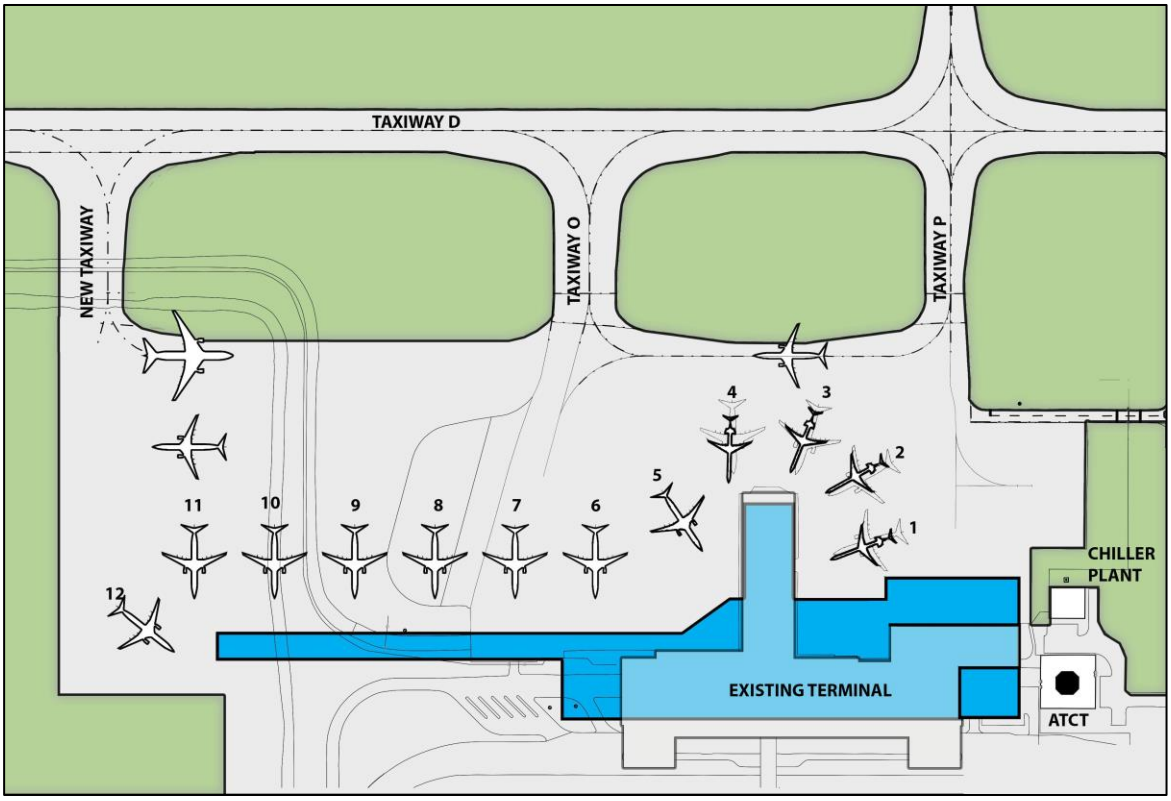
2. Dual taxilanes do not seem necessary for the linear schemes since all gates would have three points of access to Taxiway D.
3. Consider an "island" concourse with aircraft on airside with a connector back to the existing terminal. It was noted that the available pavement area may not have sufficient clearances for aircraft parking and movement. It was also noted that the resulting walking distance could be very long. The Board felt that the walking distance was not uncommon to other airports. The planning team will provide a scheme reflecting this concept.
4. The Board did not feel that Alternatives 2 and 3 warranted further consideration and could be dropped.
5. Consider expanding the ticketing lobby to include the area currently used as the SSCP and relocate the SSCP to the north side of the concourse.
6. The Board prefers creation of a consolidated concessions area.

6.4.3 Passenger Terminal Facility: Alternatives Refinement

Terminal Facility Alternative 4

Alternative 4 is a refinement of Alternative 1, and remains essentially unchanged. As shown in **Figure 6-6**, aircraft parking has been updated to reflect additional clearance from the existing concourse for ADG Group III aircraft parking. (Refer to Preliminary Alternatives write-up in **Section 6.4.2** for details). Construction phasing would involve construction of three new aircraft gates to the north along with northern expansion to baggage claim. Construction would then commence to relocate the SSCP and to expand the ticket lobby. Modifications to the outbound baggage make-up facility and the CBIS would follow. New gates would be constructed to the north based on passenger activity levels.

Figure 6-6 – Terminal Facility Alternative 4

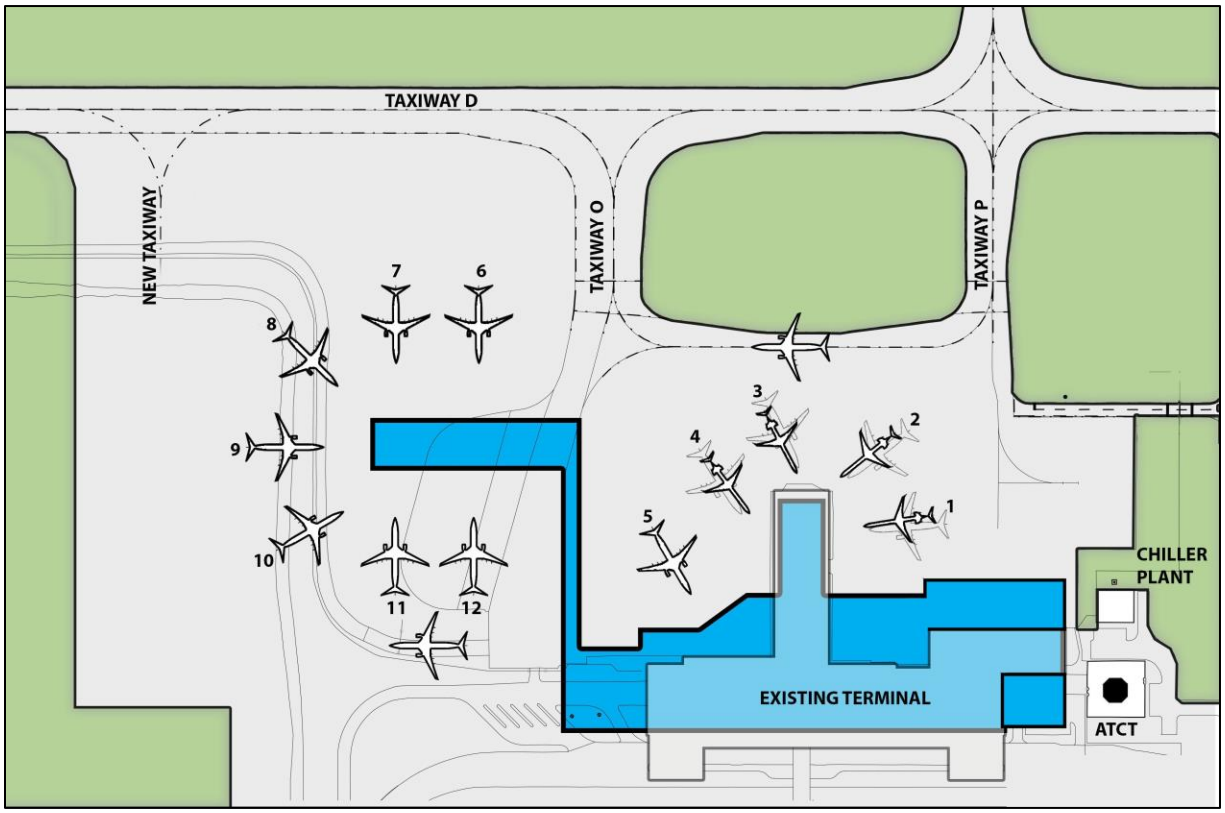


Source: Leo Daly, 2020.

Terminal Facility Alternative 5

Alternative 2 is a refinement of Alternative 2 and represents the "Island" scheme, as shown in **Figure 6-7**. A concourse of approximately 50,000 SF would be constructed, centered in the available area between the landside roadway and Taxiway D restrictions and connected to the existing terminal with a 20-foot wide walkway. The concourse would require space for concessions, restrooms, and building systems in addition to the gate holdrooms. The walking distance from the ticketing lobby to the furthest gate is approximately 1,400 feet. Most, if not all, of the concourse would be built in a single phase, as the cost to enclose the remaining area for three holdrooms is minimal. The result would be that the new construction to support PAL 4 would be required at the start of the construction program. Single taxilanes would be provided on the east, west and north sides of the new concourse. The changes in grading to slope the pavement away from the building would likely result in replacement of most of the pavement north of the terminal. This configuration would also require aircraft parked at the gate to be pushed back almost 200 feet to provide adequate clearance between the aircraft and the new concourse, which is not preferable. Expansion of the concourse to the north could be easily accommodated. Connection of the new concourse to the existing terminal could be accommodated by constructing the needed gates to the north prior to constructing the connection; however, no additional gates would be available on the landside, as the existing terminal would block aircraft movement. Approximately three to four gates could be added, but at a substantial cost. The terminal modifications would essentially be the same as those in Alternative No. 1.

