



# DRAFT MASTER PLAN UPDATE - ALTERNATIVES

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Date: July, 2020



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# 4.1 INTRODUCTION AND APPROACH

This chapter summarizes the alternatives evaluated to satisfy the facilities and land area requirements identified for Sacramento International Airport (SMF or Airport) through the end of the planning horizon, as presented in *Section 3 - Facility Requirements*.

Alternatives and/or recommendations were developed for the following facilities:

- Passenger terminal (specifically Remain Overnight (RON) Parking and aircraft gates)
- Ground transportation (GT) and parking (specifically passenger and employee parking, rental car facilities, curbsides, and access and circulation roadways)
- Support facilities (specifically air cargo, general aviation (GA), and airport/airline support)

Alternatives to meet the equipment and space requirements inside each terminal, identified in *Section 3 - Facility Requirements*, will be analyzed in a separate study when specific planning activity levels (PALs) are approaching and the terminal area is nearing capacity and requires expansion. This type of terminal study will be conducted after adoption of this Master Plan Update.

The preferred airfield alternative from the 2004 Airport Master Plan and 2017 environmental addendum is carried forward as there are no airfield capacity issues projected at SMF through the forecast period.

Four PALs were identified to represent future activity and enplaned passenger numbers at which key Airport improvements will be necessary. For any number of reasons, aviation activity (operations) and the quantity of enplaned passengers may be realized at different times from those anticipated in *Section 2 – Forecasts*. Recessions, such as those caused by the financial crisis of 2008 and the coronavirus pandemic of 2020 are expected, and will continue to impact airport activity. Because airport development is tied to planning activity levels (PALs) and not specific forecast years, the impact of the coronavirus pandemic on development will be an approximate five to 10-year delay.

PALs 1, 2, 3, and 4 correspond to the enplaned passenger levels currently forecast for the years 2023, 2028, 2033, and 2038:

- **Baseline (2018)** – 6.0 million enplaned passengers
- **PAL 1 (2023)** – 7.4 million enplaned passengers
- **PAL 2 (2028)** – 8.2 million enplaned passengers
- **PAL 3 (2033)** – 9.1 million enplaned passengers
- **PAL 4 (2038)** – 10.1 million enplaned passengers

Alternatives are intended to provide the Sacramento County Department of Airports (SCDA or Department) with a comprehensive summary of options for developing facilities at SMF and ultimately deciding on a preferred development plan.

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## 4.2 AIRFIELD

The results of the airfield requirements analysis in Section 3 – *Facility Requirements* indicate that there will be sufficient runway capacity at the Airport to accommodate forecast demand through PAL 4. Runway capacity is expected to exceed the forecast demand through the 20-year planning horizon of this Master Plan Update, even during poor weather conditions (instrument operations).

The need for a runway extension was analyzed in the 2004 SMF Master Plan. At the time of that analysis, the critical aircraft was the B-747-400ER. At maximum gross take-off weight and at standard day and hot day temperatures, a runway length of 11,000 feet was needed for the B-747-400ER to fly non-stop from SMF to London or Frankfurt (without the runway extension, these flights would require a fueling stop). The north end of Runway 34R was determined to be the preferred location for an extension relative to airfield configuration as well as runway protection zone requirements.

As shown in Table 4-1, most European destinations are located 4,500 to 5,000 nautical miles (nm) from SMF. Middle Eastern hub airports, such as those serving Ankara and Dubai, are 6,000 to 7,000 nm from SMF.

Passengers at the Airport traveling to European destinations either drive to San Francisco International Airport (SFO) or take a connecting flight. Most of the destinations listed in Table 4-1 are served by widebody aircraft, as shown in Table 4-2. These widebody aircraft are capable of flying 7,000 to 8,000 nm.

**Table 4-1 Select Airports and Distances from SMF**

Destinations	Nautical Miles*
Dublin Airport	4,400
Heathrow Airport	4,600
Amsterdam Airport Schiphol	4,700
Charles de Gaulle Airport	4,800
Frankfurt Airport	4,900
Madrid Barajas International airport	5,000
Istanbul Ataturk Airport	5,900
Dubai International Airport	7,000

*\*Rounded to the nearest hundred*

Source: OAG Worldwide Aviation Ltd. Online database, assessed February 2016

**Table 4-2 Key International Airports Served and Type of Aircraft Used on these Routes from SFO**

Destinations (airports) Served from San Francisco International Airport	Most Frequently Used Aircraft (Maximum Range in Nautical Miles*)
Heathrow Airport	B747-400 (6,800)
Amsterdam Airport Schiphol	B747-400 (6,800)
Frankfurt Airport	B747-400 (6,800)
Dublin Airport	A330-200 (7,200)
Istanbul Ataturk Airport	A380-800 (8,000)
Charles de Gaulle Airport	A380-800 (8,000)
Madrid Barajas International Airport	B777-300ER (8,300)

*\*Rounded to the nearest hundred*

Source: OAG Worldwide Aviation Ltd. Online database, accessed February 2016

The current runways (8,605 feet in length) at SMF can support some international and long-haul destinations using aircraft such as the Boeing 787-900 and Boeing 767-300ER. A 10,500-foot-long runway (requiring an extension of almost 2,000 feet) would allow some commonly used widebody aircraft to directly serve those international and long-haul markets from SMF.

It should be noted that the Sacramento County Department of Airports (SCDA or the Department) has initiated the process to update the Airport's runway headings from 16R/34L and 16L/34R to 17R/35L and 17L/35R, respectively, to accommodate for the continuous shift in magnetic heading. Department staff will remove and replace the existing runway markings as well as submit the required documents to record the updates with the appropriate governing offices in 2020. All associated operational procedures and airport documentation will be updated as well.

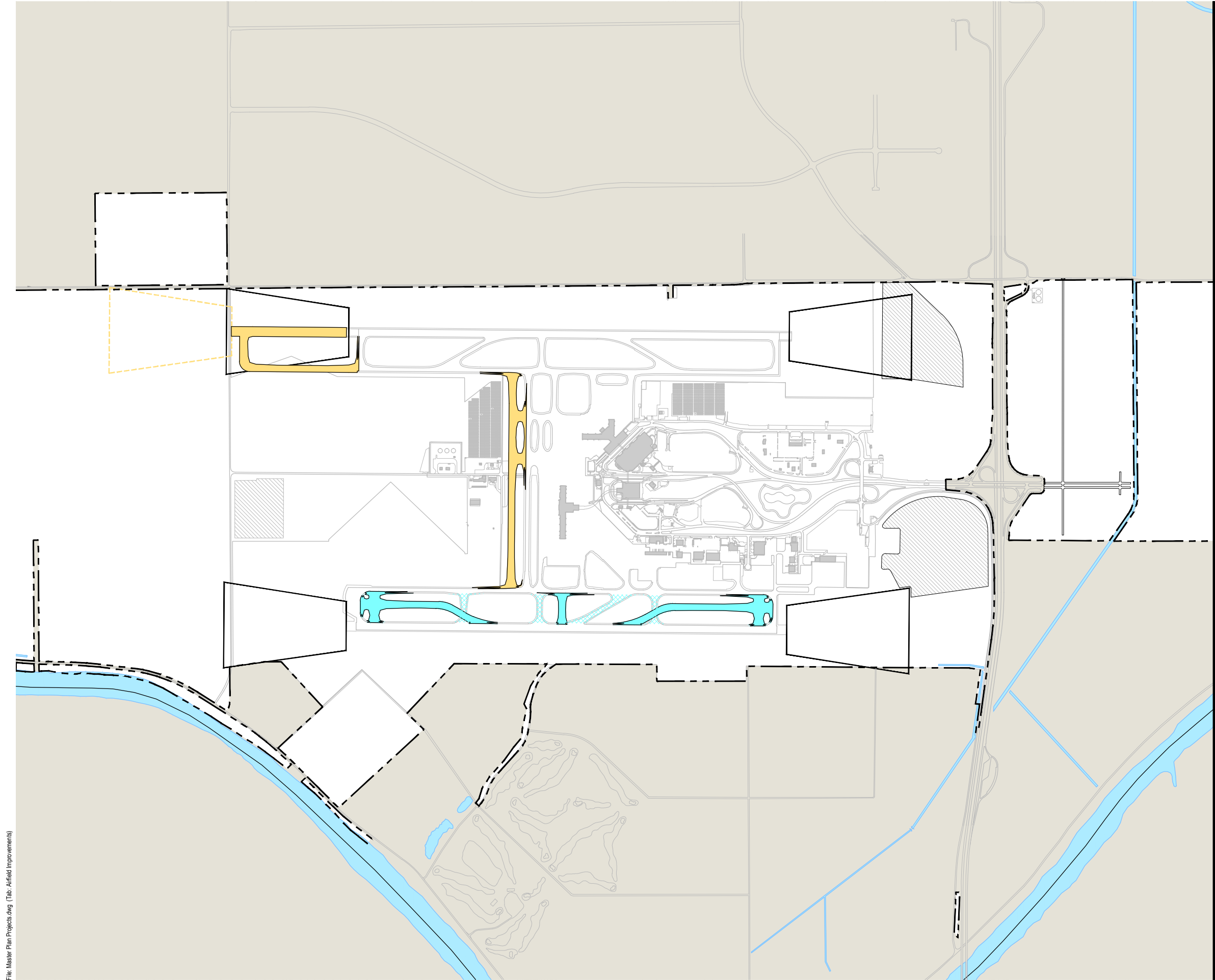
#### **4.2.1.1 Airfield Recommendation**

Regular discussions with SCDA staff and tenants related to future aircraft types, flight performance characteristics, payloads, and destinations will determine when, or if, a runway extension is warranted at the Airport. Technological advancements in aircraft performance have not driven a critical need for a runway extension at SMF, but the runway extension will continue to be depicted on the ALP (Figure 4-1) until the need is no longer warranted or a different analysis is conducted.

The demand and phasing for the runway extension, currently shown on the ALP, will be analyzed in greater detail when the A321 (or similar aircraft) becomes the critical aircraft, when more long-haul routes are introduced at SMF, or when climatic conditions create enough of an impediment to aircraft performance.

Existing taxiway capacity is adequate to meet forecast demand. The taxiway improvements shown on the ALP (Figure 4-1) will enhance operational efficiency and meet Federal Aviation Administration (FAA) design standards. These include the holdpads and high-speed, perpendicular taxiway exits for Runway 16R/34L.





LEGEND

AIRPORT PROPERTY LINE

PAL 1 (7.4M ENPLANEMENTS or APPROX. 2019-2023)

PAL 2 (8.2M ENPLANEMENTS or APPROX. 2024-2028)

PAL 3 (9.2M ENPLANEMENTS or APPROX. 2029-2033)

PAL 4 (10.2M ENPLANEMENTS or APPROX. 2034-2038)

REMOVAL

STORM WATER DETENTION

SACRAMENTO RIVER

OFF-AIRPORT PROPERTY

←

→

0

1000'

2000'

GRAPHIC SCALE IN FEET

FIGURE 4-1

AIRFIELD IMPROVEMENTS

Sacramento International Airport Master Plan  
July 2020

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## 4.3 PASSENGER TERMINAL

In analyzing the terminal requirements (Section 3), existing terminal capacity in Terminal A and Terminal B was compared with forecast demand. Industry standards and models were used to determine terminal functions and deficiencies for each PAL. The conclusion of that analysis revealed deficiencies in the following areas:

- Aircraft Gates
- Aircraft Remain Overnight Parking
- Holdroom Space
- Passenger Check-in Facilities
- Passenger Security Screening Checkpoints
- Baggage Handling Systems
- Customs and Border Protection Facilities

Alternatives to add aircraft gates and accommodate aircraft parking at SMF are considered in the following sections. Alternatives to meet the equipment and space requirements inside each terminal will be analyzed in a separate study when specific PALs are approaching and the terminal area is nearing capacity and requires expansion.

### 4.3.1 TERMINAL EXPANSION ALTERNATIVES

To determine the gating and aircraft parking requirements for both terminals, the Ratio Method and the Design Day Flight Schedule (DDFS) gating analysis methods were used.

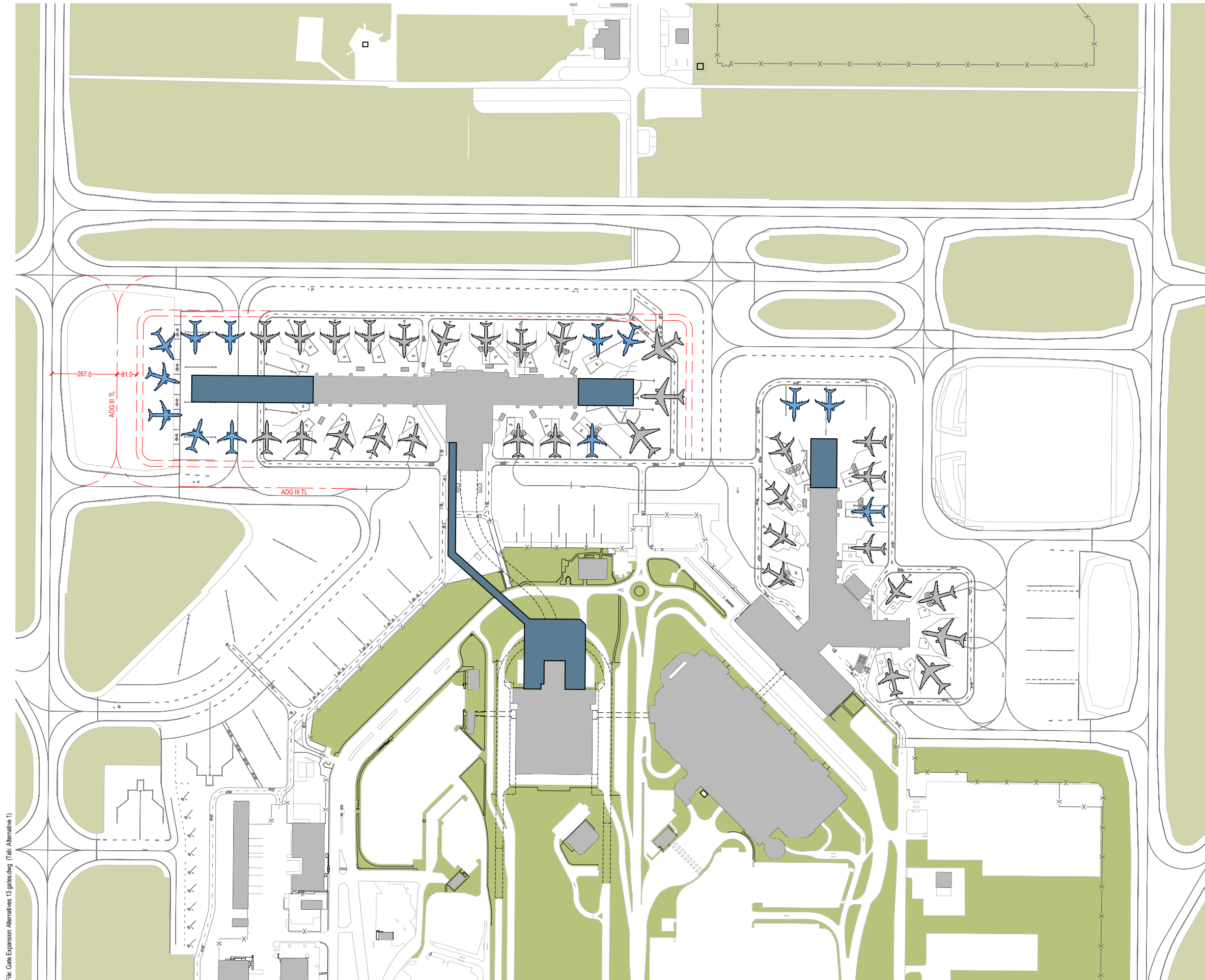
The Ratio Method gating analysis, discussed in Section 3 – *Facility Requirements*, considers turns per gate, and determines that Terminal A will need up to an additional six gates by PAL 4, and Terminal B will need up to an additional seven gates by PAL 4, for a total of 13 additional gates.

The DDFS Method gating analysis, also discussed in Section 3 – *Facility Requirements*, determines that up to eight additional gates are needed at Terminal A, and up to 13 additional gates are needed at Terminal B for a total of 21 additional gates by PAL 4.

For the purpose of this Master Plan Update, the Ratio Method gating analysis is used to examine terminal expansion alternatives. To satisfy demand for 13 gates under the Ratio Method gating analysis, three terminal expansion alternatives were considered for the 20-year planning horizon (through PAL 4). All three alternatives propose construction of a new security screening checkpoint (SSCP) area, which creates a central processor for passengers accessing Terminal B gates, and addresses the need for additional screening lanes and queuing area discussed in Section 3 – *Facility Requirements*. A passenger walkway is also constructed for automated people mover (APM) redundancy, to connect the landside and airside facilities.

- Alternative 1 (Figure 4-2) – Concourses A and B are expanded linearly. An Alternative retained from the 2004 Airport Master Plan, Concourse B receives expansions on both the east and west ends of the concourse for an additional 10 gates. Concourse A adds three additional gates on the north end (this includes Gate A13).
- Alternative 2 (Figure 4-3) - Concourse B is expanded from its west end, to the southwest at 45-degrees, which provides 10 additional gates. Concourse B is also expanded linearly to the east, which provides two additional gates. In this alternative, Gate A13 in Concourse A has been added back in use.
- Alternative 3 (Figure 4-4) –A new Concourse C is constructed parallel to, and south of, Concourse B to accommodate up to 12 new gates. In this alternative, Gate A13 in Concourse A has been added back in use.

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- LEGEND**
- AIRPORT PROPERTY LINE
  - NEW AIRCRAFT GATES
  - EXISTING AIRCRAFT GATES
  - AIRSIDE OPEN SPACE
  - LANDSIDE OPEN SPACE
  - FUTURE CONCOURSE EXPANSION
  - EXISTING BUILDINGS
  - NEW VEHICLE SERVICE ROAD
  - NEW TAXILANE CENTERLINE

Gate A13 at Terminal A will be added back to the Terminal in 2021 as part of the jet bridge replacement program; all equipment paid for. In this analysis, it is considered one of the future 13 gates.

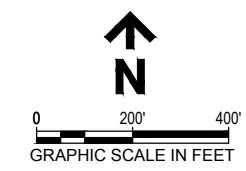
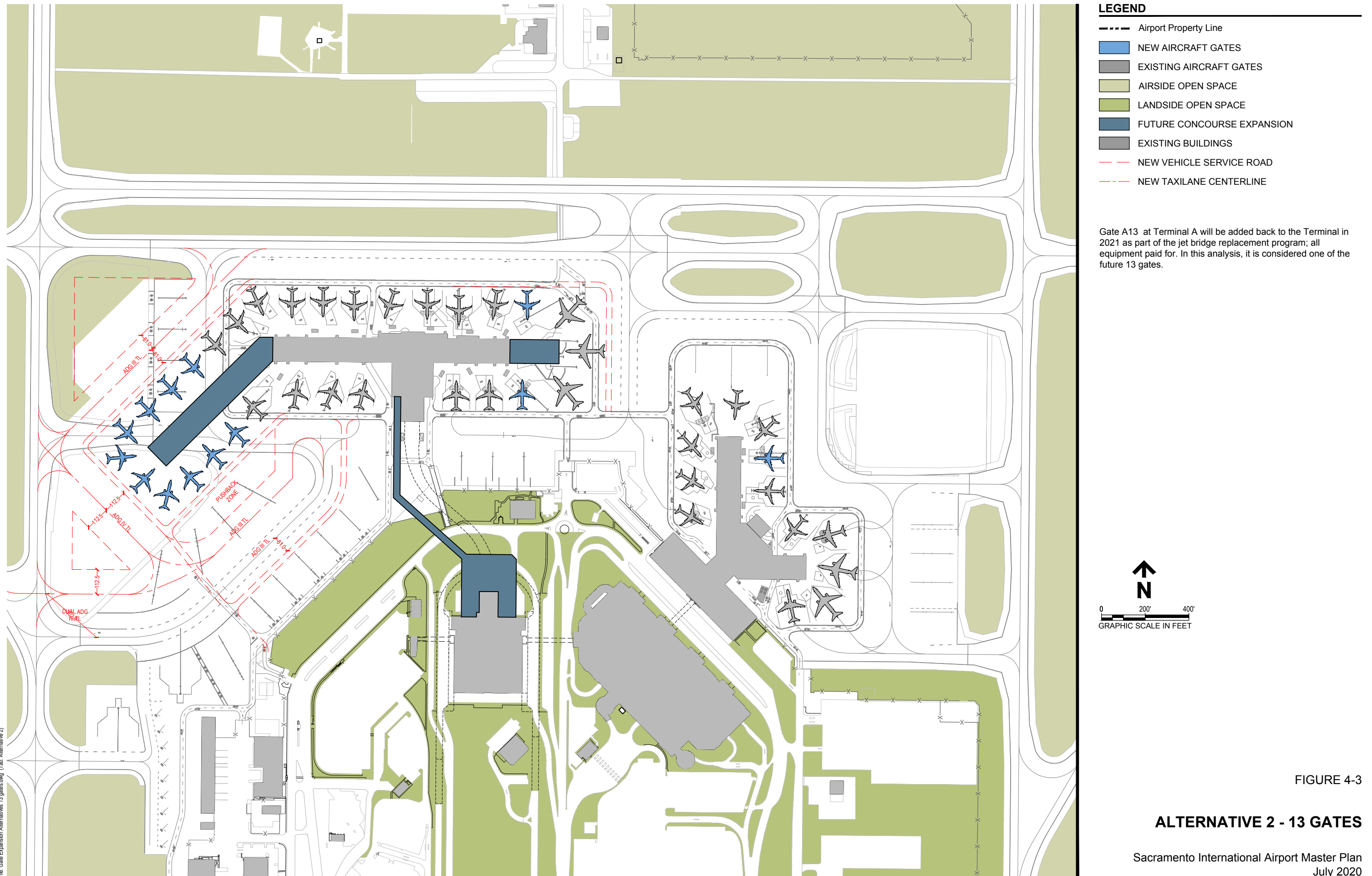
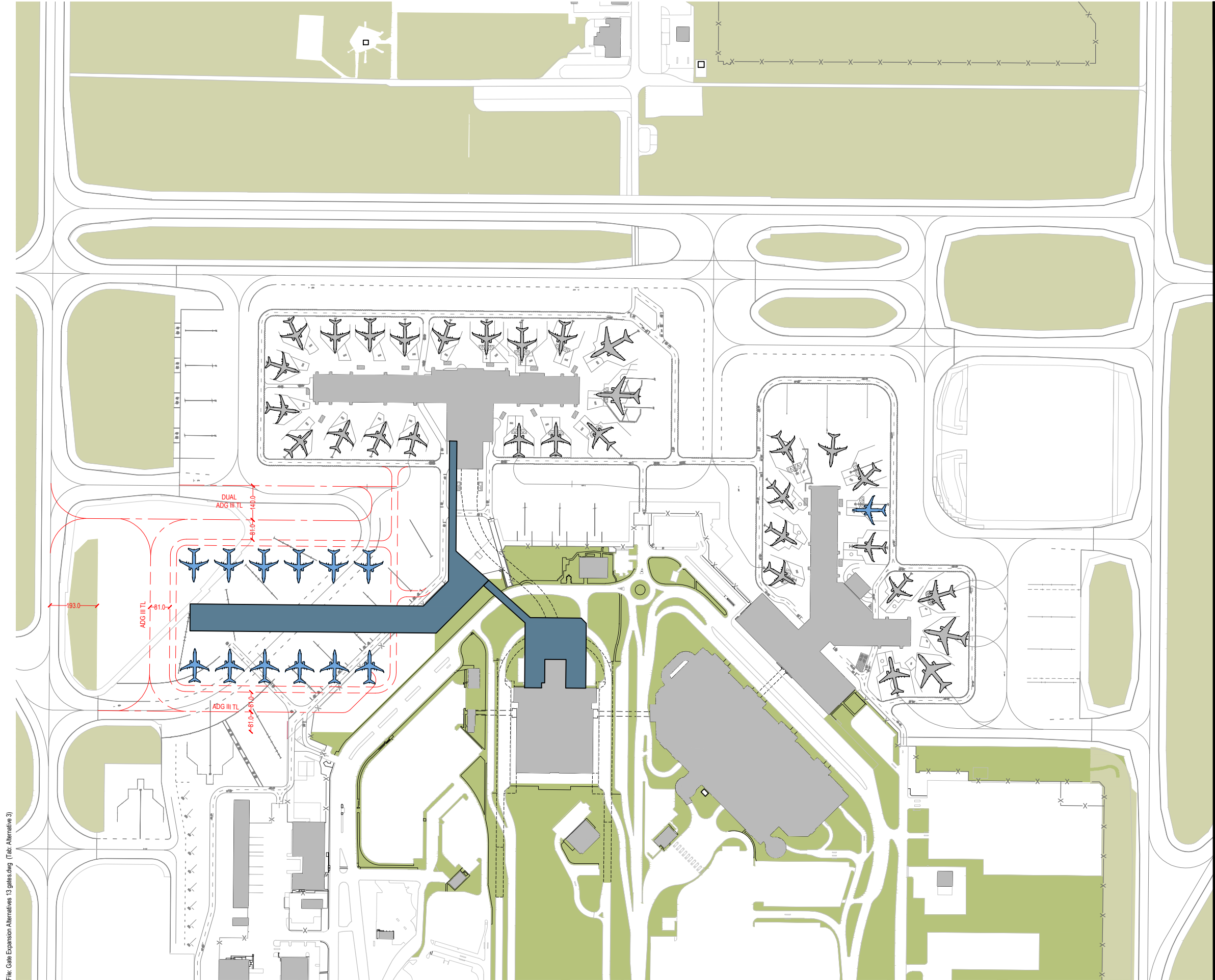


FIGURE 4-2

**ALTERNATIVE 1 - 13 GATES**



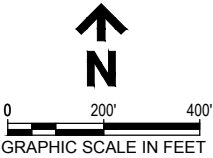




**LEGEND**

- Airport Property Line
- NEW AIRCRAFT GATES
- EXISTING AIRCRAFT GATES
- AIRSIDE OPEN SPACE
- LANDSIDE OPEN SPACE
- FUTURE CONCOURSE EXPANSION
- EXISTING BUILDINGS
- NEW VEHICLE SERVICE ROAD
- NEW TAXILANE CENTERLINE

Gate A13 at Terminal A will be added back to the Terminal in 2021 as part of the jet bridge replacement program; all equipment paid for. In this analysis, it is considered one of the future 13 gates.



File: Gate Expansion Alternatives 13 gates.dwg (Tab: Alternative 3)

FIGURE 4-4

**ALTERNATIVE 3 - 13 GATES**

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## 4.3.2 QUALITATIVE ASSESSMENT

With input from SCDA staff, each of the terminal expansion alternatives were assessed based on their relative merits and disadvantages. The assessment is summarized in Table 4-3.

**Table 4-3 Assessment of Terminal Expansion Options**

Alternative	Pros	Cons
<b>13 Gates Alternative 1</b>	<ul style="list-style-type: none"> <li>• Maintains most Concourse B RON parking</li> <li>• Utilizes existing apron geometry</li> <li>• Only one gate at Terminal A will become inoperable during construction.</li> <li>• Offers flexibility to focus phased expansion at either concourse</li> <li>• Consolidated and expanded Terminal B landside SSCP to meet demand</li> <li>• New passenger walkway for APM redundancy between Terminal B airside and landside</li> </ul>	<ul style="list-style-type: none"> <li>• Increases terminal activity on physically constrained Terminal A facilities</li> <li>• Terminal A loses 3 RON positions</li> <li>• Even if phased, a minimum of 2 gates will be inoperable during construction, and 4 RON positions are lost at Concourse B</li> <li>• Requires construction of new SSCP</li> </ul>
<b>13 Gates Alternative 2</b>	<ul style="list-style-type: none"> <li>• Focuses expansion on single concourse with flexibility to expand on either end</li> <li>• Can add 4 RON spots to replace those lost to expansion</li> <li>• Dual taxilane system with pushback zones</li> <li>• Consolidated and expanded Terminal B landside SSCP to meet demand</li> <li>• New passenger walkway for APM redundancy between Terminal B airside and landside</li> </ul>	<ul style="list-style-type: none"> <li>• Increases walking distances in Concourse B</li> <li>• Utilizes existing constrained SSCP area at Terminal B</li> <li>• Even if phased, a minimum of 2 and a maximum of 3 gates will be inoperable during construction</li> <li>• 8 RON positions are lost at Concourse B</li> <li>• Requires construction of new SSCP</li> </ul>
<b>13 Gates Alternative 3</b>	<ul style="list-style-type: none"> <li>• Dual taxilane system</li> <li>• Provides flexibility for phasing</li> <li>• Gate expansion can focus on new, Concourse C, without impact to any existing gates</li> <li>• New concourse space allows concessions program enhancement</li> <li>• Consolidated and expanded Terminal B landside SSCP to meet demand</li> <li>• New passenger walkway for APM redundancy between Terminal B airside and landside</li> </ul>	<ul style="list-style-type: none"> <li>• 10 RON positions lost</li> <li>• Requires construction of new SSCP</li> <li>• Reduces aircraft compatibility on existing cargo ramp</li> <li>• Construction of a new concourse and terminal facilities will require most capital costs.</li> </ul>

Source: Sacramento County Department of Airports, 2020

### 4.3.3 TERMINAL GATING RECOMMENDATION

The preferred terminal alternative should be phased to accommodate conservative demand with the ability to expand to accommodate more aggressive demand should other factors come into play by PAL 4, such as new airline entrants, additional international service, or growth beyond the forecast.