Figure 6-7 – Terminal Facility Alternative 5

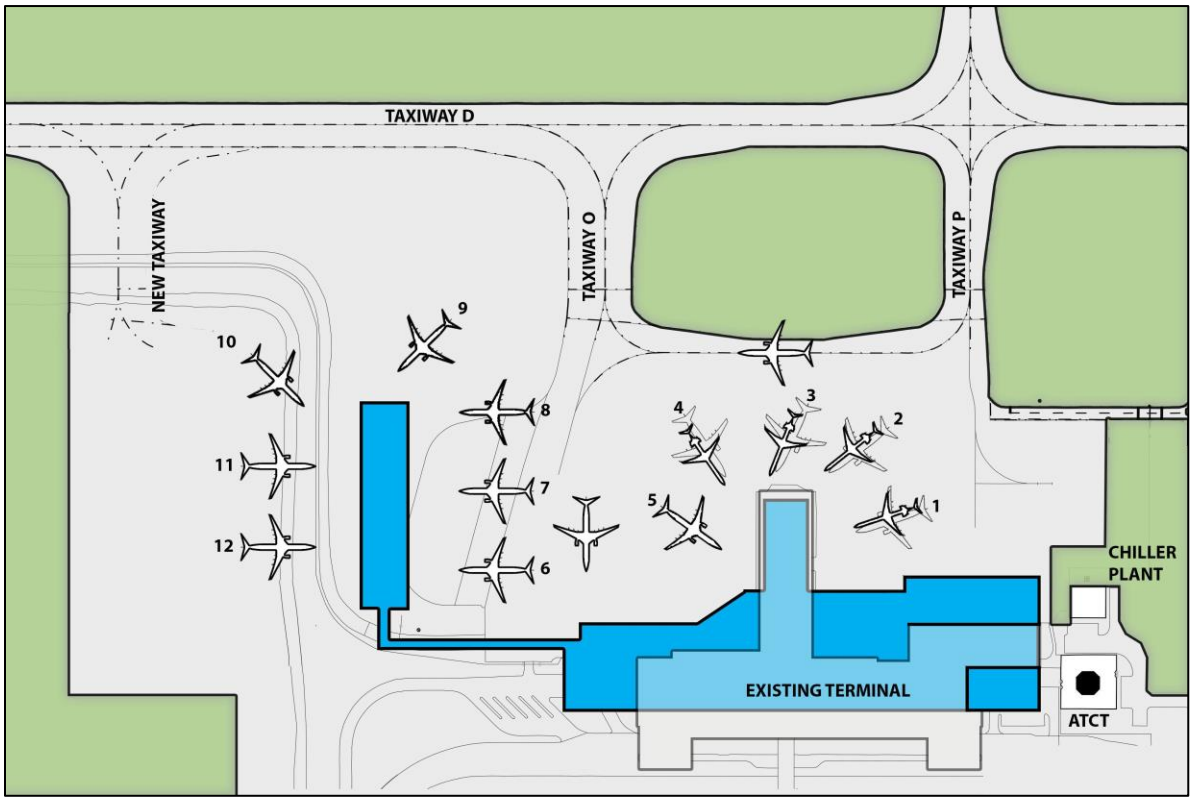


Source: Leo Daly, 2020.

Terminal Facility Alternative 6

Alternative 6, based on Alternative 3, (shown in **Figure 6-8**) is the "finger" scheme. Like Alternative 5, a concourse of approximately 50,000 SF would be constructed and connected to the existing terminal with a 20-foot wide walkway extending northward from the existing terminal. The concourse would require space for concessions, restrooms, and building systems, in addition to the gate holdrooms. The walking distance from the ticketing lobby to the furthest gate is approximately 1,100 feet. Most, if not all, of the concourse would need to be built in a single phase to accommodate the three holdrooms and the required support spaces. The result would be that the new construction to support PAL-4 would be required at the outset of the construction program. Single taxilanes would be provided on the east, south and north sides of the new concourse. The changes in grading to slope the pavement away from the building would likely result in replacement of most of the pavement north of the terminal. Expansion can be addressed by adding successive fingers that are parallel to the first; however, each successive finger would add approximately 700 feet to the walking distance for single taxilane separation and nearly 900 feet for dual taxilane separation. Without dual taxilanes between concourses, airside operations could result in delays and/or conflicts in accessing the gates. The terminal modifications would essentially be the same as in Alternatives No. 1 and No. 2.

Figure 6-8 – Terminal Facility Alternative 6



Source: Leo Daly, 2020.

6.4.4 Passenger Terminal Facility: Alternatives Evaluation

Evaluation Criteria and Analysis

The criteria listed in **Table 6-5** represents broad categories and key characteristics for terminal and airside performance.

Table 6-5 – Passenger Terminal Facility Alternatives Evaluation Criteria

Weight	Criteria	Notes
1	Passenger Experience	(QUALITATIVE) **Terminal** • Alternative maintains and expands upon goals (i.e., passenger experience, technology, sustainability, LoS, etc.); • Anticipated passenger circulation and wayfinding is easy or difficult in varying degrees measured by walking distance, level changes, perceived ease of movement through terminal; • FIS LoS
2	Operational Efficiency	(QUANTITATIVE/QUALITATIVE) **Airfield** • Access to taxiway; • Dual taxilanes versus single taxilanes; • Access to outbound and inbound baggage systems; **Terminal** • Circulation; • Queuing space; • Intuitive Wayfinding; • Access for concessions' delivery and storage
3	Flexibility	(QUALITATIVE) **Airfield-Terminal** • Alternative meets 2038 operational demand and is flexible to accommodate limited demand beyond 2038; **Terminal** • Alternative creates concourse and apron configuration that allows for flexibility to accommodate changing airline and aircraft operations (i.e., increased markets, changing aircraft gauge, etc.); • Potential for incremental growth
4	Cost	(QUANTITATIVE/QUALITATIVE) **Airfield-Terminal-Landside** • Conceptual rough order of magnitude (ROM) construction costs; • Scalability of capital costs – Alternative provides for incremental design/construction packaging to manage available funding; • Operation and maintenance costs (Older facilities more costly to operate and maintain)
5	Non-Aeronautical Revenue	(QUALITATIVE) • Alternative creates opportunities for non-aeronautical revenue
6	Environmental	(QUALITATIVE) • Alternative development has environmental impacts that would require mitigation measures; • Anticipated impacts to streams and wetlands; • Storm water management and retention facilities; • Reuse and repurpose of existing facilities;

Weight	Criteria	Notes
7	Construction/Implementation Complexity	(QUALITATIVE) **Airfield** • Phasing of taxiway construction and potential impacts to airline operations; • Terminal • Alternative requires multiple sub-phases and enabling projects to implement 2038 development plan; • Anticipated phasing of terminal facility is easy or difficult in varying degrees; • Impact on existing facilities; Repurpose and reuse of existing facilities; Temporary construction cost impacts.

Note: Weighted 1 through 7. 1 is the highest/most important weight.
Source: Leo A Daly, CHA, 2020.

Each of the refined alternatives presented in **Section 6.4.3** was reviewed and evaluated against these seven criteria which were based on qualitative and quantitative data, per the associated descriptions for each. The intent was to provide a comprehensive view of each alternative and to weigh the aspects of each for the purpose of identifying a preferred alternative for development of the terminal.

Table 6-6 – Passenger Terminal Facility Alternatives Analysis

Concept Alternative	ECP Vision Compatibility / Passenger Experience	Operational Efficiency	Flexibility	Cost	Non-Aeronautical Revenue	Environmental	Constructability / Implementation Complexity	Weighted Total
Criteria Weight/Ranking	**1**	**2**	**3**	**4**	**5**	**6**	**7**	
Alternative 1	**2**	**2**	**2**	**2**	**2**	3	3	**69**
Alternative 2	4	**4**	3	5	**2**	4	3	**96**
Alternative 3	3	**3**	**2**	5	**2**	4	**2**	**83**
Alternative 4	2	**2**	**2**	2	**2**	3	**3**	**69**
Alternative 5	4	**4**	**3**	5	**2**	4	**3**	**96**
Alternative 6	3	**3**	**2**	5	**2**	4	**2**	**83**

Notes:
1. Score 1 to 5, Score of 1 is the best, Score of 5 is the worst
2. Criteria Weight/Ranking per ECP, 1 is the highest/most important weight
3. Initial score and ranking based on family alternatives.

Source: Leo A Daly, CHA, 2020.

Passenger Experience

From the standpoint of convenience, Alternative 4 provides the shortest and most intuitive wayfinding from entrance to gate, as there is only one level change from ticketing to the SSCP and there is only one decision to be made after exiting the SSCP: whether to go right to the existing concourse area or left to the expansion area. Passengers would travel in a straight line in either direction. The Alternative 5 travel path to the new concourse has two changes in direction and a travel distance of approximately 750 feet from the SSCP to reach a point where passengers can see their gates on the new concourse. Like Alternative No. 1, Alternative No. 3 also has only one decision point as well, but the travel distance to the new concourse is longer and does not provide a view of the gates until after walking several hundred feet, which sometimes gives passengers an uneasy feeling regarding whether they are moving in the correct direction.

All schemes can be designed to accommodate the desired amenities, but Alternatives 5 and 6 would have split concessions due to the separation of the concourses. Food choices would be limited to those that happen to be in the departure gate concourse.

Operational Efficiency

The linear gate layout of Alternative 4 provides equal and direct access to any of the three access points to Taxiway D; therefore, there would be no operational conflicts for pull-in or push-back at the aircraft gates. The path for outbound baggage delivery is straightforward and runs along and between the new concourse and aircraft for safety. Airside delivery of concessions can be accomplished without impacting aircraft operations. Terminal circulation is direct and intuitive. Alternative 5 requires landside gates to taxi around several other gates in a single taxilane that could be blocked by other traffic. The pathway from the outbound baggage make-up area is indirect and involves driving under the existing concourse, under the connecting bridge, and around several aircraft gates to reach the farthest gate. The split concessions necessitate provisions for two delivery points or for transferring goods from a single point to the remote concessions during operational hours. The distance between the existing and new concourse is indirect and long, which may confuse passengers. Alternative 6 provides for more organized aircraft parking, but with single taxilanes there may be operational conflicts for aircraft traffic to access Taxiway D. Aircraft traffic would be more concentrated at the taxilane between the existing concourse and the finger. Baggage delivery would be required to drive under the existing concourse and around the new concourse or around the existing concourse to reach the farthest gate. Access to the laydown area would be near the push-back area of an aircraft gate.

Flexibility

All the alternative schemes provide opportunities for expansion to accommodate market growth. Terminals would be designed to provide for holdroom sharing and other strategies to accommodate smaller and larger aircraft with market changes; however, the expansion capability for Alternative 6 is somewhat limited by the extended travel distance between the first "finger" concourse and successive fingers. Single taxilane separation would result in an additional 700 feet of travel distance, some type of assistance would be required for each successive finger. Single taxilanes between the concourses will result in airside operational conflicts. Each concourse would require its own restrooms and concessions support.

Cost

The area of new construction added to the terminal is much less for Alternative 4 than in either of the other two. The remote "finger" and "island" concourses require additional concession and circulation area construction, as well as a greater area for pavement replacement to provide the proper slope from the concourses. The renovation of the existing terminal is comparable for all three; however, Alternative 4 can be constructed incrementally from PAL 1 through PAL 4 more easily. Gate expansions can be more closely coordinated with airport revenues and passenger growth.

Non-Aeronautical Revenue

There are some trade-offs between centralized concessions and gate-focused, distributed concessions; however, a concessions' study is recommended as part of the design process to maximize each. The existing concessions are somewhat restricted in space; therefore, the opportunity for increased area and the associated revenue is available in all schemes.

Environmental

No detrimental effects to wetlands, streams, or indigenous habitats are apparent in the area for the expansion. Alternative 5 and 6 will require more pavement replacement and, as such, may require more replacement of unsuitable soils for contamination and/or bearing capacity. Alternatives 5 and 6 will also result in longer taxiing times related to airside conflicts than would occur with Alternative 4; therefore, there would be a greater impact to air quality.

Constructability/Implementation

The construction of the Alternative 6 "finger" concourse could be accomplished completely outside of the existing concourse's operations area. The connector to the existing construction is relatively short and at the end of the operating area. In addition, nearly, if not, all of the concourse would need to be built in one phase. As a result, phasing and renovation of the terminal represents the most complicated construction phasing plan. All of the alternatives have similar challenges. Alternative 6 is slightly more complicated because of potential aircraft restrictions and operational issues due to its proximity to Taxiway D. Alternative 4 is more incremental in growth; therefore, the initial stages will need to provide a more restrictive gate relocation plan.

Summary

As shown in the analysis matrix provided in **Table 6-5** and **Table 6-6**, the lower numerical score represents a more preferable scheme. The priorities shown represent the design priorities based on conversations with Airport Management and the Board, as well as on professional judgement. Realignment of priorities may change the result somewhat. In each scoring category, the green represents good to high performance, the yellow represents acceptable performance, and the red color represents a need for reassessment or modification.

Using the color coding as a guide, it becomes intuitively clear that Alternative 4 would be the preferred choice for further development. It scores at or above the other alternatives in nearly every criterion. Using a weighted scale, the numerical calculation, which multiplies the criterion score by the weighting factor and summed at the end of each row, would indicate that Alternative 1 appears to be second best option; therefore, Alternative 4 is recommended for further development (see **Figure 6-6**).

The next portion of the Master Plan describes a phased approach to developing the preferred terminal expansion alternative through the four Planning Activity Levels.

6.4.5 Passenger Terminal Facility Phasing Strategy

The phasing strategy is designed to maximize efficiency through continued use of existing gates. Expansion occurs in stages to the north, minimizing impacts to existing terminal, gate, and apron activity as much as possible. Given that the existing facility is not very old, much of the existing terminal is reused. Major mechanical, electrical, and communication rooms remain, and existing elevator cores are maintained. Existing structural systems are preserved.

The selected scheme was refined to incorporate stakeholder comments. The Board requested that the phasing plan include incorporating a ground-level extension of the existing concourse that opened in August of 2020. The aircraft layout plan was modified to accommodate four Group III aircraft at the existing concourse.

Terminal Facility PAL 1 Development

A new concourse accommodating four Aircraft Design Group (ADG) Group III aircraft (i.e., Boeing 737-800) gates is constructed on the east side of the northern part of the existing terminal and extending to the north with a new public concourse connecting it to the existing concourse. The new concourse would include space for concessions and passenger amenities. The lower level of the new concourse accommodates support and airline operations spaces. Additional concessions are proposed in an existing unoccupied space on the second level at the north end of the terminal adjacent to the new concourse.

The recent addition of a ground level holdroom on the existing concourse allows the existing upper level to be reconfigured to accommodate holdrooms for four Group III aircraft with sufficient space remaining to enlarge the public restroom and to add passenger amenities and concessions.

Baggage make-up is relocated to an area of new construction just south of the existing concourse, placing it closer to the gates and providing space for the CBIS to expand to the south and east. Part of this new buildout can be used for an interim expansion of the SSCP. The upper level of this expansion can be used for an expansion of administrative offices.

Existing stair, escalator and elevator access from ground level ticketing and baggage claim to the existing concourse remain in this phase.

The ticketing hall can be expanded into newly constructed space to the south of the terminal, providing additional ticketing, queueing, ATO, and circulation space. The curbside canopy would be extended to the south to cover the additional departures curb. The existing baggage claim hall remains in place in this phase.

Terminal Facility PAL 2 Development

PAL 2 adds construction for one new gate and additional support space to the north end of the new concourse. The terminal is expanded to the north to accommodate a new baggage claim hall and rental car counters. New escalators and elevators at the north end of the new baggage claim hall provide vertical circulation for deplaning passengers. The curbside canopy would be extended to the north to cover the additional arrivals curb. The concourse level of this expansion provides space for additional concessions and restrooms.

The space vacated by the old baggage claim, along with a new expansion of the terminal just north of the existing concourse, provide space for a new security screening checkpoint (SSCP) accommodating nine screening stations and ample queueing. New escalators and elevators at the north end of the SSCP provide vertical circulation to concourse level for enplaning passengers. The existing escalators and stair from the ticketing/baggage claim level to the existing concourse are demolished.

Terminal Facility PAL 3 Development
Increases in facility requirements for PAL 3 are incremental. A separate construction phase is not proposed for this stage of development.

Terminal Facility PAL 4 Development
PAL 4 adds construction to the north end of the new concourse for three more Group III aircraft gates and additional concession, amenity, and support spaces. Expansion beyond the planning horizon would be a continued extension of the concourse to the north, eventually connecting with a new replacement terminal.

6.5 GROUND ACCESS AND PARKING DEVELOPMENT CONCEPTS

6.5.1 Existing Parking Facilities

As described in **Chapter 5**, there are 1,859 paved surface parking spaces to accommodate short- and long-term public parkers, employees, and rental car ready/return. There is also an unpaved area located between the ring-road and the rental car fueling and wash area (QTA area) that can accommodate approximately 300 overflow parkers during peak times, such as holidays. The QTA area can accommodate about 765 vehicles. In late 2013, approximately 300 public spaces were covered with shade/rain canopies and became available for use by either short- or long-term parkers. All parking spaces are located more than 300 feet from the terminal building. The existing parking configuration is depicted in **Figure 6-9.**

The parking demand calculations for the planning horizon are summarized in **Table 6-7**. This table indicates that, with use of the unpaved overflow lot, there is sufficient parking supply during current peak passenger activity levels for all lots with the exception of long-term covered parking and the rental car ready and return. The lack of a dedicated cell-phone lot has also led to unnecessary circulation on West Bay Loop and queueing near the terminal. By the PAL 1 milestone, additional deficiencies are forecasted for short-term and employee parking spaces. As demand continues to rise, parking constraints will become more pronounced over the planning horizon, emphasizing the need for a long-term solution for all types of parking.

Table 6-7 –Parking Capacity and Demand

Activity	Existing (2018)	Base	PAL 1	PAL 2	PAL 3	PAL 4
Short-Term Parking	202	157	178	202	230	261
Covered Long-Term Parking	300	294	336	381	432	492
Uncovered Long-Term Parking	656	646	740	842	953	1,089
Transportation Network Companies (TNC) Parking	40	23	26	30	34	39
Employee Parking	204	196	223	253	288	327
Rental Car Parking	457	244	277	315	358	407

Source: AVCON, 2019.
*Does not include overflow

To meet the growing parking demands and provide a high level of customer service, in the most cost-effective manner, a phased parking expansion program is recommended. The following describes a four-phase concept.

6.5.2 Phase 1 Parking Concepts

As shown in **Figure 6-10**, Phase 1 includes both planning and construction and is intended to satisfy the parking needs forecasted for PAL 1. Construction of a 149-stall short term public parking lot directly east of the existing Rental Car Ready & Return Lot would be constructed. This lot will be outside the 300 feet of the terminal and will not require blast protection. A portion of existing 202-space short-term parking lot (including handicap spaces) would be converted into 96 additional covered parking spaces. The reconfiguration of the covered lot results in a seven (7) space reduction when converted from short-term to covered parking. The employee parking lot would be expanded westward to provide 40 additional stalls, but a total of seven (7) spaces from the existing employee lot must be removed to account for new drive connections and additional landscape islands. The long-term parking lot would be expanded westward to provide 104 additional stalls.

In order to better serve the changing demands to include additional cell-phone parking, the taxi queue would be relocated north of the terminal and the lot repurposed to provide a total of 28 existing spaces for the cell phone lot. Additionally, the cell phone lot is to be expanded by 26 stalls to provide a total of 54 stalls.

Table 6-8 – PAL 1 Parking Capacity and Demand

Activity	Existing Capacity	PAL 1 Construction	Reallocated Spaces	PAL 1 Capacity	PAL 1 Demand
Short-Term Parking	202	+149	-103	247	178
Covered Long-Term Parking	300	+96	-	396	336
Uncovered Long-Term Parking	656	+104	-	760	740
Employee Parking	204	+33	-	237	223
Rental Car Parking	457	-	-	457	277

Source: AVCON, 2019.

Due to the large scope of expanding the west long-term parking campus it is recommended planning for expansion of the lot and requisite re-routing of West Bay Parkway is included as part of Phase 1.

6.5.3 Phase 2 Parking Concepts

As shown in **Figure 6-11**, Phase 2 is intended to satisfy the need to increase long-term and employee parking demand forecasted for PAL 2. The west long-term parking campus is to be expanded westward to provide an additional 365 stalls of long-term parking. This coincides with a westward expansion of the Employee Parking Lot to provide an additional 46 stalls. The PAL 1 parking lot configurations were configured to allow for the future lot expansion without the need for space reduction requirements.

In order to facilitate the westward expansion of these parking lots West Bay Loop would be rerouted around the rental car facility. This new configuration would have the long-term benefit of providing improved service to the ultimate terminal facility in addition to facilitating the expansion of the west long-term campus.