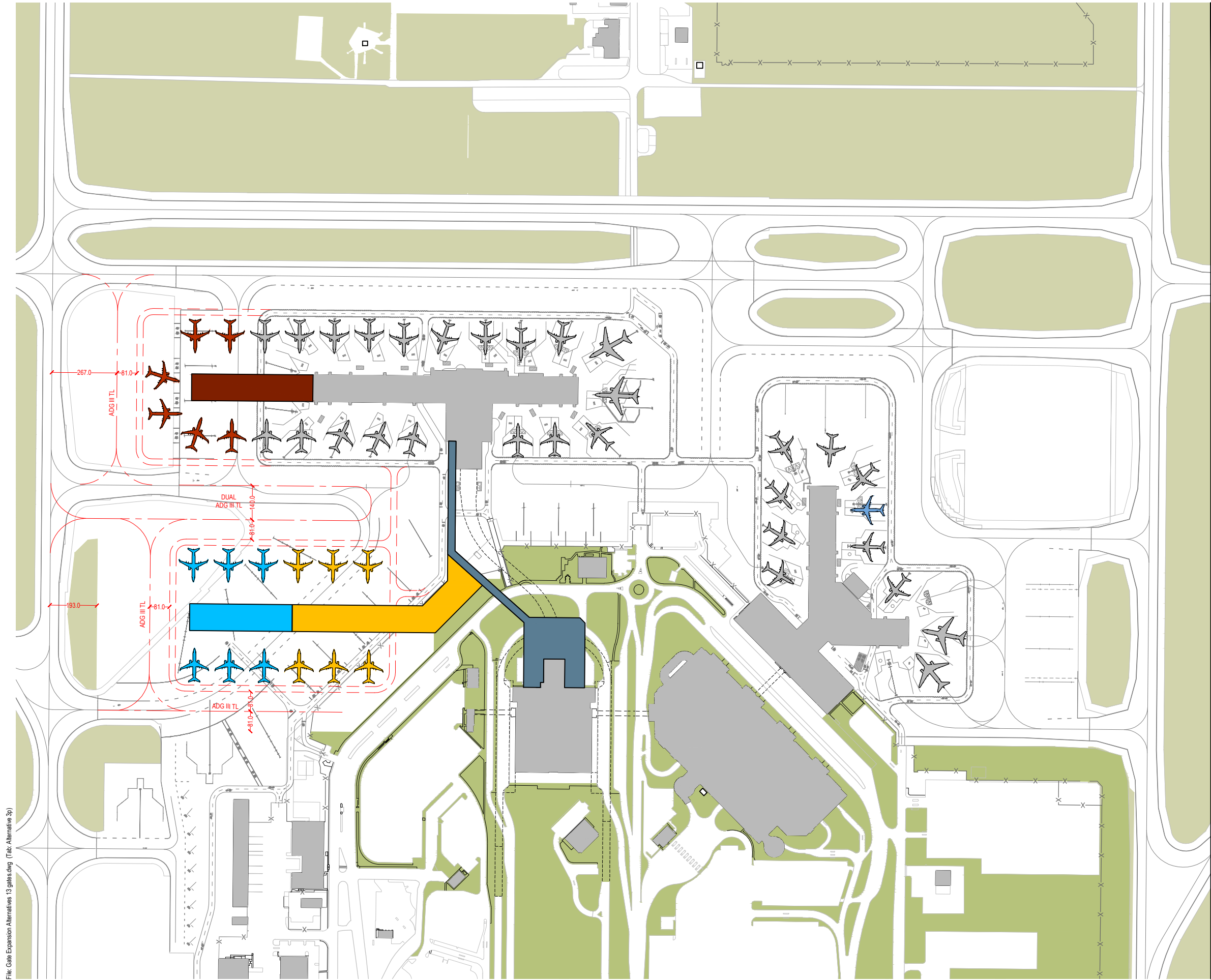
Due to the physical constraints associated with Terminal A, along with the age of the facility, it is recommended that gate expansion be focused at Terminal B. Alternative 3 provides the most flexibility for phasing construction at Terminal B without impacting existing gates, and accommodates both near-term terminal expansion needs as well as the ultimate PAL 4 development.

To preserve gate expansion and phasing flexibility, optional phasing for Alternative 3 was developed and is shown on Figure 4-5. In this variation, an initial six-gate expansion is constructed on the west end of Concourse B with additional expansion accommodated at a new Concourse C, which can accommodate up to 12 gates when demand warrants the additional gate capacity.

Alternative 3 includes moving walkways to enable more efficient passenger flow within the Terminal B complex and a new consolidated SSCP to enable more effective passenger processing. An Americans with Disabilities Act (ADA) compliant, protected from the elements and with no passenger access to the airport operations area (AOA) will ensure passengers have an alternate means of moving between existing Concourse B and Terminal B, and a future Concourse C. Moving walkways and escalators within this connector will provide a level of service beyond the existing infrastructure and will ensure airside security.

Alternative 3 also includes updated holdrooms, a central concourse circulation zone, strategically placed concession areas, restrooms, and building support spaces create an improved passenger experience. Dual taxilanes accessing new gates will ensure effective access to airfield facilities. Phasing flexibility minimizes impacts to existing operations.

Near-term terminal expansion design and phasing will rely on further analyses and collaboration with airline partners for conclusive justification. Additional analysis is recommended to further refine ramp charts and explore opportunities for efficiencies by either reallocating airlines between the terminals or exploring the addition of common-use gates.



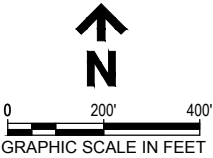
**LEGEND**

- Airport Property Line
- NEW AIRCRAFT GATES
- EXISTING AIRCRAFT GATES
- AIRSIDE OPEN SPACE
- LANDSIDE OPEN SPACE
- FUTURE CONCOURSE EXPANSION
- EXISTING BUILDINGS
- NEW VEHICLE SERVICE ROAD
- NEW TAXILANE CENTERLINE
- PHASING OPTION 1
- PHASING OPTION 2
- PHASING OPTION 3\*

\*Phasing Option 3 cannot be constructed unless Phasing Option 2 has been constructed.

- Phasing Option Construction Order can be:
- 1,2,3
  - 2,3,1
  - 2,1,3

Gate A13 at Terminal A will be added back to the Terminal in 2021 as part of the jet bridge replacement program; all equipment paid for. In this analysis, it is considered one of the future 13 gates.



File: Gate Expansion Alternatives 13 gates.dwg (Tab: Alternative 3p)

FIGURE 4-5

**ALTERNATIVE 3 - 13 GATES  
WITH PHASING OPTIONS**

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### 4.3.4 AIRCRAFT REMAIN OVERNIGHT PARKING

Additional RON parking needs were identified in the DDFS method gating analysis (presented in *Section 3 – Facility Requirements*). As per that analysis, in Terminal A, up to six additional RON positions are needed through PAL 4. In Terminal B, up to three additional RON positions are needed through PAL 4, for a total of up to nine additional RON positions at the Airport. It is important to note that RON positions are linked to the addition of aircraft gates, since aircraft can park at remote positions while others can remain overnight at new gates. For this reason, no RON alternatives were developed on the west side of the Airport, as all the gating alternatives impact the availability of RON positions. On the east side, the gating alternatives do not affect the ability to add RON positions, therefore four RON parking alternative locations are evaluated in this area (Figure 4-6). For this analysis, all RON parking alternatives accommodate Aircraft Design Group (ADG)-III aircraft. ADG-III aircraft account for 83% of the fleet mix at SMF and are anticipated to account for 85% of the fleet mix in future years. A summary of each RON parking alternative is provided in Table 4-4.

**Table 4-4 RON Parking Alternatives**

Alternative	ADG-III Aircraft Accommodated	New Impervious Surface
Alternative A1	7	51,500
Alternative A2	8	42,500
Alternative A3	4	25,500
Alternative A4	13	67,000

Source: Sacramento County Department of Airports, 2020

#### 4.3.4.1 Alternative A1

This alternative is located south of the existing Terminal A apron in the space currently occupied by an employee parking lot.

**PROS:**

- Existing electrical vault remains in-place
- Entirely new apron space; aircraft do not need to be pushed back onto active taxiways

**CONS:**

- Construction of a blast wall along the north perimeter of the adjacent solar farm is recommended with this option
- Provides only up to seven ADG-III aircraft parking positions

#### 4.3.4.2 *Alternative A2*

This alternative is located within the island between Taxiway C1 and Taxiway C2

*PROS:*

- Allows for towless entry and push-back, or tow-out options with central taxilane between aircraft
- Provides up to eight ADG-III aircraft parking positions
- Currently shown on the ALP as future apron area for RON parking

*CONS:*

- Non-movement boundary on Taxiway C1 should be moved to Taxiway D object free area (OFA) boundary to avoid aircraft on the north side of the island from being pushed onto an active taxiway

#### 4.3.4.3 *Alternative A3*

This alternative is located within the island between Taxiway W and Taxiway C1.

*PROS:*

- Allows for tow-less entry and push-back, or tow-out options with central taxilane between aircraft

*CONS:*

- Recommended that the non-movement boundary on Taxiway C1 is moved to the OFA boundary of Taxiway D to avoid aircraft parked on the north side of the island from being pushed back onto an active taxiway; alternatively, aircraft may exit under their own power onto Taxiway W
- Provides only up to four ADG-III aircraft parking positions

#### 4.3.4.4 *Alternative A4*

This alternative is located along the north edge of the Taxiway W pavement, south of the solar farm.

*PROS:*

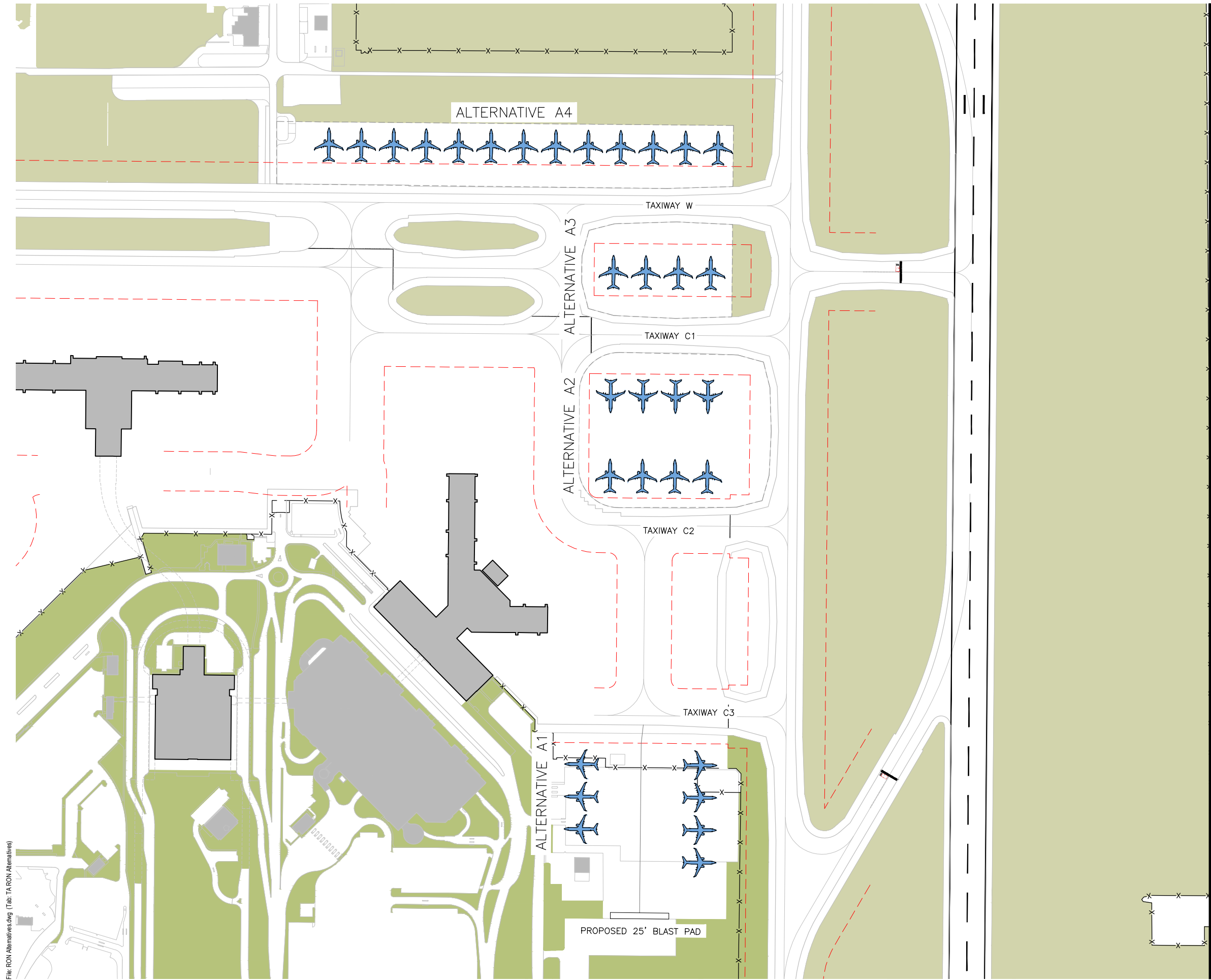
- Provides for the most lead-in lines in one single area as compared to the other three options (up to 13 ADG-III parking positions)

*CONS:*

- Aircraft will need to be pushed back onto an active taxiway
- This configuration is in conflict with future Taxiway V construction

#### 4.3.4.5 *Remain Overnight Parking Recommendation*

Each of the RON parking alternatives are viable options for future RON aircraft parking. Alternative A2 has previously been analyzed for its operational and parking benefits and is currently shown on the ALP as future apron area for RON parking. Alternative A2 increases RON by eight positions and for the majority of the terminal expansion options, the additional positions provided in Alternative A2 will accommodate demand through PAL 4. Alternative A2 is alternative recommended by the SCDA.



- LEGEND**
- AIRPORT PROPERTY LINE
  - - - TAXIWAY OBJECT FREE AREA
  - NEW REMAIN OVERNIGHT POSITIONS
  - AIRSIDE OPEN SPACE
  - LANDSIDE OPEN SPACE

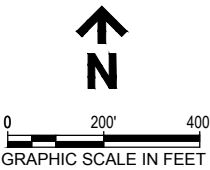


FIGURE 4-6

**RON PARKING ALTERNATIVES**

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July 2020

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## 4.4 GROUND TRANSPORTATION AND PARKING

In analyzing the ground transportation and parking requirements for SMF, models were created to determine public parking (close-in vs. remote), rental car, and ground access needs as described in *Section 3 - Facility Requirements*. Requirements were then compared to existing facilities, and alternatives were developed where gaps appeared. Alternatives scenarios and/or recommendations have been developed for PAL 1 through PAL 4 to address deficiencies in the following areas:

- Public parking facilities (close-in and remote)
- Rental car facilities
- Airport roadways
- Curbside/ground transportation center

### 4.4.1 PUBLIC PARKING ALTERNATIVE SITES

Public parking requirements increase from approximately 16,400 spaces under baseline conditions to nearly 25,000 spaces by PAL 4. This is driven largely by the need for the Airport to accommodate all public parking customers in on-airport facilities. A variety of public parking sites and products are considered, as shown in Figure 4-7.

#### 4.4.1.1 Close-In Public Parking Alternatives

Close-in parking facilities are defined as being within a 1,500-foot “walkable” distance of the passenger terminals. The shape of the existing SMF terminals, supporting airfield, and existing landside assets limits new close-in parking facilities to specific locations, each shown in Figure 4-7. In some cases, new parking revenue controls will have to be established.

- Public Parking facility #18 replaces the Hourly B public parking lot with an Hourly B garage, which could be six or seven levels depending on airport traffic control tower (ATCT) line-of-sight constraints, and could provide at least 3,400 parking spaces. The facility can be built in phases with southward expansions to align capital investment with parking demand.
- Public Parking facility #19 is an expansion of the Parking Garage B and would be constructed to the same height and grow the facility to approximately 5,100 spaces (similar size to Garage A).
- Facility #20 is a consolidated rental car (ConRAC) facility with an option to include public parking, described in more detail in *Section 4.4.2*. Approximately 3,640 public parking spaces could be constructed on the upper floor(s) of a two-or-four-level ConRAC facility, which would replace the lost daily lot spaces.
- Facility #25 is a 1,500-space expansion of the Terminal A garage to the southeast of the existing facility. Construction phasing to maintain operations within the facility will be required. This alternative needs to consider the age of the existing garage infrastructure and the footprint, which conflicts with potential ConRAC alternatives.

#### **4.4.1.2 Remote Parking Alternatives**

Remote parking facilities at the Airport require shuttle buses to provide customer connectivity between the parking facility and the passenger terminals. Approximately 55% of existing parking facilities at SMF are remote parking facilities. Expanding remote facilities will include an associated expansion of the shuttle service to access those facilities. It will also increase the amount of impervious surface cover, which will require analysis of stormwater runoff and potential mitigation. The following remote parking alternatives were considered, as shown in Figure 4-7:

- Facility #23 is a new southward expansion of the existing East Economy Parking Lot. The 2,800-space parking facility is currently under design and will be served by the same shuttle bus as the existing East Economy Lot.
- Facility #21 is an eastward expansion of the East Economy Lot, which would provide approximately 1,800 new public parking spaces.
- Facility #24 is a potential future southward expansion of Economy Lot #23, which would provide an additional 3,700 public parking spaces.

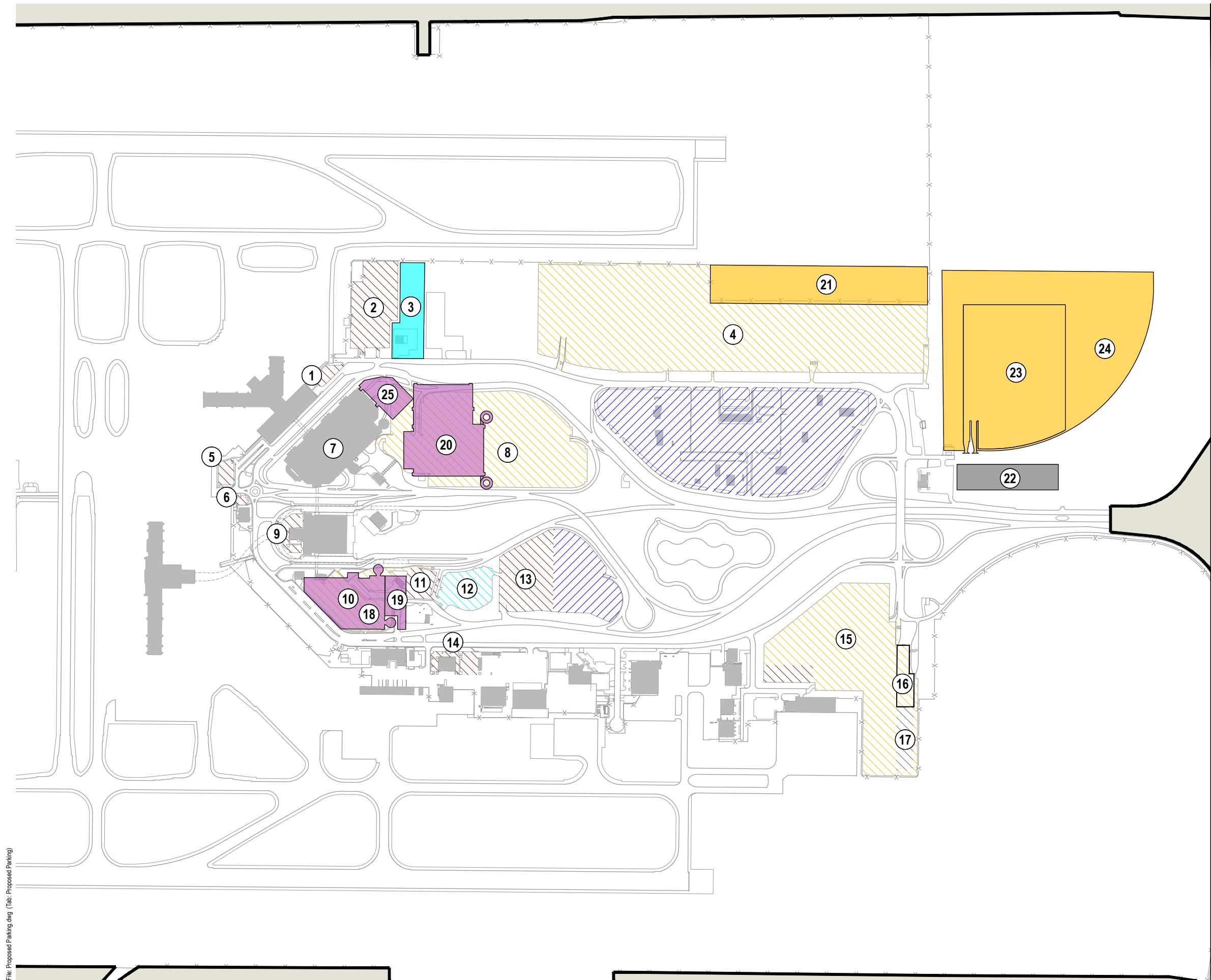
#### **4.4.1.3 Public Parking Assessment and Recommendation**

Determining a preferred public parking alternative(s) relies on striking the right balance between 1) a higher capital cost, with higher revenue generating and level of service aspects of close-in parking facilities, and 2) a lower capital cost, with lower net revenue generating remote parking facilities.

To meet close-in demand and compensate for public parking spaces lost in the Daily Lot due to other preferred developments, the recommendation is to construct a garage (Public Parking facility #18 and #19) on the current Hourly B surface lot (Public Parking Facility #10) in either one or two phases based upon demand/capacity requirements. Additional remote surface parking (described in Section 4.4.1.2) should be constructed in phases to meet demand, but also to minimize operations and maintenance (O&M) costs associated with shuttle bus operations.

Some public parking projects are currently in various stages of development from planning to design. The Airport should continue to identify parking projects based on development timelines and costs that can be balanced with revenues as parking demand fluctuates with changing aviation demand and customer needs.





**LEGEND**

- Airport Property Line
- Buildings
- Off-Airport Property
- ▨ Public Parking - Surface / Future
- ▨ Public Parking - Structure / Future
- ▨ Employee Parking - Surface / Future
- ▨ Bus Parking / Future
- ▨ TNC / Taxi Facilities / Future
- ▨ Rent-A-Car Facilities / Future

PARKING FACILITY INDEX		SPACES
①	Employee Parking Lot (50)	50
②	Employee Parking Lot (51)	796
③	Bus Parking Lot	30
④	Economy Parking Lot (40-43)	6,374
⑤	Employee Parking Lot (32)	68
⑥	Employee Parking Lot (2)	16
⑦	Parking Garage	5,255
⑧	Daily A Parking Lot (20-21)	3,052
⑨	Employee Parking Lot (1)	40
⑩	Hourly B Parking Lot	618
⑪	Employee Parking Lot (5)	115
⑫	Bus Parking Lot (9)	3885
⑬	Employee Parking Lot (11 - North)	518
⑭	Employee Parking Lot (53)	113
⑮	West Economy Parking Lot (44)	1,794
⑯	Cell Phone Waiting Lot	147
⑰	TNC Parking Lot (45)	204
⑱	Terminal B Garage	3,400
⑲	Terminal B Garage Expansion	1,600
⑳	Parking on Rent-A-Car Facility	2,000
㉑	East Economy Lot Expansion	1,767
㉒	New Cell Phone Lot	450
㉓	South Economy Lot	2,848
㉔	South Economy Lot Expansion	3,687
㉕	Existing Parking Garage Expansion	1,500

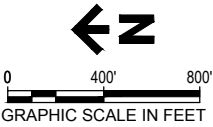


FIGURE 4-7

**PROPOSED PARKING  
EXPANSION SITES**

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## 4.4.2 RENTAL CAR FACILITY ALTERNATIVES

The existing rental car site at SMF has been operating in a constrained environment for some time and has an inefficient layout with deficient security for modern car rental activities. All planning for rental car operations has been in an effort to construct a new consolidated rental car facility. Once this happens, the existing car rental site and facilities can be repurposed for rental car maintenance, some other airport function, or a combination of the two.

### 4.4.2.1 Alternatives Development Process

Site selection for rental car (RAC) facility expansion began with three sites on the west, south, and southeast side of Terminal B. None of these sites were sufficiently sized to accommodate a surface RAC facility, so a ConRAC garage was explored. All footprints identified for a ConRAC were also walkable, to preserve higher-value real estate currently being used for public parking, and therefore, the Airport supported and preferred development of a ConRAC garage.

Preliminary massing and blocking was considered for three sites. The site west of Terminal B was discarded due to its longer walking distance to Terminal A, difficulty in connecting to the existing RAC facility (for service sites), and preferred site use as a public parking garage to balance the parking demand between the terminals. The site directly south of Terminal B was discarded because it was inadequately sized to accommodate both ready/return and quick turnaround activities and due to its proximity to the ATCT. The age of the existing Terminal A parking garage warranted a structural evaluation and consideration of an alternative that demolished the existing garage and replaced it with a combined ConRAC/public parking facility. Ultimately, the various options were narrowed down to three ConRAC alternatives as shown on Figure 4-8, Figure 4-9, and Figure 4-10.

Many ConRAC facilities in the United States are constructed with three levels of ready/return parking corresponding to each of the major RAC families (Hertz/Dollar/Thrifty, Enterprise Holdings, and the Avis Budget Group). However, RAC market share at SMF is approximately 45% Enterprise Holdings and 55% for others. Therefore, two-level and four-level ConRAC alternatives were explored to allow for better optimization of space inside the facility.

Space required for rental car operations at the Airport is divided into several categories including ready/return space, quick turnaround area (QTA), and additional vehicle storage space. Following discussions with the rental car companies at SMF, the PAL 3 requirement also accommodates PAL 4 RAC activity with flexible operations and strikes the right balance of near-term facility needs with long-term operational flexibility. The total PAL 3 requirement is approximately 2.6 million square feet, or 59 acres of footprint. Roughly half of the space is needed for ready/return and QTAs while the other half is needed for vehicle storage. A customer service building (CSB), approximately 22,000 square feet, is required by PAL 4 as well. The existing space allocated to RAC operations is approximately 1.2 million square feet. Existing rental car companies support RAC facility expansion if the customer facing elements can be located within a 1,500-foot “walkable” distance of the passenger terminal buildings.

### 4.4.2.2 ConRAC Alternative 1

ConRAC Alternative 1, shown in Figure 4-8, features a two-level ready/return garage with a QTA in a separate two-level structure adjacent to, and on the south side, of the existing parking garage. The QTA is shown as a separate garage structure to meet the local fire code, since it contains vehicle fueling infrastructure. The ready/return garage has a floorplate of approximately 440,000 square feet and provides space for approximately 635 ready spaces and 410 return spaces on each level. The ConRAC facility connects to the passenger terminals via new elevated walkways so that customers have an indoor, conditioned space. A customer service building is provided on the north side of the ready/return garage.

The footprint of ConRAC Alternative 1 displaces nearly the entire daily public parking lot. As a result, the ConRAC facility will need to include additional structured parking above the ready/return garage. An additional level of parking could be included for rental car storage, which would help the RACs operate the facility at maximum efficiency. Finally, a roadway overpass is shown over the Terminal A entrance roadway, connecting

from the south side of the QTA to the existing RAC area, which would continue to serve as RAC vehicle storage and heavy maintenance.

#### **4.4.2.3 ConRAC Alternative 2**

ConRAC Alternative 2, shown in Figure 4-9, is a four-level ready/return garage, with approximately half the footprint of Alternative 1. The QTA is two levels with a level of RAC storage parking above the fuel and wash facilities. Other elements of ConRAC Alternative 2 are similar to Alternative 1 including the connecting walkways and customer service building.

Because the footprint of the ready/return garage in Alternative 2 is much smaller than in Alternative 1, the impact to the daily public parking lot is reduced. Replacement parking could be accommodated in a new Terminal B garage or in new remote surface parking.

#### **4.4.2.4 ConRAC Alternative 3**

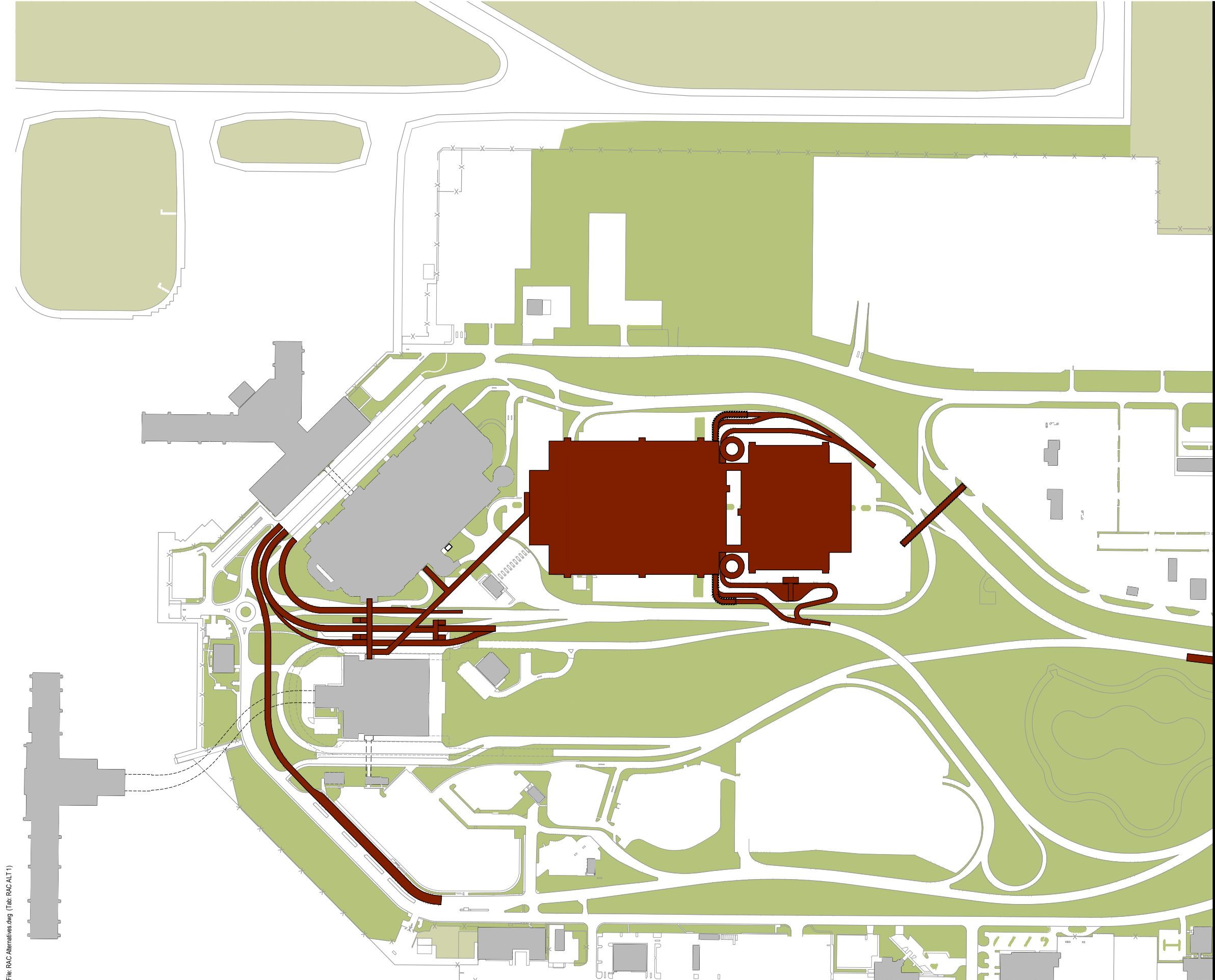
Figure 4-10 shows a potential entire replacement of the existing Terminal A parking garage with a combined ConRAC and public parking facility. The new replacement facility is ideally located adjacent to both Terminal A and Terminal B, minimizing walking distances for both RAC and public parking customers.

The existing garage was constructed in 2001 and is not quite 20 years old at the time of this Master Plan Update; or, roughly halfway through its potential useful life. A March 2020 structural condition assessment by the Watry Design Group determined that the existing garage is in good condition and can last many more years with appropriate preventative maintenance. The cost of demolishing and replacing an asset in good condition does not justify further consideration of this alternative.