Table 6-9 – PAL 2 Parking Capacity and Demand

Activity	PAL 1 Capacity	PAL 2 Construction	Reallocated Spaces	PAL 2 Capacity	PAL 2 Demand
Short-Term Parking	247	-	-	247	202
Covered Long-Term Parking	396	-	-	396	381
Uncovered Long-Term Parking	760	+365	-	1,125	842
Employee Parking	237	+46	-	283	253
Rental Car Parking	457	-	-	457	315

Source: AVCON, 2019.

Planning for additional expansion of the employee lot should be considered as part of PAL 2. The employee lot is anticipated to exceed the capacity added during PAL 3, but construction of additional pavements is not feasible until the drainage west of the existing West Bay Parkway footprint has been rerouted.

6.5.4 Phase 3 Parking Concepts

As shown in **Figure 6-12**, Phase 3 is intended to satisfy the need for increase long-term and employee parking demand forecasted for PAL 3. The west long-term parking campus is to be expanded westward to provide an additional 522 stalls of long-term parking. This coincides with a westward expansion of the Employee Parking Lot to provide an additional 90 stalls.

Table 6-10 – PAL 3 Parking Capacity and Demand

Activity	PAL 2 Capacity	PAL 3 Construction	Reallocated Spaces	PAL 3 Capacity	PAL 3 Demand
Short-Term Parking	247	-	-	247	230
Covered Long-Term Parking	396	-	-	396	432
Uncovered Long-Term Parking	1,125	+522	-	1,647	953
Employee Parking	283	+90	-	373	288
Rental Car Parking	457	-	-	457	358

Source: AVCON, 2019.

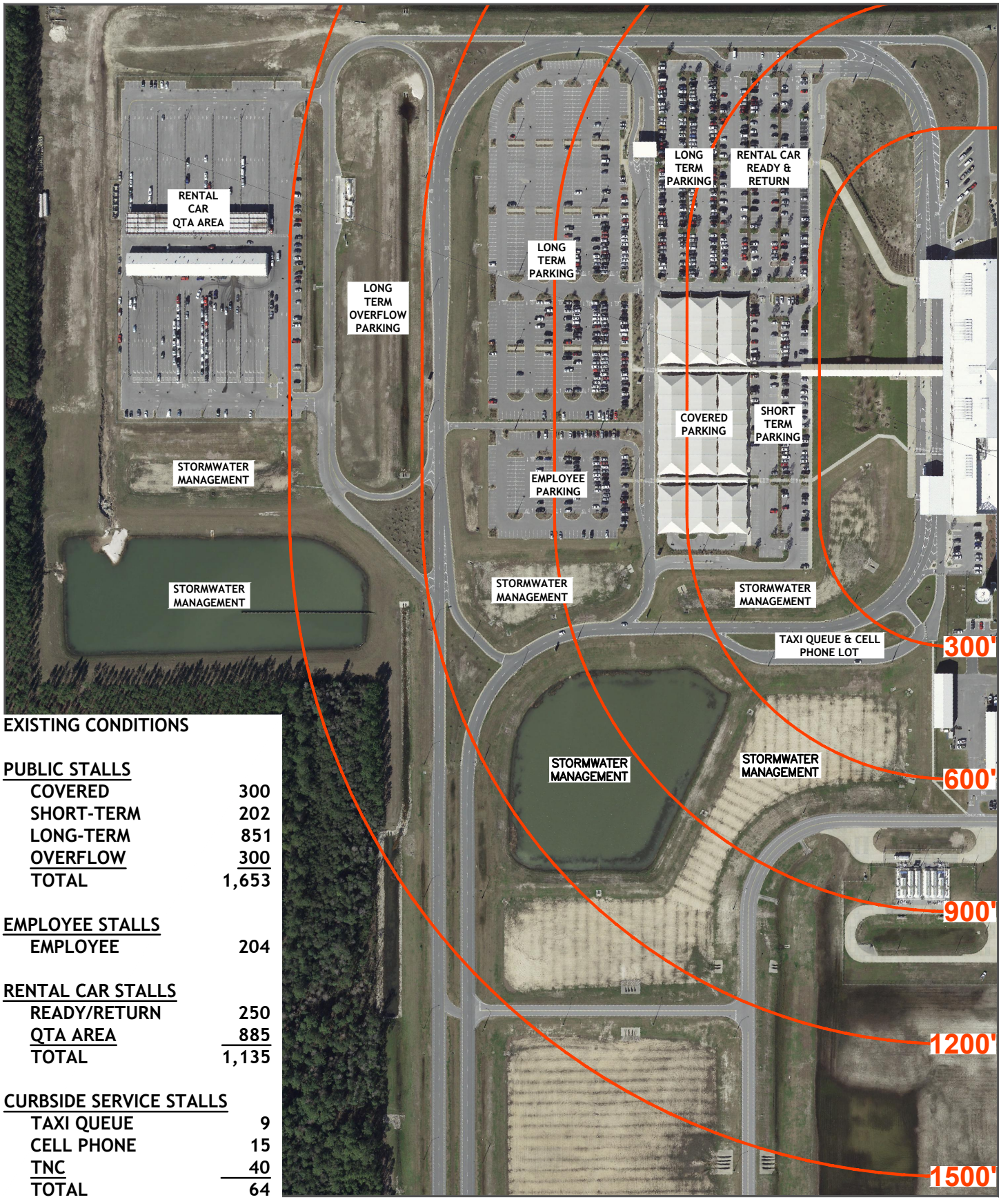
6.5.5 Phase 4 Parking Concepts

As shown in **Figure 6-13**, Phase 4 would satisfy the PAL 4 forecasted parking needs of the Airport through the construction additional surface parking. A parking garage was considered, but the PAL 2 roadway expansion allowed for the use of surface parking. The west long-term parking campus is to be expanded westward to provide an additional 220 stalls of long-term parking. This coincides with an eastward expansion of the Short-Term Parking Lots to provide an additional 361 stalls. The Short-Term spaces will also require blast deflection due to the proximity to the terminal. PAL 4 will also allow for the conversion of 91 spaces to additional covered parking. The reconfiguration of the covered lot results in a seven (7) space reduction when converted from short-term to covered parking. The final covered parking expansion requires and entrance configuration to separate the short-term entrance from the covered parking entrance.

Table 6-11 – PAL 4 Parking Capacity and Demand

Activity	PAL 3 Capacity	PAL 4 Construction	Reallocated Spaces	PAL 4 Capacity	PAL 4 Demand
Short-Term Parking	247	+361	-98	510	261
Covered Long-Term Parking	396	+91	-	487	492
Uncovered Long-Term Parking	1,647	+220	-	1,867	1,089
Employee Parking	373	-	-	373	327
Rental Car Parking	457	-	-	457	407

Source: AVCON, 2019.



EXISTING CONDITIONS

PUBLIC STALLS	
COVERED	300
SHORT-TERM	202
LONG-TERM	851
OVERFLOW	300
TOTAL	1,653
EMPLOYEE STALLS	
EMPLOYEE	204
RENTAL CAR STALLS	
READY/RETURN	250
QTA AREA	885
TOTAL	1,135
CURBSIDE SERVICE STALLS	
TAXI QUEUE	9
CELL PHONE	15
TNC	40
TOTAL	64

GRAPHIC SCALE (FEET)
0 150 300

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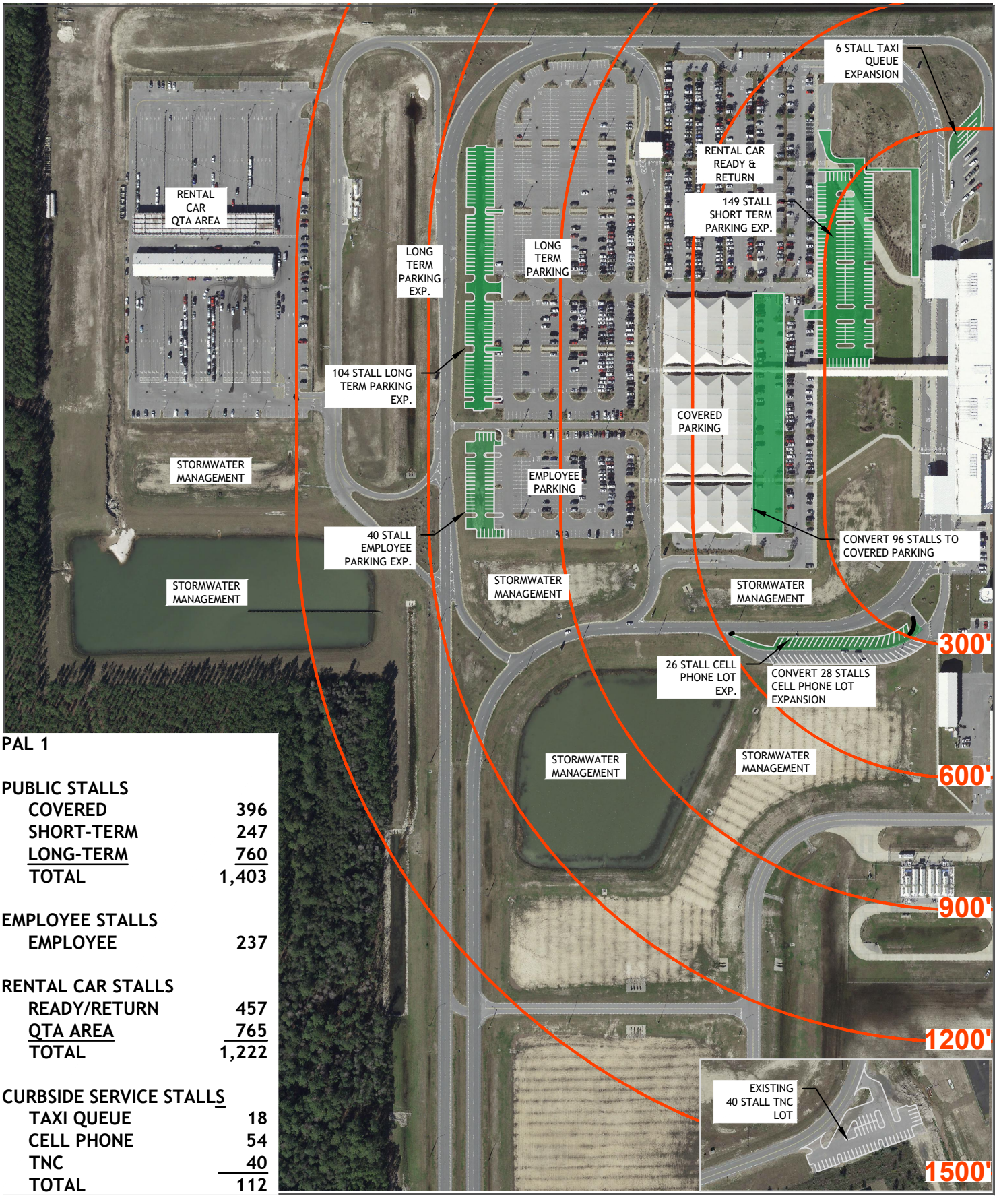
Figure 6-9
Existing Parking Facilities