#### **4.4.2.5 ConRAC Assessment and Recommendation**

Key evaluation criteria to determine whether ConRAC Alternative 1 or 2 is preferred include cost, constructability, and RAC stakeholder preference. The decision is also influenced by the preferred locations and project timelines for public parking facilities since both alternatives impact public parking.

ConRAC Alternative 2 impacts less public parking due to its smaller footprint, and offers flexibility in being constructed as either a two-level or four-level facility based on anticipated demand. Replacement public parking within the ConRAC can also be included as part of Alternative 2; therefore, this is the preferred alternative.



**LEGEND**

- AIRPORT PROPERTY LINE
- ALTERNATIVE 1
- AIRSIDE OPEN SPACE
- LANDSIDE OPEN SPACE

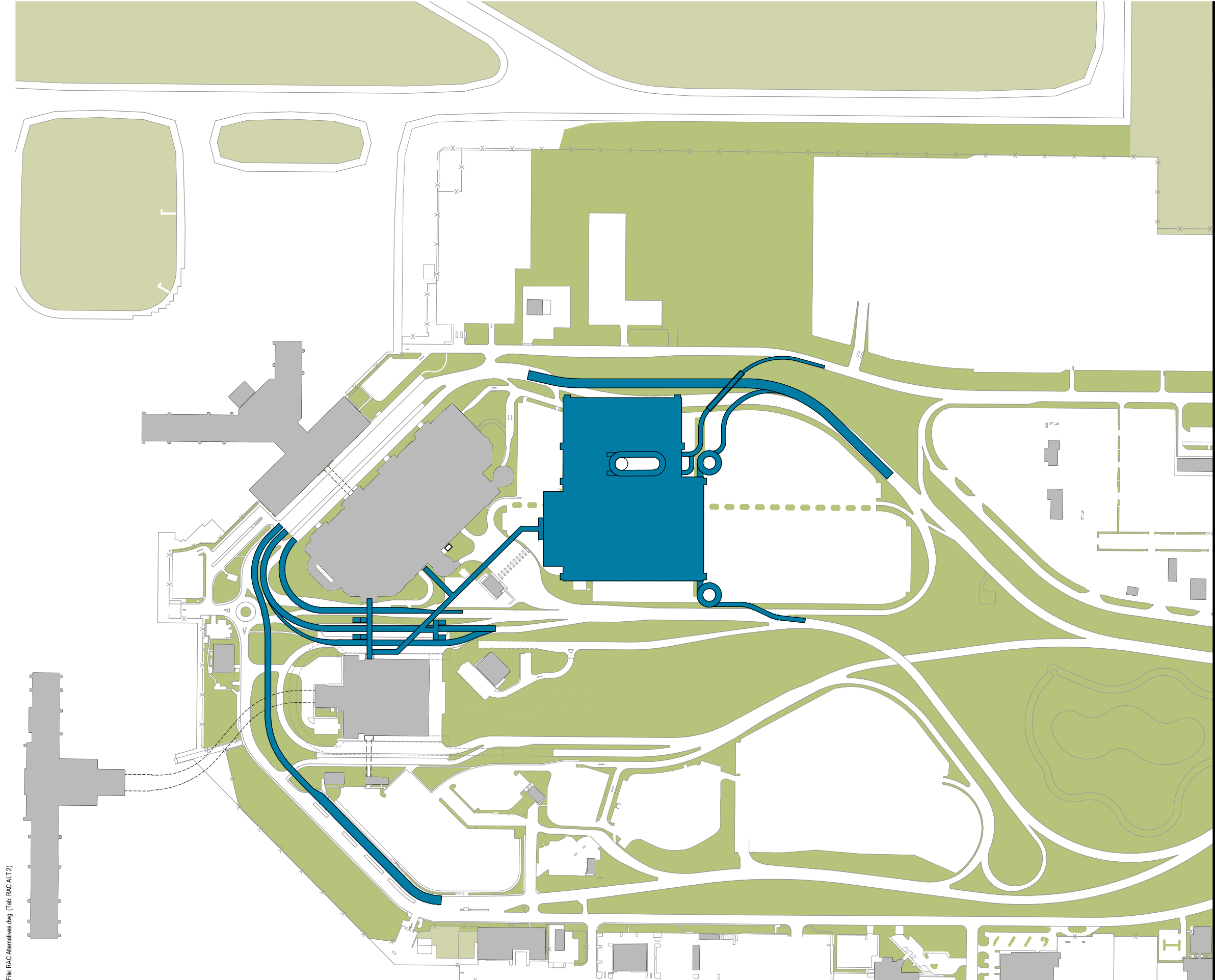
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FIGURE 4-8

**CONRAC ALTERNATIVE 1**

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**LEGEND**

- AIRPORT PROPERTY LINE
- ALTERNATIVE 2
- AIRSIDE OPEN SPACE
- LANDSIDE OPEN SPACE

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GRAPHIC SCALE IN FEET

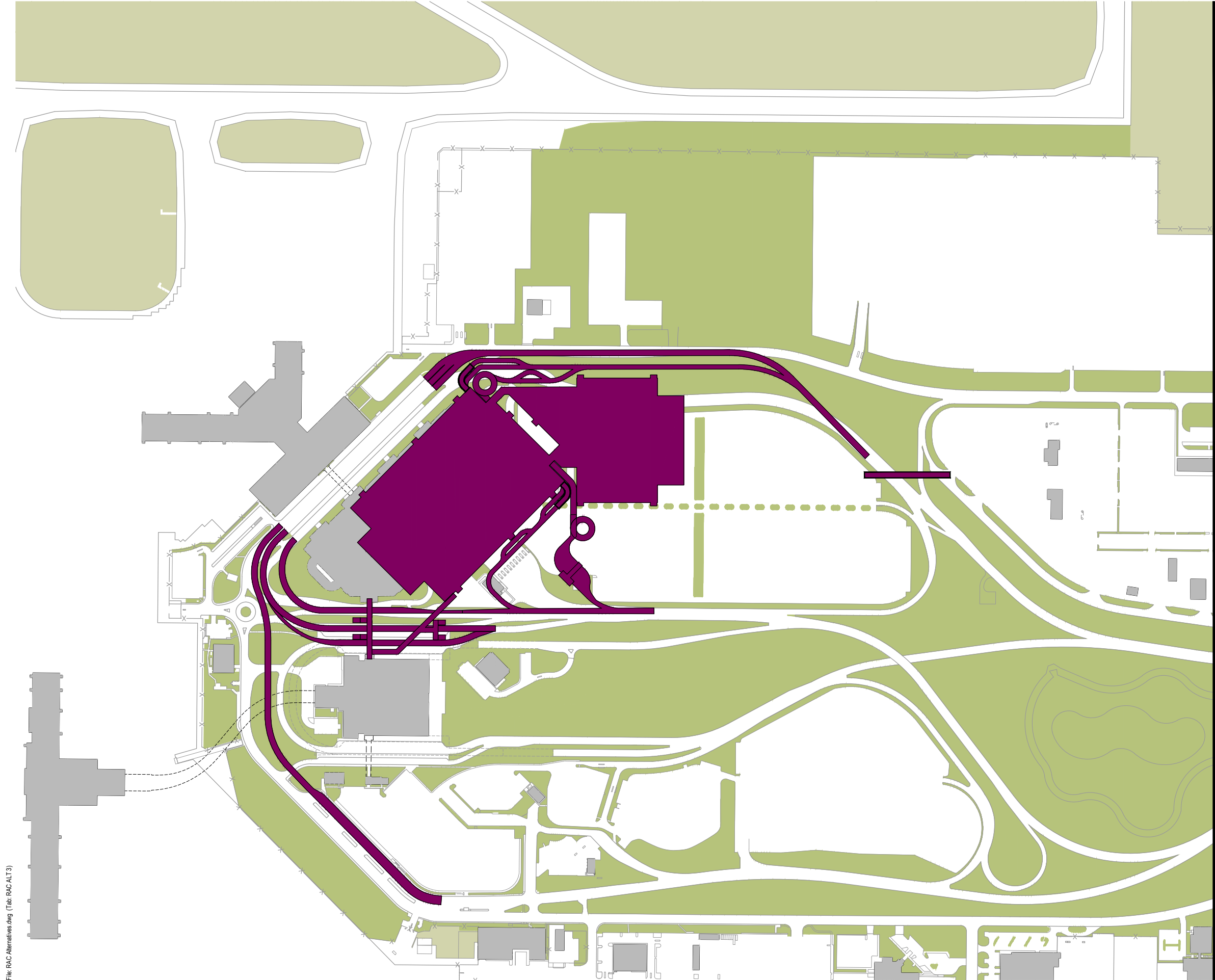
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FIGURE 4-9

**CONRAC ALTERNATIVE 2**

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**LEGEND**

- AIRPORT PROPERTY LINE
- ALTERNATIVE 3
- AIRSIDE OPEN SPACE
- LANDSIDE OPEN SPACE

← N

0 200' 400'

GRAPHIC SCALE IN FEET

FIGURE 4-10

**CONRAC ALTERNATIVE 3**

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### 4.4.3 AIRPORT ROADWAY IMPROVEMENTS

Roadway demand nearly reaches capacity on Airport Boulevard under baseline conditions. As new close-in parking and rental car facilities are constructed to accommodate demand, new roadway capacity will be needed to help passengers enter and exit the Airport. Currently two projects are underway to alleviate near-term congestion: 1) the Interstate-5 interchange improvements, and 2) the Elkhorn Boulevard extension.

#### 4.4.3.1 Interstate-5 Interchange Improvements

The California Department of Transportation (Caltrans) has embarked on a project to install ramp meters along ramps exiting Airport Boulevard onto northbound and southbound Interstate-5. Capacity from the installation of additional lanes (completion is dependent upon Caltrans schedule) should be compared to the baseline and projected peak-hour roadway volumes in this Master Plan Update to re-examine throughput and determine adequacy. Any capacity improvements to the interchange will be at the Airport's cost and discretion.

#### 4.4.3.2 Elkhorn Boulevard Extension

New roadway access via an Elkhorn Boulevard extension is currently under design. This new roadway has the potential to alleviate congestion at the existing interchange with Interstate-5 and Airport Boulevard by providing a new access point for passengers entering and leaving the Airport to the north and east, particularly via California SR-99.

#### 4.4.3.3 Future Airport Roadway Improvements

Though some capacity issues currently appear on the inbound roadways in future PALs, several of the parking and ground transportation alternatives will require improvements to those roadways or will have to utilize other existing on-airport roadways that are currently under-utilized or have additional capacity. One example of this is the Terminal B bypass exit, which could alleviate congestion at the traffic circle and adjacent to Terminal B. This is shown as an enabling project to the Ground Transportation Center (GTC), discussed in Section 4.4.4.

A separate traffic study is underway at the time of this Master Plan Update to review roadway connectivity with on-airport traffic generators such as curbside, parking, and rental car facilities, and to ensure that safety and capacity are addressed at each of the on-airport roadway intersections.

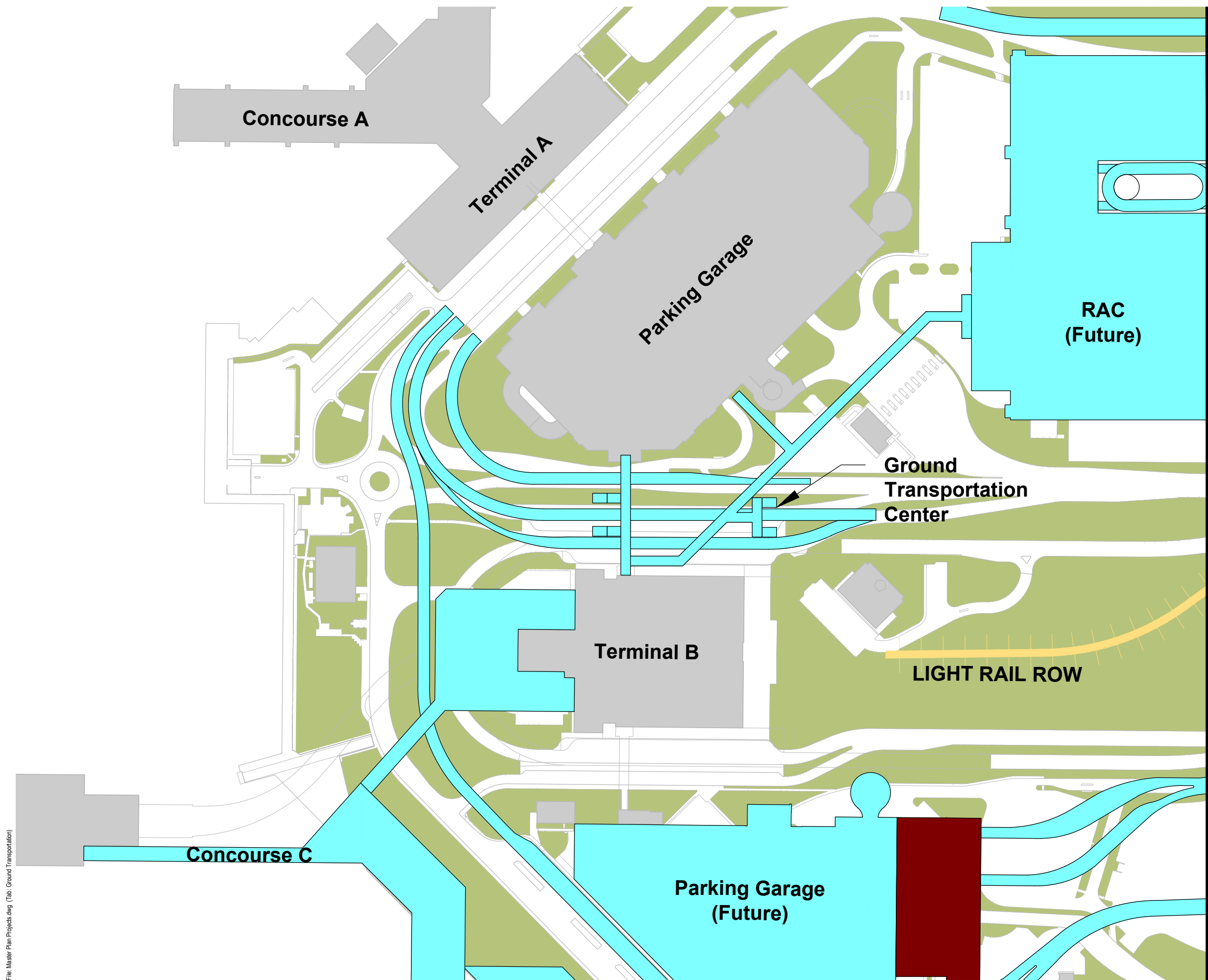
### 4.4.4 CURBSIDES AND GROUND TRANSPORTATION CENTER

The total curbside capacity at the Airport is adequate through PAL 4. If operations are consolidated or focused more at Terminal B, then the roadway capacity on the upper level of Terminal B, as well as that curb length, will become more congested and will need to be re-evaluated. Consideration should be given to providing additional lanes that connect the east and west sides of Terminal B. Alternative access should also be provided to one of the terminal curbs to unlink the two sides and eliminate the need for passengers on both sides. Building additional curb capacity, or optimizing curbside space by pickup vs. drop-off, and by commercial vs. private vehicles, will extend the life of the existing curbs at both terminals, but it may also trigger the need for new curbside roadways.

One alternative within the terminal core that will drive efficiency is construction of a new, consolidated GTC to replace the existing GTC facilities at Terminal A and Terminal B. Figure 4-11 shows the potential configuration of a consolidated GTC located between Terminal B and the existing Terminal A garage. The facility would consist of two or three roadways parallel to the existing Terminal B curbside roadways.

Commercial vehicle activities such as shuttles, taxis, limos, transportation-chartered parties, and transportation network companies (TNCs) would each have space allocated on the curbside roadways of the GTC. Elevated walkways would connect Terminal A and Terminal B to the GTC. This consolidated GTC could be used for both passenger pickup and drop-off activities, which would reduce congestion on the existing curbside roadway infrastructure. One key enabling project required to create physical space for the GTC in the proposed location is the re-routing of the Terminal A exit roadway counterclockwise, around the north side of Terminal B, south of

the roundabout and under the APM guideway. The roadway would rejoin the Airport exit roadway on the west side of the existing Hourly B lot site.



**LEGEND**

- AIRPORT PROPERTY LINE
- PAL 1 (7.4M ENPLANEMENTS or APPROX. 2019-2023)
- PAL 2 (8.2M ENPLANEMENTS or APPROX. 2024-2028)
- PAL 3 (9.2M ENPLANEMENTS or APPROX. 2029-2033)
- PAL 4 (10.2M ENPLANEMENTS or APPROX. 2034-2038)

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FIGURE 4-11

**GROUND TRANSPORTATION CENTER**

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## 4.5 SUPPORT FACILITIES

This section describes the site assessment completed for air cargo, general aviation, airport maintenance, and commercial development at the Airport. Based on the assessment, it was concluded that (1) most support facilities at the Airport are suitably located, and (2) the site assessment is useful as a land use management tool as opportunities for new Airport development arise. Commercial development opportunities that compete with space needs for on-Airport functions will continue to be considered on a case-by-case basis.

The objective of this site assessment is to identify locations that best meet the criteria of the specific support facilities and to provide the Airport with decision-making information for long-term land use planning and allocation of space.

The following support facilities are not part of this analysis:

- ARFF is excluded from this analysis because a new facility that meets demand through PAL 4 is planned for construction in 2020.
- Fuel storage is excluded from this analysis because the existing fuel farm is relatively new and has the capacity to accommodate fuel storage requirements through the PAL 4 planning period.
- Office space for airport administration needs will be assessed during a more focused terminal study.
- Catering facility requirements are not expected to outgrow the existing facility size throughout the planning period. Once the existing catering facility nears the end of its useful life, SCDA staff will re-assess demand, needs, and alternative locations.
- Neither the FAA Flight Inspection Field Office (FIFO) nor the United States Post Office are expected to require additional facilities during the planning period. As these facilities reach the end of their useful lives, SCDA staff will re-assess demand, needs, and alternative locations.

### 4.5.1 SUPPORT FACILITIES SITES ASSESSED

Based on the existing land use at the Airport and input from SCDA staff, five broad study areas were identified (i.e., sites), located in different sections of the Airport, as shown on the key map provided in Figure 4-12. Specific locations of facilities within the sites that are suitable for development were also identified in the subsequent sections depending on the requirements identified in *Section 3 – Facility Requirements*.

**Site 1: North Airfield Area** - Located north of Taxiway W, this site currently houses the ARFF facilities, maintenance facilities, and temporary structures. A portion of this site will be used for the future ATCT. This site has non-public, gate-controlled access to Elverta Road, which can be used to access State Route 99 (CA-99).

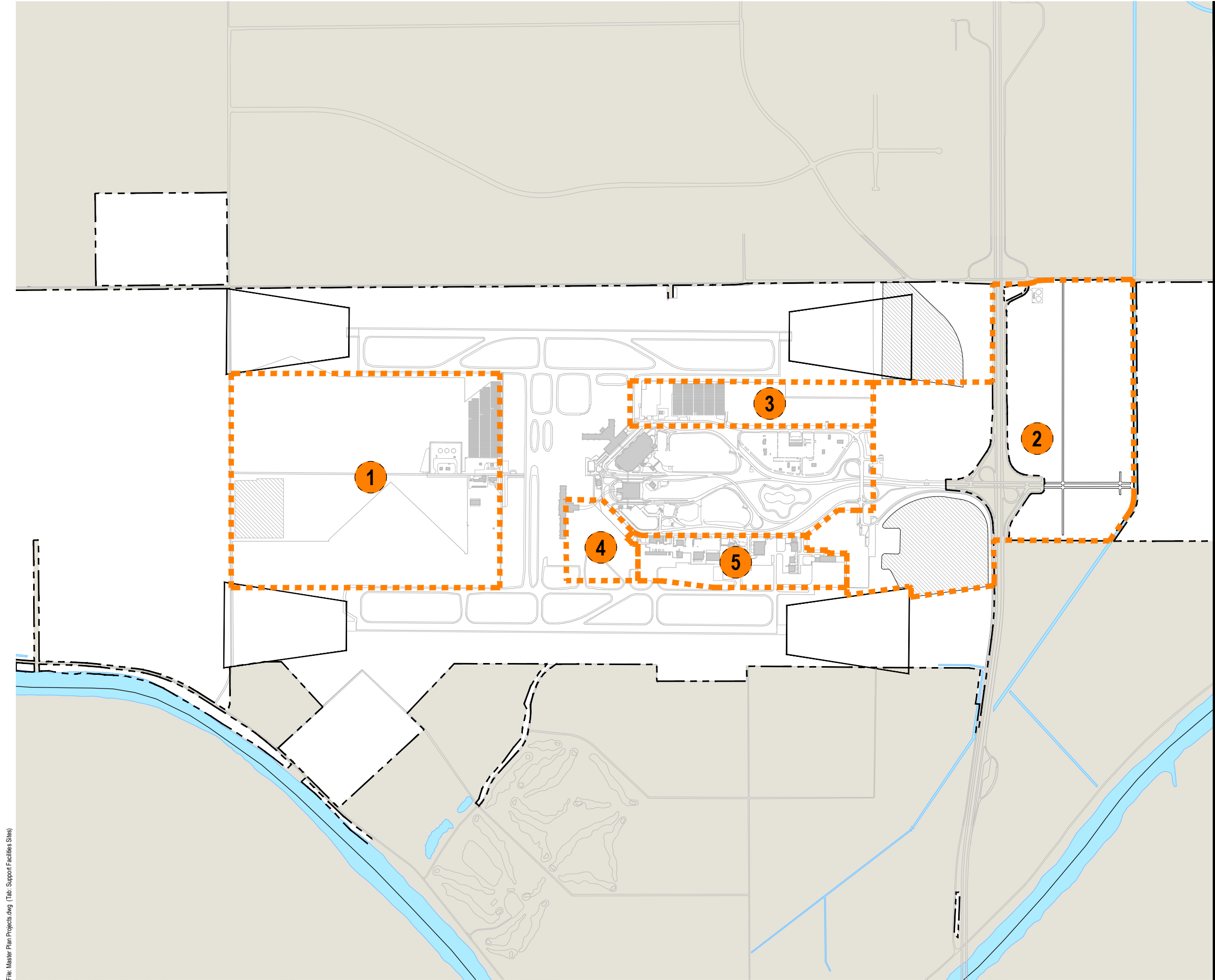
**Site 2: I-5 Interchange Area** - Located south of Crossfield Drive, this site is largely undeveloped. Some areas close to the Runway 34R end have limited, SCDA-access only (Meister Road) and are mostly used by maintenance crews. The site currently does not have airfield access.

**Site 3: Economy Lot Area** - Located between Aviation Drive and Taxiway D, this site is primarily used as an economy parking lot. A portion of this site is used for the east solar farm, and the northern end is an employee parking lot. The site has good landside access. Direct airside access could be provided to this site.

**Site 4: Remain Overnight Apron Area between Cargo Facilities and Concourse B** - This site is currently used for cargo operations and RON parking. This site has airside access and landside access and is identified as a potential site for a future terminal concourse.

**Site 5: West Airfield Area** - Multiple buildings on this site are located between Taxiway A and Lindbergh Drive, and some have direct airfield access. These buildings currently house the all-cargo carriers, provisioning, catering, GA, the United States Postal Service (USPS), and the FAA FIFO.

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**LEGEND**

- AIRPORT PROPERTY LINE
- SUPPORT FACILITY AREAS

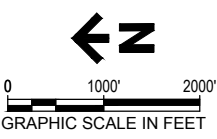


FIGURE 4-12

**SUPPORT FACILITIES SITES**

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## 4.5.2 CARGO FACILITIES

Based on conversations with cargo operators and the cargo forecast presented in *Section 2 – Forecast*, a strong cargo growth scenario is expected across the industry. This results in a need for additional cargo space and an update to typically used cargo facility planning metrics.

The projected activity at SMF supports the high-growth cargo scenario forecast, and that scenario was used when determining future capacity needs. The high growth forecast assumes a CAGR of 5.1 percent over the 20-year planning horizon.

As discussed in *Section 3 – Facility Requirements*, 1.0 to 2.0 square feet per annual enplaned ton was historically used for cargo facility planning. However, since demand for one-day and same-day shipping has increased, cargo carriers are requiring more facilities for warehousing and sort equipment, and a metric of 3.5 square feet per annual enplaned ton of cargo better estimates facility requirements for these types of cargo operations.

Using a metric of 3.5 square feet per annual enplaned ton of cargo and the high-growth cargo scenario forecast, the estimated cargo volume by PAL 4 requires warehouse capacity of approximately 1,037,036 square feet. An additional cargo apron, approximately 3,500 feet in length, is also required.

The three likely sites for new cargo facilities are the Economy Lot Area (Site 3), the West Airfield Area (Site 5, existing location), and the North Airfield Area (Site 1). The North Airfield Area can provide cargo operators with separate landside access for their trucks to access CA-99 (and then I-5) via Elverta Road. The existing cargo buildings (on Site 5) are used by cargo operators and airlines for warehousing belly cargo and provisioning supplies.

Airport staff have observed that currently, airline support vehicles must travel through the apron space used by the integrated cargo operators. Potential solutions include relocating this function or swapping the locations of these tenants. The existing RON Apron Area (Site 4) is suitable for a new two-level cargo facility.

The Economy Lot Area and West Airfield Area meet most of the characteristics for an integrated cargo site. However, if provisioning facilities were to be relocated from the current site, the West Airfield Area (Site 5) could accommodate both integrated and cargo-only operators. Additional analysis is needed to ensure that truck traffic will not affect roadways.

## 4.5.3 GENERAL AVIATION FACILITIES

The fixed base operator (FBO) Lease and Development Agreement with the County describes a 22-acre, multiphase expansion of the GA area at the Airport. The agreement also grants the FBO a right of first refusal to the West Economy Lot (used for holiday overflow parking) and cell phone lot; areas adjacent to its current location on the Airport. The FBO development addresses the GA demand through PAL 4. No other GA operators at SMF expressed a need for additional GA facilities.

The West Airfield (existing location) meets all the required characteristics for future expansion to meet forecast demand through PAL 4. A completely new facility on another site would likely *not* be cost-effective.

## 4.5.4 MAINTENANCE FACILITIES

Building and airfield maintenance facility needs do not necessarily increase proportionally with aviation activity, but are more a function of the overall pavement, grassy areas, terminal square footage (requiring maintenance), and climatic conditions. Therefore, Airport maintenance requirements were developed based on information provided by SCDA staff, who identified a total land requirement of 18 acres, or 784,080 square feet of land for expansion in support of airport operations (which includes storage, maintenance, and refuse/recycling yards). SCDA staff also identified several operational deficiencies that result from Airport maintenance functions being located in separate facilities and different locations at the Airport. Consolidating various Airport maintenance

functions in a single area is a preferred option. Site 1 (the North Airfield Area) meets all the requirements for maintenance expansion, improvements, or consolidation through PAL 4.

There has been interest in developing aircraft Maintenance, Repair, and Overhaul (MRO) facilities from the airlines at SMF. Three sites have been identified for MRO facilities at the Airport. All of the locations offer direct airfield access: 1) the first site is to the west of Taxiway D and north of the north solar farm, 2) the second site is to the east of Taxiway A and north of Taxiway W, and 3) the third site replaces the existing employee parking lot north of the east solar farm and east of Terminal A.

Existing demand requires the ability to store three ADG-III aircraft within the maintenance facility and park up to four ADG-III aircraft on an adjacent ramp. Each proposed MRO location occupies approximately seven acres, including the hangar, ramp, office space, and employee parking. Access via taxilanes will be required to nearby aprons or other taxilanes/taxiways (this is not included in the seven-acre calculation).

As aircraft operations continue to grow (both commercial and cargo), preserving space for MRO facilities will offer existing and new-entrant airlines the additional capability and benefit to perform MRO on their fleet.

### 4.5.5 COMMERCIAL DEVELOPMENT

The five sites were evaluated for potential development in response to three commercial development opportunities:

- **Travel Center (Truck Stop)** – A travel center is a commercial facility that provides refueling, a rest area, food, and other services primarily for truck drivers. An average travel center consists of about 10 to 20 acres with a 10,000 square foot building that can accommodate a convenience store, restaurant, shower(s), and truck wash.
- **Second Gas Station** – Airport management may consider a second gas/compressed natural gas station to provide an enhanced level of service for airline passengers. For planning purposes, a 60,000 square foot station with a 5,000 square foot building space is considered adequate.
- **Structural Fire Station** – Complementary to the services provided by the Airport fire station, a structural fire station at the Airport would provide additional medical services for any emergencies at the terminals, and would address any fire emergencies in the surrounding communities and I-5 corridor. The fire station would occupy a 1.0-acre plot.

The I-5 Interchange Area (Site 2) is the best fit for commercial development due to its access to roadways and the I-5, its minimal obstruction to nearby facilities, and its location being away from most airport functions.

Development on either side of I-5 within Site 2 is possible. South of the I-5 offers greater flexibility for a developer, but the lack of infrastructure connections will require larger upfront investment. Commercial development north of the I-5 will likely require additional changes to the roadway infrastructure or configuration as traffic increases.

### 4.5.6 SITE ASSESSMENT

The following site characteristics are used to evaluate each of the five sites based on professional judgment and experience at the Airport.

#### 4.5.6.1 Airfield Access

A site with direct access (preferably without passing through security gates) to the airfield is categorized as “pro.” A site located in proximity to the airfield, but with access only through a security gates is categorized as “con”. A site that requires the use of Airport roadway segments to access the airfield is categorized as “con.”

#### **4.5.6.2 Landside Access**

This characteristic includes access for employees and company vehicles. A site with direct access to roadways and quick access to I-5 is categorized as “pro.” A site located farther from I-5 that requires the use of semi-private roads, or that has limited ability to provide parking spaces is categorized as “con.” An island site with very restricted or no roadway access is categorized as “con.”

#### **4.5.6.3 Taxiway Frontage**

A paved site located adjacent to a taxiway, thereby allowing aircraft and ground support equipment to maneuver is categorized as “pro.” A site with some access to taxiways, or partially unpaved, is categorized as “con”. A site that would not permit access to taxiways is categorized as “con”.

#### **4.5.6.4 Existing Facilities**

A site with recently built facilities, such as sufficient paved areas, sufficient building space, and with utilities, is categorized as “pro.” A site with no infrastructure is categorized as “con”. A site with old infrastructure that may trigger major retrofits is categorized as “con”.

#### **4.5.6.5 Geometric Characteristics**

A rectangular-shaped site with large acreage is categorized as “pro”. Conversely, a site with oddly shaped boundaries and unmovable constraints, such as a river, is categorized as “con”.