PAL 1

PUBLIC STALLS	
COVERED	396
SHORT-TERM	247
LONG-TERM	760
TOTAL	1,403
EMPLOYEE STALLS	
EMPLOYEE	237
RENTAL CAR STALLS	
READY/RETURN	457
QTA AREA	765
TOTAL	1,222
CURBSIDE SERVICE STALLS	
TAXI QUEUE	18
CELL PHONE	54
TNC	40
TOTAL	112

GRAPHIC SCALE (FEET)
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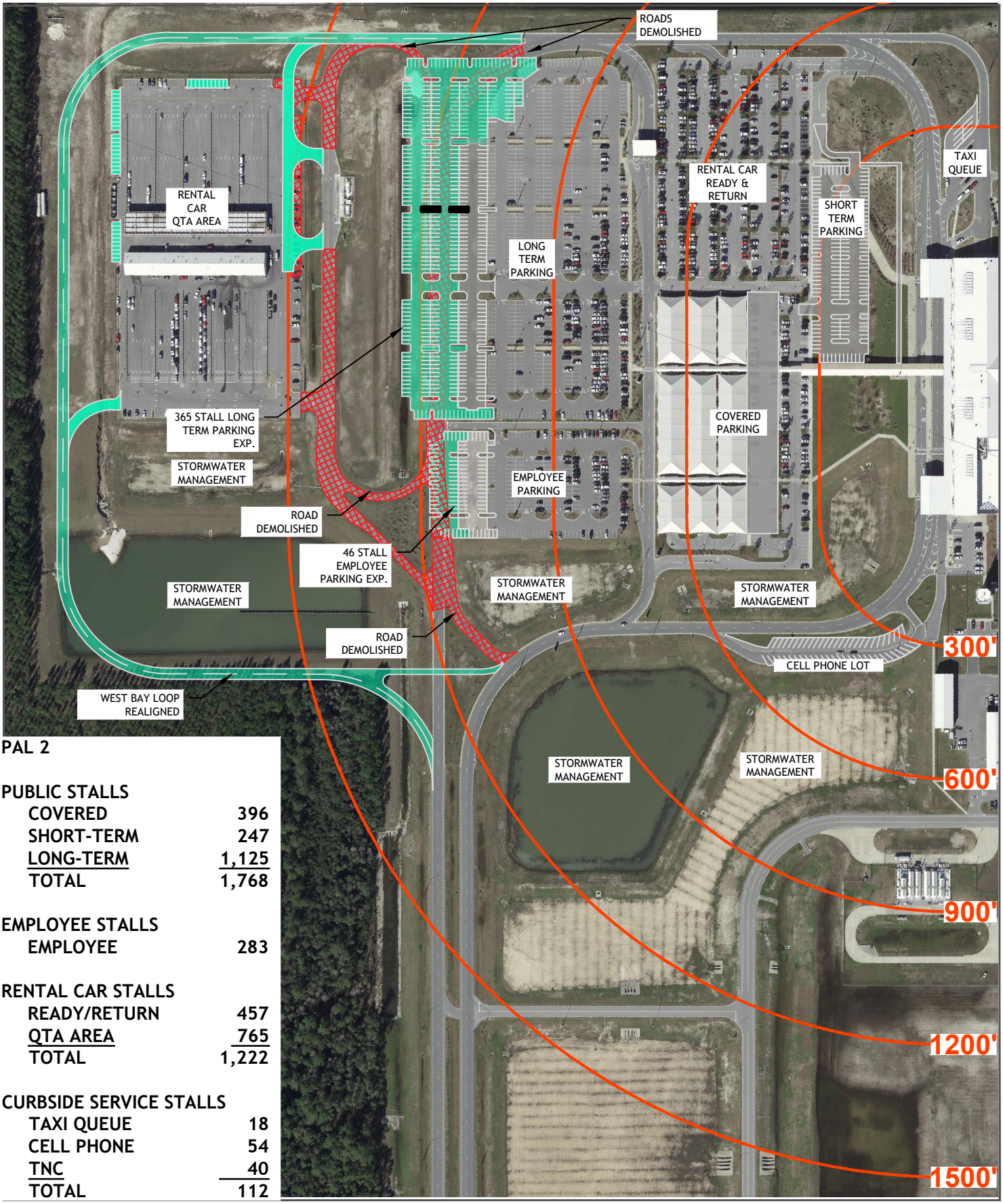
Figure **6-10**
Surface Parking and Access - PAL 1



PAL 2

PUBLIC STALLS	
COVERED	396
SHORT-TERM	247
LONG-TERM	1,125
TOTAL	1,768
EMPLOYEE STALLS	
EMPLOYEE	283
RENTAL CAR STALLS	
READY/RETURN	457
QTA AREA	765
TOTAL	1,222
CURBSIDE SERVICE STALLS	
TAXI QUEUE	18
CELL PHONE	54
TNC	40
TOTAL	112

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GRAPHIC SCALE (FEET)
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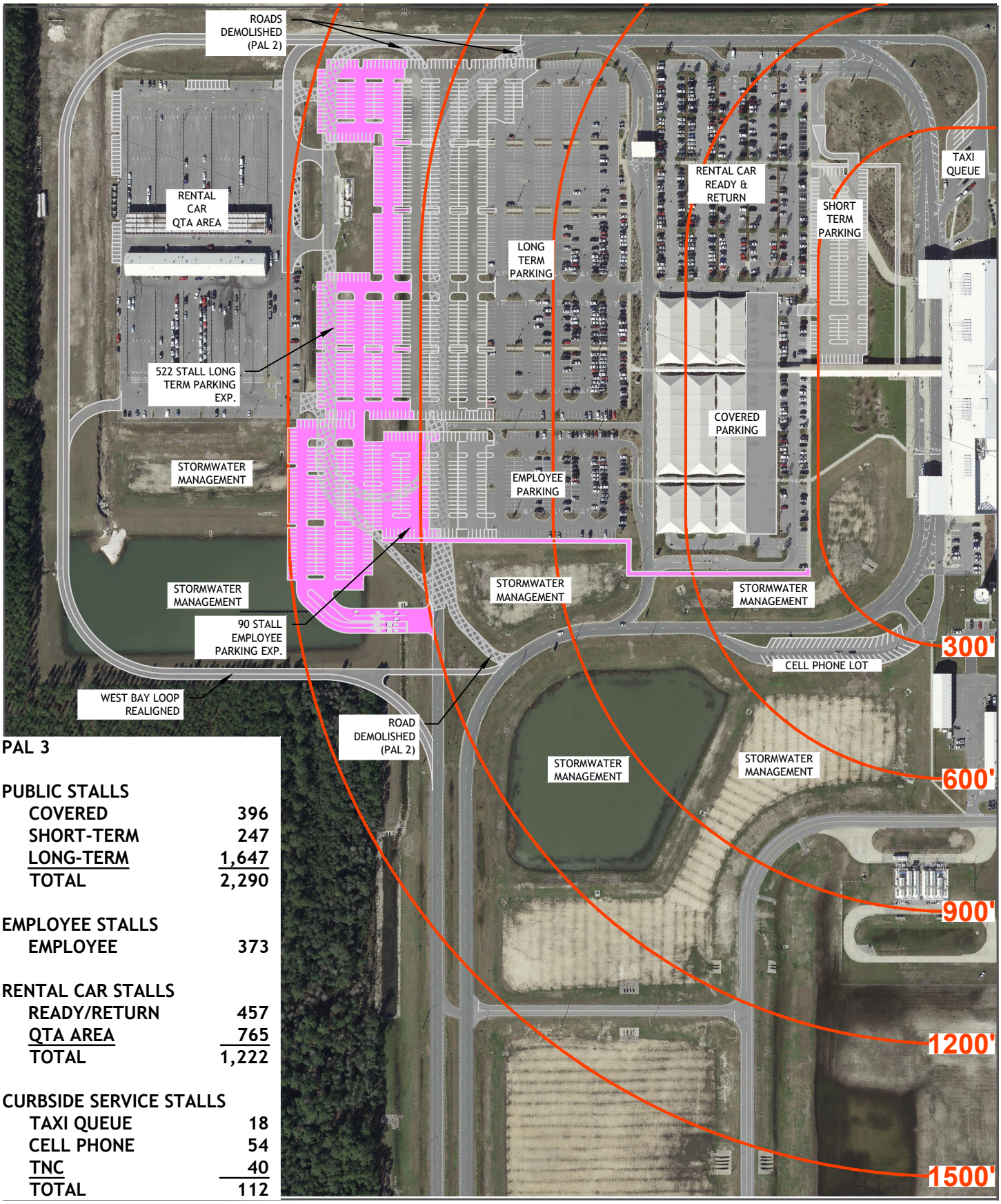
Figure **6-11**
Surface Parking and Access - PAL 2



PAL 3

PUBLIC STALLS	
COVERED	396
SHORT-TERM	247
LONG-TERM	1,647
TOTAL	2,290
EMPLOYEE STALLS	
EMPLOYEE	373
RENTAL CAR STALLS	
READY/RETURN	457
QTA AREA	765
TOTAL	1,222
CURBSIDE SERVICE STALLS	
TAXI QUEUE	18
CELL PHONE	54
TNC	40
TOTAL	112

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GRAPHIC SCALE (FEET)
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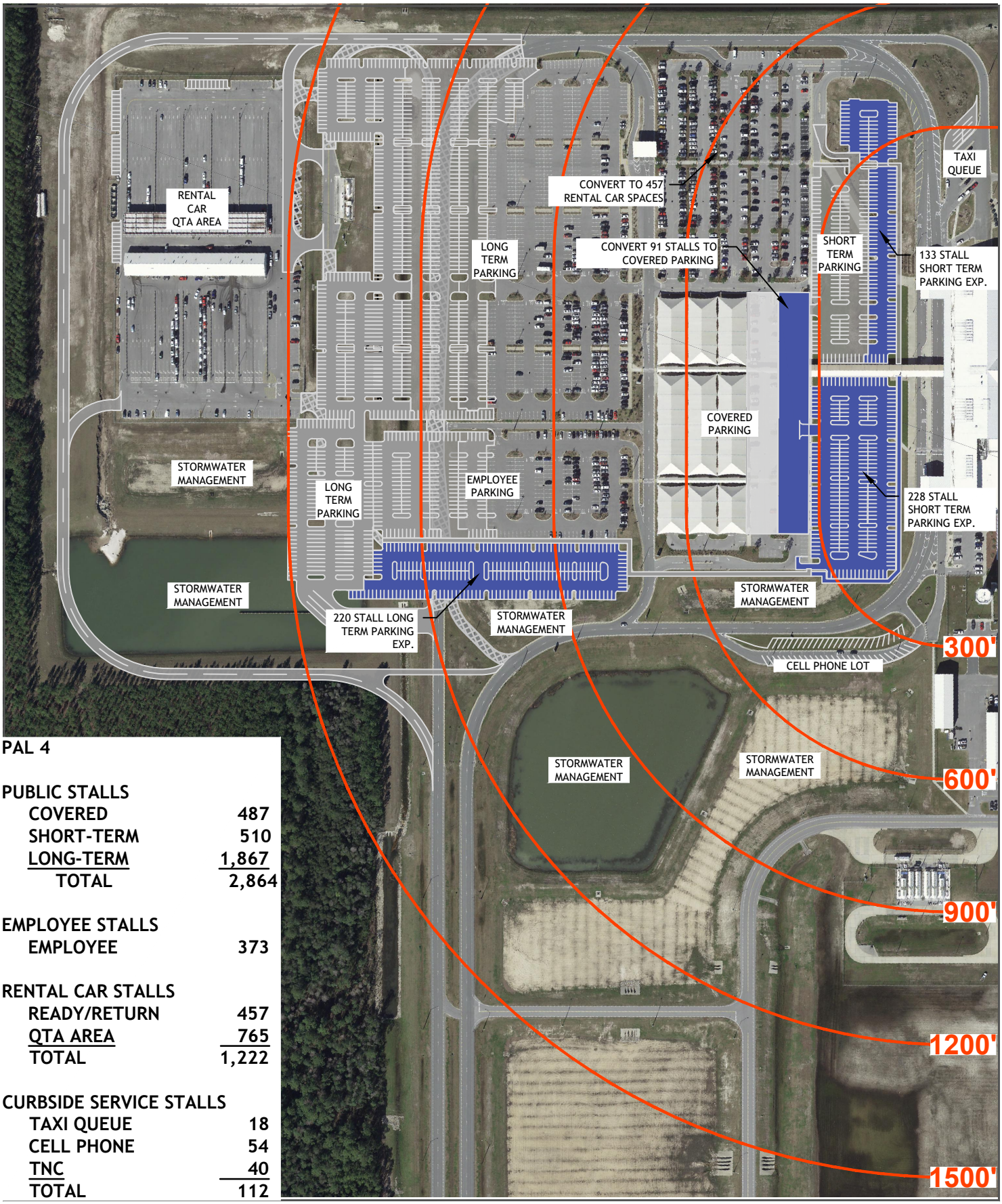
Figure 6-12
Surface Parking and Access - PAL 3



PAL 4

PUBLIC STALLS	
COVERED	487
SHORT-TERM	510
LONG-TERM	1,867
TOTAL	2,864
EMPLOYEE STALLS	
EMPLOYEE	373
RENTAL CAR STALLS	
READY/RETURN	457
QTA AREA	765
TOTAL	1,222
CURBSIDE SERVICE STALLS	
TAXI QUEUE	18
CELL PHONE	54
TNC	40
TOTAL	112

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GRAPHIC SCALE (FEET)
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Figure **6-13**
Surface Parking and Access - PAL 4

6.6 SUPPORT FACILITIES DEVELOPMENT CONCEPTS

6.6.1 General Aviation (GA) Alternatives

General Aviation (GA) activity at ECP represents approximately 55 percent of total annual airport operations and includes various types of private, corporate, and business aircraft flights. GA services and facilities are accommodated by a variety of entities, including, the Airport District, Sheltair, and Bay Aircraft Owners Association. The GA facilities are currently located on the southwest side of the airfield and consist of aircraft apron parking and tie-downs, as well as hangars (i.e., bulk hangars, corporate hangars, and T-hangars).

The following discusses potential development to accommodate projected demand and future buildout. Note that the evaluation for future GA infrastructure was conducted independently of the presumed Runway 3/21 construction.

General Aviation and FBO Apron

ECP is projected to have an increased number of transient aircraft that will require short-term parking options (i.e., itinerant parking aprons, tie-downs, and hangar space). The Airport's GA apron is currently at capacity, with a deficit of approximately 20,526 SY. By PAL 4, this deficit is projected at approximately 23,997 SY. Given the transient nature of small jets within the planning horizon, it is assumed that most of the aircraft will be parked on itinerant aprons and at tie-down areas, opposed to conventional hangars. An ongoing development at ECP, 'Project Gator' has been recently initiated, which includes a 2,200 SY transient apron between the FBO facilities and the T-hangars.

As shown in **Figure 6-14**, it is recommended that the existing itinerant apron to the south of the existing GA Executive Terminal be expanded to the south by approximately 28,975 SY, with approximately 18,820 SY for aircraft maneuvering. The remaining approximate 10,155 SY will provide for additional itinerant and tie-down parking positions.

General Aviation Aircraft Storage Facilities

Hangar requirements are generally a function of the number and type of based aircraft, owner preferences, hangar rental costs, and area climate. As previously discussed in **Chapter 5,** due to weather conditions, hangars are highly desirable in the Panama City region. The heat and sun exposure can damage avionics and fade exterior paint, while thunderstorms and hailstorms can cause considerable amounts of damage to the aircraft. During the forecast period, ECP is expected to see an increase in based aircraft. While ECP has adequate space to support the number of based aircraft throughout the planning horizon, there is not enough storage space to support the types of aircraft expected to be based at the Airport. ECP is expected to see a decrease in single- and multi-engine-based aircraft, while experiencing growth in jet aircraft at the Airport. To support the increase in based jet aircraft, and as discussed in **Chapter 5**, the Airport will need approximately 3,382 SF of hangar space by PAL 4.

Construction of a new bulk hangar is recommended to the north of the GA Executive Terminal and west of the existing itinerant apron. The new hangar, measuring up to 14,000 SF, would be capable of accommodating based aircraft in the future, as well as providing hangar storage for itinerant aircraft not utilizing the apron.

This would be in addition to two additional bulk hangars to the south of the FBO facility. It should be noted that development of these hangars is being privately funded.

Furthermore, the six land-lease, single-aircraft hangars on the north side of the GA area are expected to reach their 20-year useful life in PAL 3; therefore, it is recommended that the hangars be demolished and be replaced with T-hangars. As shown in **Figure 6-14**, space is available to provide up to two sections of standard nested T-hangars and one section of fully nested T-hangars. The two sections of standard nested T-hangars could each contain six 1,008 SF hangar units and two 168 SF offices, while the fully nested T-hangar section could contain nine 1,276 SF hangar units and two 638 SF offices.

6.6.2 Air Cargo Development

As described in **Chapter 5**, the current 5,121 SF cargo processing facility is expected to adequately accommodate projected demand throughout the 20-year planning period, as the facility is not expected to surpass 33.9 percent capacity.

The Cessna 208 Caravan is the most demanding aircraft performing cargo-related operations and is expected to remain the most demanding throughout the planning period, averaging one departure per day now and in the future; however, if the Airport were to receive additional cargo operations, the apron would have a 172 SY deficiency; therefore, it is recommended that the existing apron be expanded by 172 SY to the north. See **Figure 6-15**.

6.6.3 Aircraft Fueling Development

The existing fuel farm, which is comprised of four 50,000-gallon Jet-A fuel tanks and four 15,000-gallon Avgas fuel tanks, is located on the west side of the airfield. The fueling facilities are owned by the Airport; however, Menzies Aviation is responsible for managing the fuel farm and fuel storage. The fuel tanks are all above-ground and do not have underground pipelines to dispense the fuel to alternate locations on the airfield for aircraft users; therefore, fuel is transported and dispensed via specialized fuel trucks owned by Menzies Aviation.

On average, the Airport is capable of sustaining a 3.5- or five-day fuel reserve throughout the planning horizon; however, if wanting to maintain a seven-day fuel reserve beyond PAL 1, additional fuel storage areas will be necessary. As shown in **Figure 6-15**, the current fuel facilities can be expanded to the east. To accommodate future needs, it is recommended that the new fuel farm expansion contain five 50,000-gallon tanks and three 15,000-gallon tanks.

6.6.4 Airport Equipment Storage and Maintenance Development

Although the Airport's equipment storage and maintenance facilities are adequately sized, with the east building measuring approximately 6,000 SF and the west building measuring approximately 5,000 SF, to support activity at ECP now and throughout the planning period, vehicular parking for maintenance personnel in the vicinity of the facilities is insufficient; therefore, areas for additional parking were evaluated. See **Figure 6-15**.