#### **4.5.6.6 Environmental**

Most of the Airport is located in a floodplain and any unpaved site may require floodplain fill work. A site reserved for wildlife habitat conservation, or having any other known environmental impacts is categorized as “con”. A site with underground tanks, or a history of previous spills, is categorized as “con”. Sites with no known major environmental impacts are categorized as “pro”.

Table 4-5 shows the pros and cons of each site. Consideration of available space, opportunity costs, lost revenue, and construction costs will influence final priorities and site selection.

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**Table 4-5 Site Pros and Cons**

SITE	PROS	CONS
1 – North Airfield	<ul style="list-style-type: none"> <li>• Good airfield access</li> <li>• Good taxiway frontage</li> <li>• Good geometric characteristics</li> <li>• No major environmental impacts</li> <li>• Can provide cargo operators with separate landside access for their trucks to access CA-99 (and then I-5) via Elverta Road</li> <li>• Can provide cargo operators with immediate access to runways, some access to airport roadway segments, and has minimal obstruction to nearby facilities; site is away from terminals and can accommodate a new tenant; no obstruction to facility expansion(s)</li> <li>• Meets requirements for maintenance facilities because of access to all parts of airport, has minimal obstruction to nearby facilities, and is away from other tenants</li> <li>• For GA facilities, provides immediate access to airfield; minimal obstruction to nearby facilities; site can accommodate new tenant; does not obstruct major facility expansion</li> </ul>	<ul style="list-style-type: none"> <li>• Access for passengers using the terminal (landside access) is unavailable</li> <li>• Fair existing facilities</li> </ul>
2 – I5 Interchange Area	<ul style="list-style-type: none"> <li>• Good landside access</li> <li>• Good geometric characteristics</li> <li>• No major environmental impacts</li> <li>• Preferred site for commercial development due to access to roadways and I-5, minimal obstruction to nearby facilities, and away from current airport functions</li> </ul>	<ul style="list-style-type: none"> <li>• Poor airfield access</li> <li>• No taxiway frontage</li> <li>• No existing facilities</li> <li>• Poor site for future GA as no access to airfield</li> <li>• Poor site for future cargo as no immediate access to runways</li> </ul>
3 – Economy Lot Area	<ul style="list-style-type: none"> <li>• Good airfield access</li> <li>• Good landside access</li> <li>• Good taxiway frontage</li> <li>• Good geometric characteristics</li> </ul>	<ul style="list-style-type: none"> <li>• Fair existing facilities</li> <li>• Away from existing GA facilities; new GA facilities in this location would require greater investment</li> <li>• Is currently used for airport parking; this lot has been reaching constrained levels</li> </ul>

SITE	PROS	CONS
	<ul style="list-style-type: none"> <li>No major environmental impacts</li> <li>Can provide cargo operators with immediate access to runways, has access to airport roadway segments, minimal obstruction to nearby facilities; site is away from terminals and can accommodate a new tenant</li> <li>For GA facilities, provides immediate access to airfield, access to airport roadways segments; minimal obstruction to nearby facilities; site can accommodate new tenant</li> </ul>	
4 – RON Area	<ul style="list-style-type: none"> <li>Good airfield access</li> <li>Good taxiway frontage</li> <li>Good geometric characteristics</li> <li>No major environmental impacts</li> </ul>	<ul style="list-style-type: none"> <li>Fair landside access</li> <li>Fair existing facilities</li> <li>Poor site for maintenance facility expansion as there would be obstruction to nearby facilities</li> <li>Poor site for GA expansion as there is potential for obstruction to nearby facilities, site is too close to concourses, and may obstruct major facility expansion</li> <li>Poor site for cargo expansion as there is potential for obstruction to nearby facilities, site is too close to concourses, does not accommodate a new tenant well, and may obstruct major facility expansion</li> </ul>
5 – West Airfield	<ul style="list-style-type: none"> <li>Good airfield access</li> <li>Good landside access</li> <li>Good taxiway frontage</li> <li>Good geometric characteristics</li> <li>No major environmental impacts</li> <li>For GA facilities provides immediate access to airfield, access to airport roadway segments; minimal obstruction to nearby facilities; site is away from concourses; existing GA facilities located on this site</li> </ul>	<ul style="list-style-type: none"> <li>Fair existing facilities</li> <li>Poor site for maintenance facility expansion as there would be obstruction to nearby facilities; site is away from most existing maintenance facilities</li> </ul>

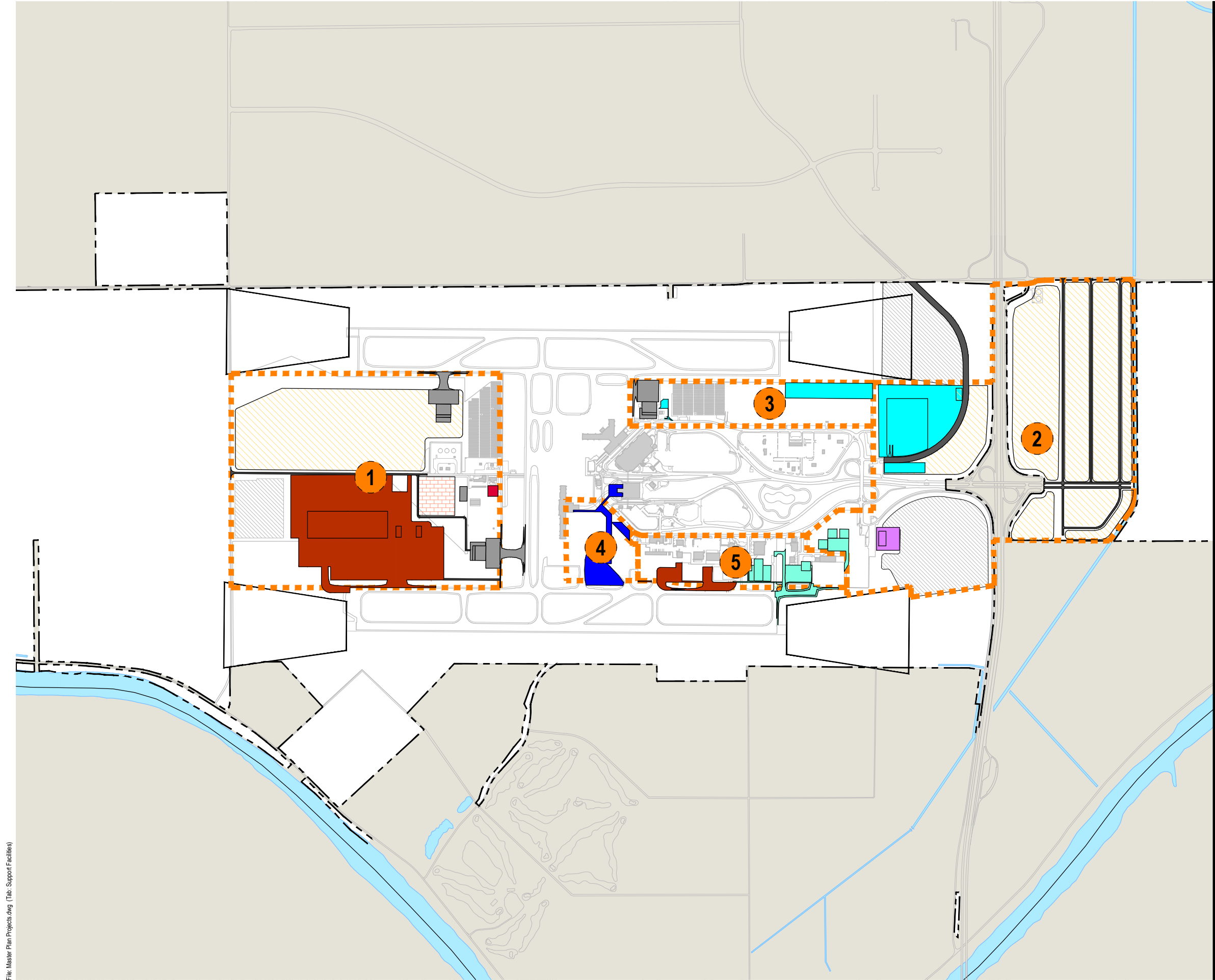
Source: Sacramento Department of Airports, 2020

#### 4.5.7 SUPPORT FACILITIES RECOMMENDATION

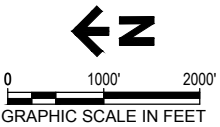
The recommended land uses for each of the five development sites are shown on Figure 4-13. Generally, Site 1 is focused on cargo development, maintenance facilities, and MRO; Site 2 is focused on commercial development; Site 3 is focused on parking facilities; Site 4 is focused on terminal expansion; and, Site 5 is focused general aviation and cargo development.

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- LEGEND**
- AIRPORT PROPERTY LINE
  - Aircraft Maintenance, Rehabilitation, and Overhaul
  - Airport Fire
  - Air Traffic Control Tower
  - Cargo Facilities
  - Commercial Development
  - General Aviation
  - Landscape Maintenance
  - Parking Facilities
  - Roadways
  - Terminal / Concourse Facilities
  - STORM WATER DETENTION
  - SACRAMENTO RIVER
  - OFF-AIRPORT PROPERTY



File: Master Plan Projects.dwg (Tab: Support Facilities)

FIGURE 4-13

**SUPPORT FACILITY LAND  
USE RECOMMENDATIONS**

Sacramento International Airport Master Plan  
July 2020

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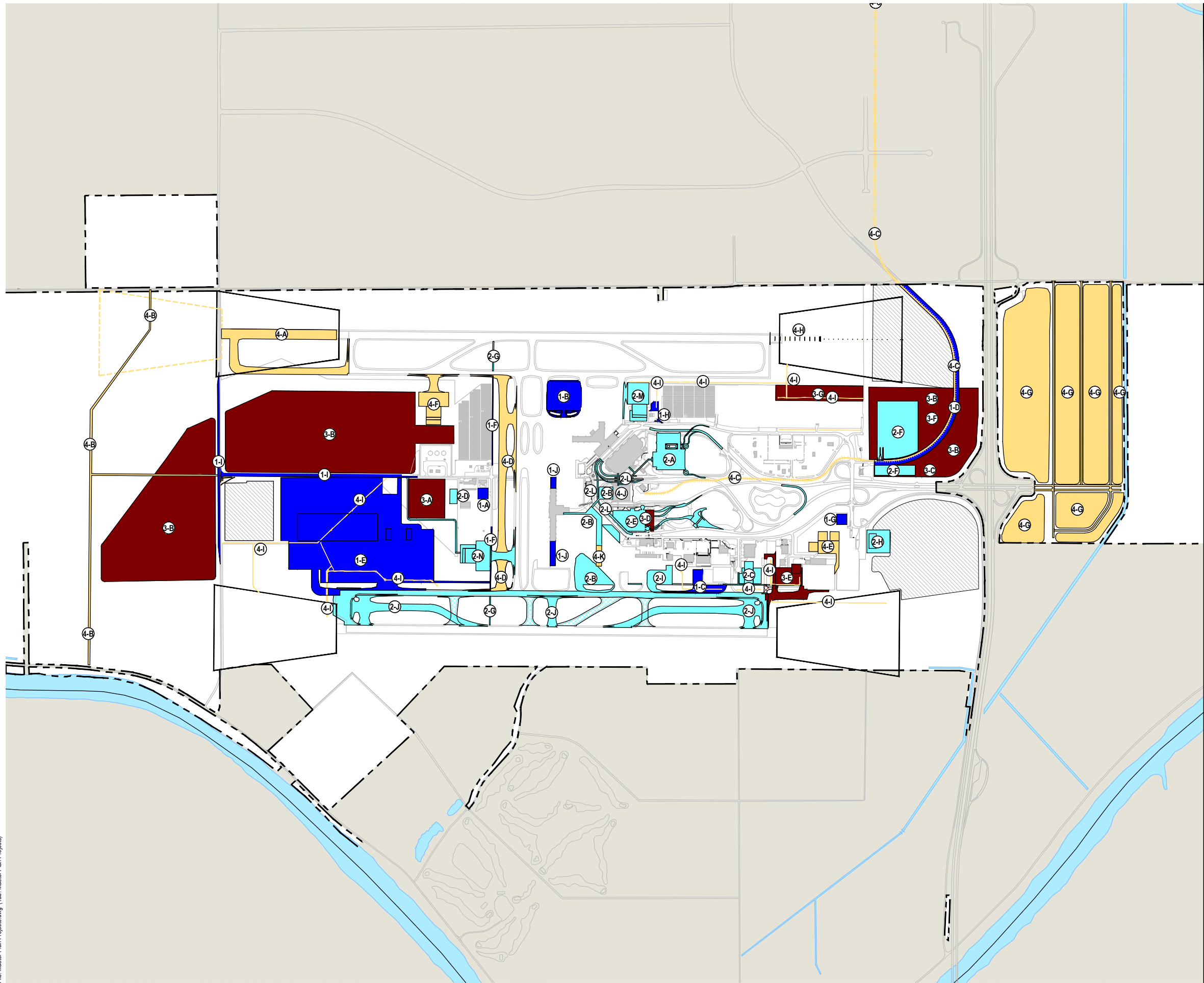
## 4.6 PREFERRED ALTERNATIVE

In determining the preferred alternative (Figure 4-14) for the Airport, SCDA staff considered existing land use development patterns, operational needs, operational impacts, discussions with tenants, long-term operations and maintenance costs, and longer-term growth requirements.

- The existing area identified for a Runway 16L/34R extension and parallel Taxiway D extension will continue to be reserved, should it be needed.
- The areas for Taxiway V, Taxiway A connectors, holdpads, and the replacement ATCT will continue to be reserved.
- Terminal Alternative 3, with optional phasing on Concourse B, provides the most flexibility to accommodate near-term terminal expansion needs and PAL 4 demand and will be reserved as such.
- RON Alternative A2 will be reserved as future apron area for RON parking.
- Construct a garage on the current Hourly B surface lot in either one or two phases to meet close-in parking demands and compensate for public parking spaces lost in the Daily Lot. Additional remote surface parking should also be constructed in phases to meet demand, but also to minimize O&M costs associated with shuttle bus operations.
- ConRAC Alternative 2, with its smaller footprint is the preferred alternative. Cost, constructability, and RAC stakeholder input will determine whether a two-level or four-level ConRAC is ultimately constructed at SMF.
- Site 1 and Site 5 will be reserved for air cargo development.
- Site 1 will be reserved for maintenance facility development and MRO facilities.
- Site 2 will be reserved for commercial development.
- Site 3 will be reserved for parking.
- Site 4 will be reserved for terminal development
- Site 5 will be reserved for general aviation development.