6.6.5 Aircraft Rescue and Firefighting / Public Safety Development

ECP is currently operating under ARFF Index B. Over the planning horizon, the Airport is projected to receive five or more daily operations by aircraft measuring 126 feet or greater (ex., B737-800); therefore, the ARFF index will increase to an Index C.

In addition, during on-site interviews with Public Safety personnel, it was advised that the current Public Safety facility is at capacity and that parking for ARFF and Public Safety staff is inadequate; therefore, an option for expanding parking was also evaluated. **Figure 6-15** depicts the previously discussed ARFF training facility and parking expansion.

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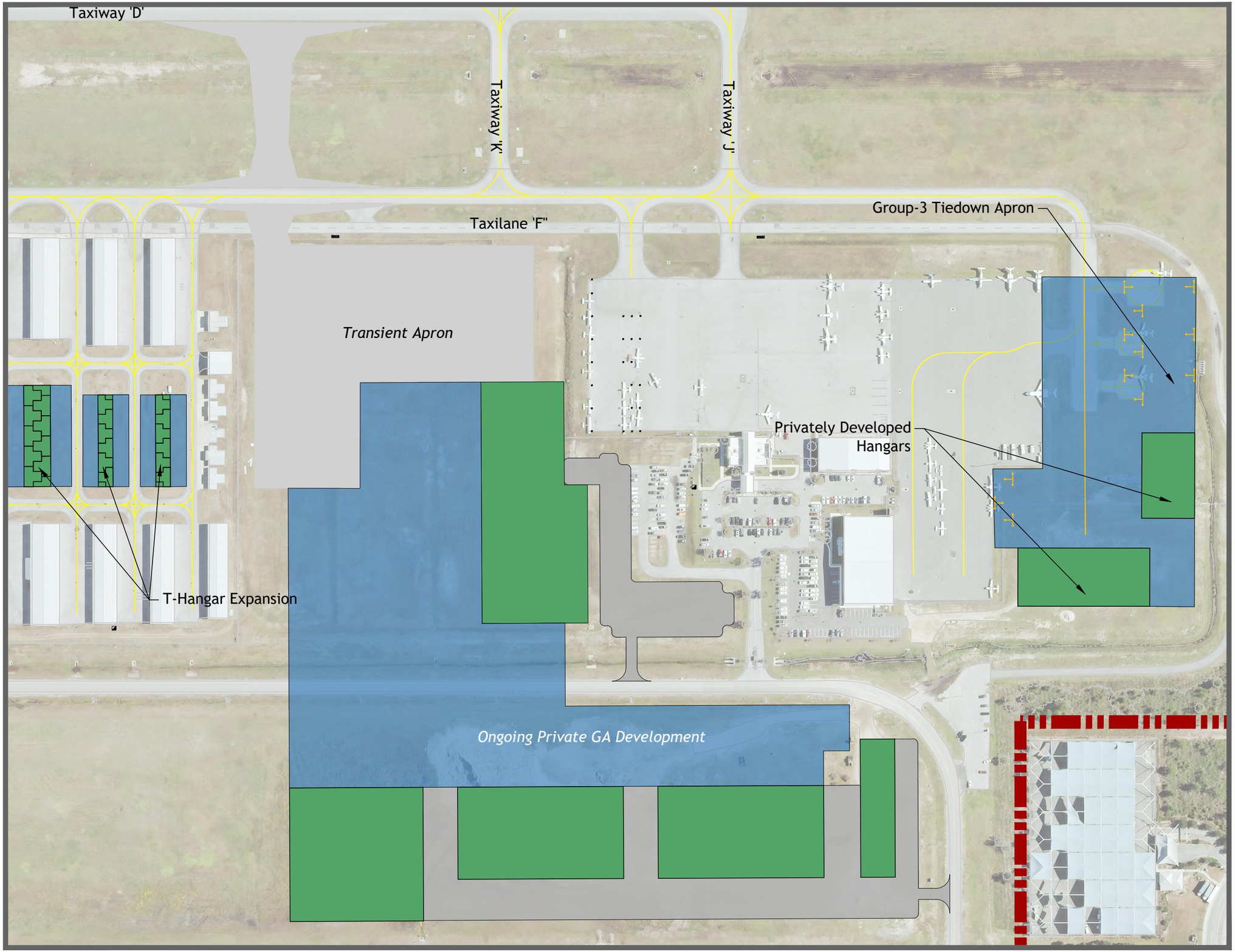

GRAPHIC SCALE (FEET)
0 100 200

LEGEND
- Proposed Airfield Pavement
- Proposed Hangars
- Property Line

Figure 6-14
General Aviation Development

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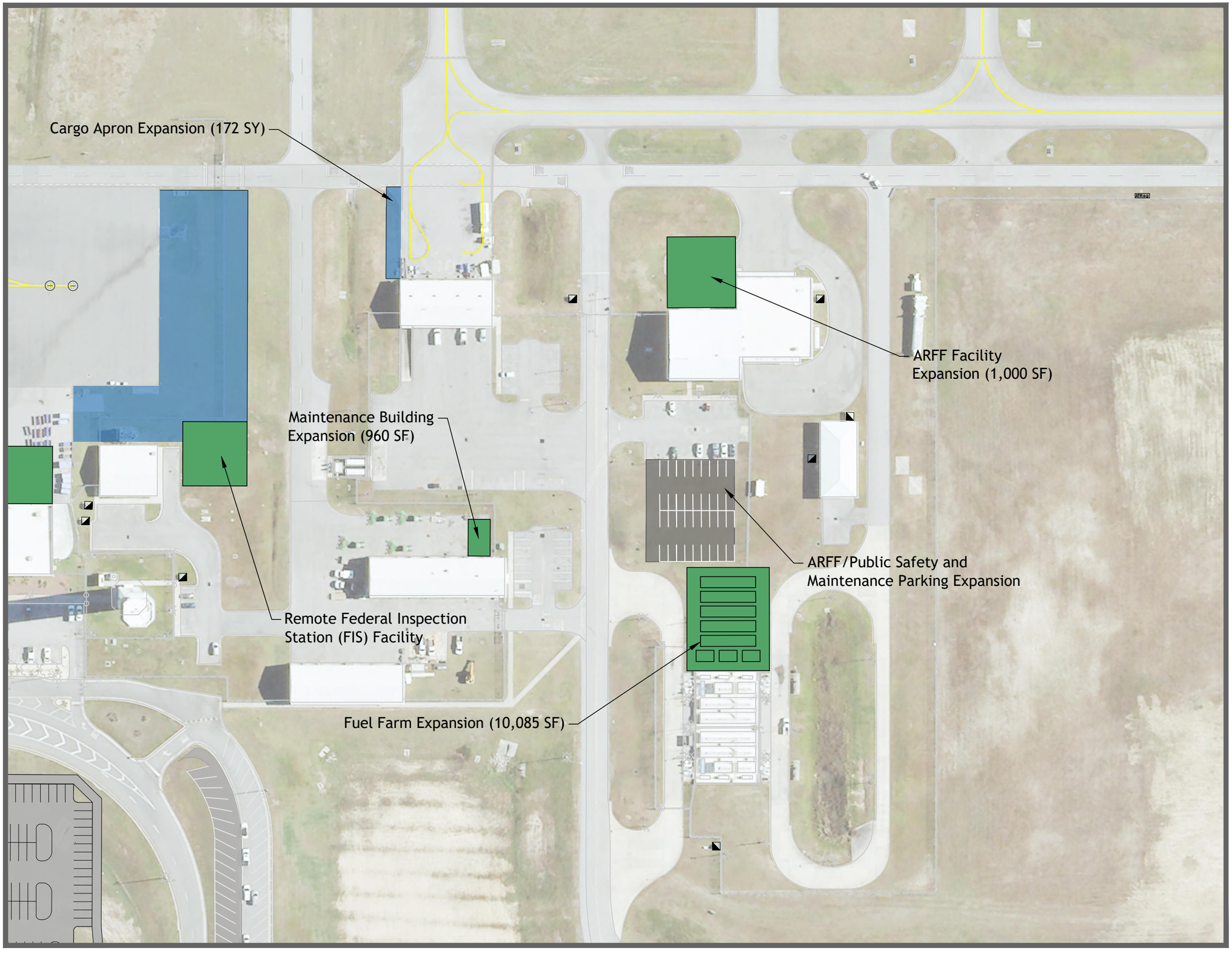

GRAPHIC SCALE (FEET)
0 50 100

LEGEND

- Proposed Airfield Pavement
- Proposed Airfield Facility Expansion
- Proposed Parking Area Expansion

Figure 6-15
Support Facilities Development

6.7 RECOMMENDED DEVELOPMENT PLAN SUMMARY

Based on the review of the Airport's goals and objectives, as well as the needs and constraints identified in this Chapter and in previous Chapters, specific alternatives were identified as the most reasonable to form the recommended development plan for ECP. This plan improves the safety, operational efficiency, and functionality of the airfield while incorporating all necessary facilities. This section provides a summary of the major concepts in support of the short- and long-term operation of the Airport.

As mentioned previously, there are a substantial number of areas on the Airport that were evaluated and have recommended improvement concepts. It should be emphasized that this is a long-term plan and that some desired improvements may not be financially or environmentally feasible.

A summary of recommended alternative or concept is presented in the subsequent sections and in **Table 6-12**, while the recommended plan for ECP is illustrated in **Figure 6-16**.

6.7.1 Airfield Development

Enhancing Current Airfield Infrastructure

Runway 16/34
To bring the runway into compliance with FAA standards, 25-foot shoulders should be constructed along both sides of Runway 16/34

Taxiways
Based on immediate needs, it is recommended that all of Taxiways 'E1' and 'E2,' parts of Taxiways 'J', 'K', and 'M', and all of Taxilane 'F' be expanded from 35 feet wide to 50 feet wide to meet width requirements for TDG 3 taxiways. This would also warrant development of an additional taxiway connector from the GA apron to Taxilane 'F.' This would address the direct apron-to-runway access taxiways, no longer permitted by FAA guidance.

Although not required, it is recommended that 20-foot wide shoulders be constructed on both sides of all taxiways at the ECP.

Future Airfield Infrastructure
As previously discussed, a new runway (Runway 3/21) would satisfy potential crosswind coverage issues .

Evaluation Criteria
To date, based on planning efforts preceding this Study, the Airport has prepared a 5,100-foot by 100-foot area for construction of the runway. It is important to note that prior to implementing construction of the recommended airfield infrastructure, further evaluation will be necessary in accordance with FAA and NEPA standards.

Initial Construction of Runway 3/21 & Taxiways
The first phase of construction for Runway 3/21 is recommended on the east side of the airfield, with an initial length of 3,600 feet and width of 150 feet. Current Taxiways 'K' and 'J' will be extended to meet a new taxiway constructed parallel to Runway 3/21.

Ultimate Construction of Runway 3/21 & Taxiways

In the subsequent planning period, it is further recommended that Runway 3/21 be extended to an ultimate length of 7,500 feet. The taxiway built in the first phase of construction will be extended to the full length of Runway 3/21. A second full-length parallel runway will be constructed east of Runway 3/21. Taxiway connectors will also be constructed to provide additional access points between the parallel taxiways and runway.

6.7.2 Passenger Terminal Facility Development

Concourse Expansion

To better accommodate projected passenger and operating demands, a new linear, two-level, one-sided, 750-foot-long 50-foot wide concourse expansion to the north along existing fence line is recommended. The new concourse would be capable of initially supporting seven ADG-III gates. The lower level of the expansion will provide for additional operational space, as well as centralized GSE parking. In the long-term, it is recommended that the existing concourse have five additional gates, with four of the gates supporting up to ADG III aircraft and one of the gates being capable of supporting ADG V aircraft during irregular operating (IROP) conditions. Dual taxilanes will be located behind the aircraft parked at the gates and new connection constructed from the apron to Taxiway D, thus increasing efficiency in maneuvering procedures while minimizing delays.

Expanded apron space for RON parking at existing south end would be relocated to the areas of new pavement at the north end.

Additional Terminal Facility Improvements

Further recommendations include relocating the SSCP and providing up to one additional standard screening lane in the short-term. In the long-term, the check-in lobby can be expanded south, increasing from 28 to 51 full-service agent positions with each having a kiosk and bag-drop. Modifications to the outbound baggage make-up facility and CBIS would follow. It is further recommended that Gate 1 be decommissioned, and the existing concourse reconfigured to expand the holdrooms areas and restroom facilities. Given the new concourse and reconfiguration of the existing concourse, ECP will be able to offer new concessions and amenities (i.e., a play area for children and a mother's nursing room).

6.7.3 Ground Access and Parking Development

To accommodate parking demands, while also providing a high level of customer service, it is recommended that ECP undergo a parking expansion program. The program will occur in three phases and will consist of the following implementations:

- Parking Expansion Program - PAL 1/PAL 2
  - Construct a 149-stall short-term public parking lot directly east of the existing rental car ready & return lot.
  - Convert a portion of the existing 202-space short-term parking lot (including handicap spaces) into 96 additional covered parking spaces.
  - Expand long-term parking lot westward to provide 104 additional spaces.

- Relocate the taxi queue north of the terminal. Repurpose the existing 28 spaces as cell phone parking spaces and expand the new cell phone parking by 26 spaces to provide a total of 54 stalls.
- Expand the west long-term parking campus westward to provide an additional 365 stalls of long-term parking.
- Expand the employee lot westward for an additional 46 stalls.
- Realign West Bay Loop to accommodate PAL 2 parking demands

✈ Parking Expansion Program - PAL 3/PAL4

- Expand the west long-term parking campus westward to provide an additional 522 stalls of long-term parking.
- Expand the west long-term parking campus westward to provide an additional 220 stalls of long-term parking.
- Expand the short-term lot east to provide an additional 361 stalls.
- Convert 91 parking spaces to additional covered parking.
- Reconfigure the entrance to separate short-term and covered parking entrances.

6.7.4 Support Facilities Development

General Aviation

In the short-term, development of the two FBO-owned hangars will address GA aircraft storage needs. In the mid- to long-term, it is recommended that the six land-lease hangars on the north side of the GA area be decommissioned and replaced with new T-hangar facilities. Furthermore, a new 14,000 SF bulk hangar is recommended in the long-term on the south side of the GA area and west of the existing itinerant apron. A new itinerant parking apron is also recommended on the south side of the GA area, south of the existing itinerant parking apron. The new apron will provide up to 18,820 SY for aircraft maneuvering and approximately 10,155 SY for aircraft parking.

Air Cargo

A cargo apron expansion of 172 SY to the north of the existing apron is recommended.

Aircraft Fueling

To accommodate a seven-day fuel reserve, a fuel farm expansion to the east of the existing facilities is recommended. It is recommended five 50,000 gallon and two 15,000-gallon storage tanks be installed in the short-term, with one additional 15,000 gallon being installed in the mid- to long-term.

Airport Equipment Storage and Maintenance

Additional parking for airport maintenance personnel is recommended and can be accommodate north of the existing airport equipment storage and maintenance facilities, with access via Johnny Reave Road.

Aircraft Rescue and Firefighting and Parking Development

A new ARFF training facility is recommended to the south of the ARFF and Public Safety building. An ARFF and Public Safety employee parking expansion is also recommended, which can be accommodate to the west of the current designated parking area.

Table 6-12 – Recommended Development Plan Summary

	Near-Term (0-5 Years)	Intermediate (6-10 Years)	Long-Term (11-20 Years)	Ultimate
Airfield	Eliminate direct apron-to-runway access	Expand Terminal Apron by approx. 45,760 SY to meet long-term gate demand	Construct taxiway parallel to Runway 16/34: 3,600 feet x 150 feet	Development of parallel, third runway
	Expand GA Apron by approximately 28,975 SY (18,820 SY for aircraft maneuvering; 10,155 SY for additional itinerant and tiedown parking positions)	Construct Crosswind Runway (Stage 1 - AIP Eligible)	Design and Construct Crosswind Runway (Stage 2)	Expansion of taxiway network and development of dual parallel taxiways
	Design Crosswind Runway (Stage 1)		Extend Taxiways 'K' and 'J' to meet a new taxiway constructed parallel to Runway 3/21	
Terminal	Begin terminal renovations	Commence PAL 2 Terminal Facility expansion	Complete Terminal Facility expansion	Expand Terminal Facility and Apron
	Begin construction of Terminal Facility expansion (PAL 1)			
Parking & Public Access	Construct a 149-stall short-term public parking lot directly east of the existing rental car ready & return lot.	Expand the west long-term parking campus westward to provide an additional 365 stalls of long-term parking.	Expand the west long-term parking campus westward to provide an additional 522 stalls of long-term parking.	
	Convert a portion of the existing 202-space short-term parking lot (including handicap spaces) into 96 additional covered parking spaces. Note, the reconfiguration of the covered lot results in a loss of seven spaces when converted from short-term to covered parking.	Expand the employee lot westward for an additional 46 stalls.	Expand the west long-term parking campus westward to provide an additional 220 stalls of long-term parking.	
	Expand long-term parking lot westward to provide 104 additional spaces.	Realign West Bay Loop to accommodate parking demands	Expand the short-term lot east to provide an additional 361 stalls.	
	Relocate the taxi queue north of the terminal. Repurpose the existing 28 spaces as cell phone parking spaces and expand the new cell phone parking by 26 spaces to provide a total of 54 stalls.		Convert 91 parking spaces to additional covered parking. The reconfiguration will result in a seven (7) space reduction when converted from short-term to covered parking.	
Support Facilities		Expand Air Cargo Apron north by approximately 170 SY	Expand Fuel Farm facilities to include five 50,000-gallon tanks and three 15,000-gallon tanks.	
		Expand ARFF training facilities	Develop additional T-Hangars	
		Develop additional Box Hangars at existing GA Apron		
Planning	5-year ARFF capital improvements		Property Acquisition - Runway 3/21 RPZ	
	5-year Airport police capital improvements			
	5-year Airport Maintenance capital improvements			

Source: CHA, 2021.

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Proposed Runway
21 RPZ

Proposed Parallel Taxiway

Runway 16-34

Taxiway 'D'

ARFF Facility Expansion

Taxilane 'F'

Terminal Apron
Expansion

Terminal Expansion

GA Hangar and
Tiedown Expansion

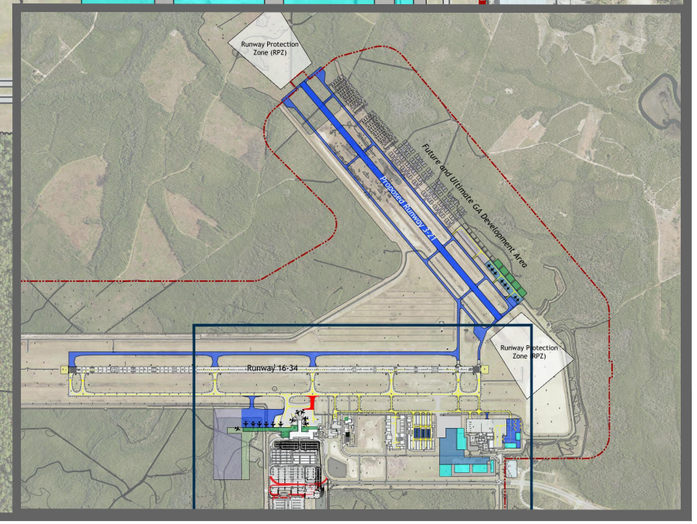
Fuel Facility
Expansion

T-Hangar Expansion

Cell Phone
Lot Expansion

Long-Term Parking
Expansion

Re-Routed Terminal Loop



GRAPHIC SCALE (FEET)
0 250 500

LEGEND

- Proposed Airfield Pavement
- Proposed Hangars
- Proposed Terminal / Support Facilities
- Proposed Parking (Surface Lot)
- Property Line

Figure 6-16
Recommended Development Plan