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File: Master Plan Projects.dwg (Tab: Master Plan Projects)



## LEGEND

- AIRPORT PROPERTY LINE
- PAL 1 (7.4M ENPLANEMENTS or APPROX. 2019-2023)
- PAL 2 (8.2M ENPLANEMENTS or APPROX. 2024-2028)
- PAL 3 (9.2M ENPLANEMENTS or APPROX. 2029-2033)
- PAL 4 (10.2M ENPLANEMENTS or APPROX. 2034-2038)
- REMOVAL
- STORM WATER DETENTION
- SACRAMENTO RIVER
- OFF-AIRPORT PROPERTY

## PROPOSED PROJECTS

- |  |   |
|--|---|
| 1-A NEW ARFF   | 3-A NEW AIR TRAFFIC CONTROL TOWER                           |
| 1-B RON APRON  | 3-B COMMERCIAL DEVELOPMENT/AIRSIDE DEVELOPMENT (≈324 ACRES) |
| 1-C CARGO APRON EXPANSION  | 3-C AIRPORT HOTEL (NOT SHOWN)                               |
| 1-D ELKHORN BOULEVARD EXTENSION  | 3-D PARKING GARAGE EXPANSION                                |
| 1-E NEW CARGO FACILITY   | 3-E PHASE 2 GA IMPROVEMENTS                                 |
| 1-F WIDEN AND OVERLAY CY HOMER ROAD  | 3-F PHASE 2 ECONOMY LOT EXPANSION (SOUTH)                   |
| 1-G CITY OF SACRAMENTO COMMUNITY FIRE STATION                                | 3-G PHASE 3 ECONOMY LOT EXPANSION (EAST)                    |
| 1-H NEW AIRPORT BUS PARKING LOT  | 4-A RUNWAY EXTENSION 16L/34R TO 11,000FT                    |
| 1-I ELVERTA AND EARHART ROADWAY IMPROVEMENTS                                 | 4-B ELVERTA ROAD RELOCATION                                 |
| 1-J CONCOURSE B EXPANSION  | 4-C LIGHT RAIL SERVICE TO SMF                               |
| 2-A NEW CONRAC   | 4-D NEW CROSSFIELD TXY V                                    |
| 2-B TERMINAL B PEDESTRIAN WALKWAY, RELOCATED SSCP, 6-GATE EXPANSION W/ APRON | 4-E PHASE 3 GA IMPROVEMENTS                                 |
| 2-C PHASE 1 GA IMPROVEMENTS  | 4-F AIRCRAFT MRO NORTHEAST STORAGE                          |
| 2-D AIRPORT MAINTENANCE EQ. STORAGE  | 4-G COMMERCIAL DEVELOPMENT (≈231 ACRES)                     |
| 2-E NEW PARKING GARAGE   | 4-H NEW ILS FOR RUNWAY 34R                                  |
| 2-F PHASE 1 ECONOMY LOT EXPANSION  | 4-I CULVERT DITCHES   |
| 2-G CY HOMER ROAD EXTENSION TO BOTH RUNWAYS                                  | 4-J ADD BAGGAGE/TICKETING TO TERMINAL B WITHIN STRUCTURE    |
| 2-H LANDSCAPE MAINTENANCE BUILDING   | 4-K TERMINAL B 6-GATE EXPANSION                             |
| 2-I AIR CARGO APRON EXPANSION  |   |
| 2-J TXY A TAXIWAY EXIT RECONFIGURATION AND HOLDING POSITIONS                 |   |
| 2-K GROUND TRANSPORATION CENTER  |   |
| 2-L TERMINAL B BYPASS ROADWAY  |   |
| 2-M AIRCRAFT MRO EAST  |   |
| 2-N AIRCRAFT MRO NORTHWEST   |   |

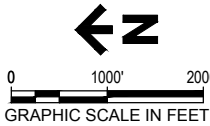


FIGURE 4-14

## MASTER PLAN PROJECTS

Sacramento International Airport Master Plan  
July 2020

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## 4.6.1 PHASING

The phasing plan for the Preferred Alternative is a combination of projects dependent upon PALs as described in *Section 2 – Forecast*, and projects driven by marketplace and fiscal readiness. For the purpose of this section, projects as closely tied to each PAL are grouped together. *Section 5 – Development Plan*, will describe the estimated timeline and financial cost of each project in more detail.

The Preferred Alternative projects are shown on Figures 4-15 through 4-18, as per the corresponding alpha-numeric list below.

- **PAL 1**

- 1-A) New ARFF station building north of CY Homer Road and west of Earhart Drive
- 1-B) Additional terminal apron in proximity to Concourse A (RON Apron)
- 1-C) Cargo apron expansion of the southern portion of the existing air cargo apron pavement
- 1-D) Elkhorn Boulevard extension from Metro Air Park to Crossfield Drive
- 1-E) New air cargo building and air cargo apron with a taxiway connector to Runway 34R end
- 1-F) Widen (and Overlay) Cy Homer Road to two lanes
- 1-G) New community fire station at northwestern corner of Lindbergh Drive and Crossfield Drive; fire station to be built by the City of Sacramento Fire Department on County-owned land
- 1-H) New shuttle bus maintenance and staging facility east of Aviation Drive
- 1-I) Elverta and Earhart Roadway Improvements
- 1-J) Concourse B Expansion

- **PAL 2**

- 2-A) CONRAC facility
- 2-B) Terminal B pedestrian walkway, relocated SSCP, and gate expansion (6 gates) with apron
- 2-C) Phase 1: General aviation area improvements/expansion including corporate hangars, fixed base operator facility, and apron
- 2-D) New airport, airfield, and equipment maintenance buildings north of Cy Homer Road
- 2-E) New Parking Garage (Hourly B Lot)
- 2-F) Phase 1: Expansion of Economy parking surface lot north of I-5 and east of Airport Boulevard to accommodate 2,800 automobile parking spaces
- 2-G) Extension of Cy Homer Road to both runways
- 2-H) Landscape maintenance area and building south of the General Aviation area and employee parking lot
- 2-I) Rehab and expansion of northern portion of the existing air cargo apron pavement
- 2-J) Taxiway A holdpads and high-speed, perpendicular taxiway exists for RWY 16R/34L
- 2-K) Ground Transportation Center (shared components with ConRAC)
- 2-L) Terminal B Bypass Roadway
- 2-M) MRO Facility (East side adjacent to Terminal A)
- 2-N) MRO Facility (Northwest side adjacent to new air cargo development)

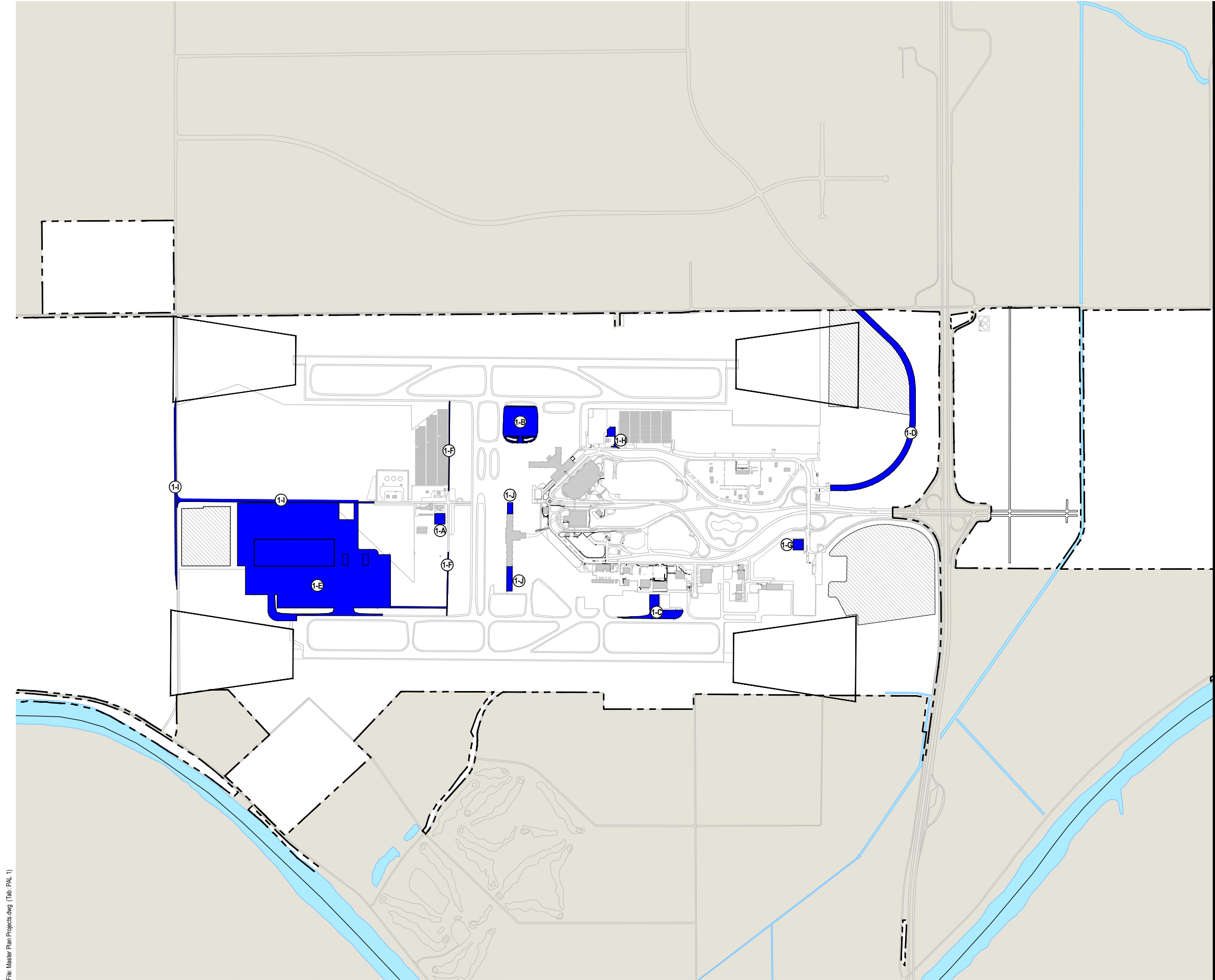
- **PAL 3**

- 3-A) New ATCT north of Cy Homer Road and west of Earhart Drive
- 3-B) Commercial development north of I-5 and east of Airport Boulevard, as well as east of Earhart Road and north of existing Elverta Road (approximately 324 acres)
- 3-C) Airport Hotel (not shown)
- 3-D) Expand Terminal B parking garage
- 3-E) Phase 2: General aviation area improvements/expansion including corporate hangars, fixed base operator facility, and apron
- 3-F) Phase 2: Expansion of Economy parking surface (south)
- 3-G) Phase 3: Expansion of Economy Parking surface (east)

- **PAL 4**

- 4-A) 2,400-foot extension of Runway 16L/34R to provide a total runway length of 11,000 feet
- 4-B) Elverta Road relocation
- 4-C) Light rail service to SMF passenger terminal
- 4-D) New north Crossfield Taxiway V
- 4-E) Phase 3: General aviation area improvements/expansion including corporate hangars, fixed base operator facility, and apron
- 4-F) MRO Facility (Northeast side adjacent to solar farm)
- 4-G) Commercial Development south of I-5 (approximately 231 acres)
- 4-H) New localizer, ILS glide slope, and ALSF-2 for new ILS approach to Runway 34R
- 4-I) Place ditches within culverts and pipes in RPZ and road areas
- 4-J) Expand Terminal B (addition Baggage/Ticketing within Structure)
- 4-K) Terminal B Gate Expansion (6 gates) to 44 gates total





**LEGEND**

- AIRPORT PROPERTY LINE
- PAL 1 (7.4M ENPLANEMENTS or APPROX. 2019-2023)
- PAL 2 (8.2M ENPLANEMENTS or APPROX. 2024-2028)
- PAL 3 (9.2M ENPLANEMENTS or APPROX. 2029-2033)
- PAL 4 (10.2M ENPLANEMENTS or APPROX. 2034-2038)
- REMOVAL
- STORM WATER DETENTION
- SACRAMENTO RIVER
- OFF-AIRPORT PROPERTY

**PROPOSED PROJECTS**

- 1-A NEW ARFF
- 1-B RON APRON
- 1-C CARGO APRON EXPANSION
- 1-D ELKHORN BOULEVARD EXTENSION
- 1-E NEW CARGO FACILITY
- 1-F WIDEN AND OVERLAY CY HOMER ROAD
- 1-G CITY OF SACRAMENTO COMMUNITY FIRE STATION
- 1-H NEW AIRPORT BUS PARKING LOT
- 1-I ELVERTA AND EARHART ROADWAY IMPROVEMENTS
- 1-J CONCOURSE B EXPANSION

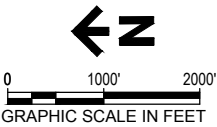
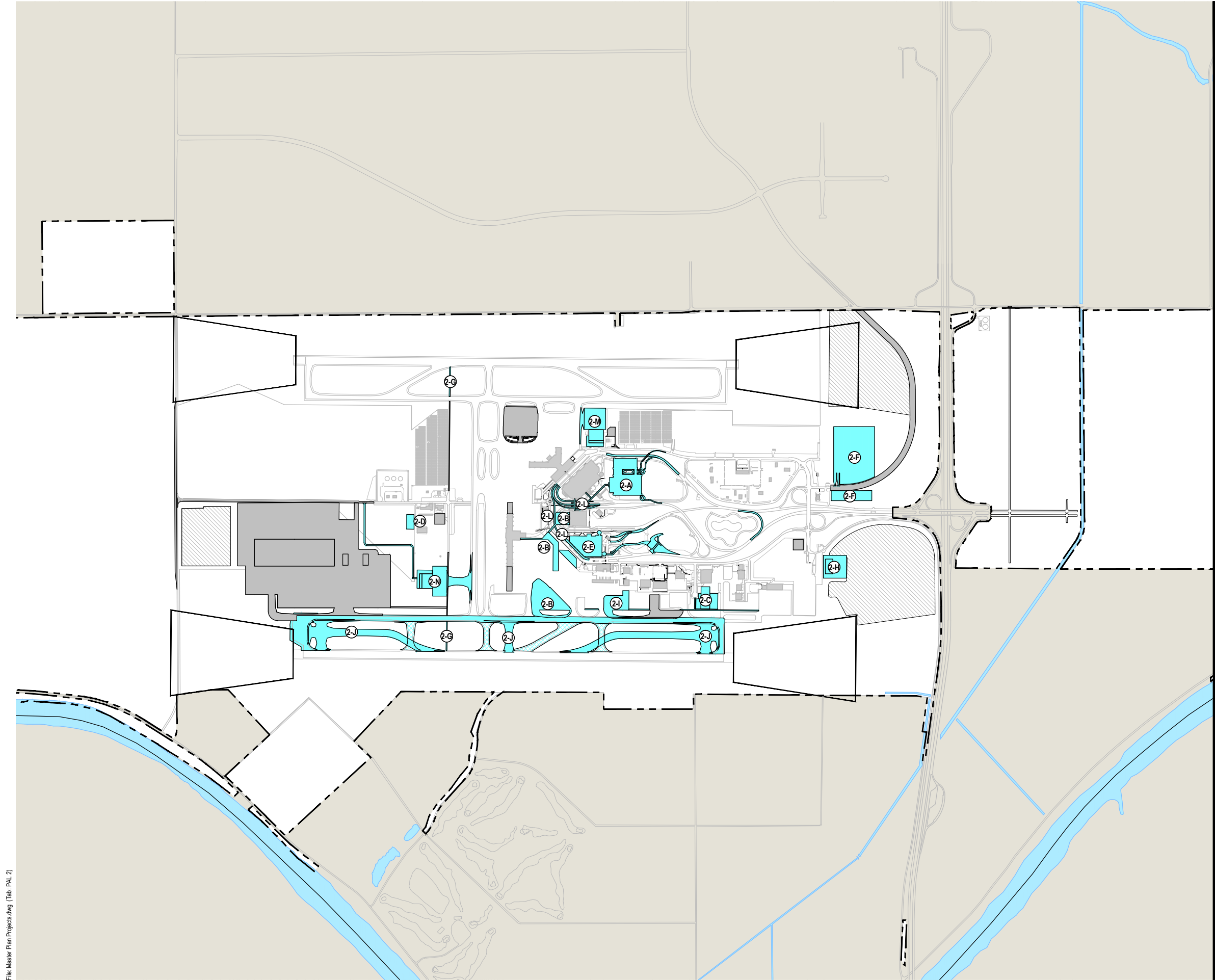


FIGURE 4-15

**PAL 1 DEVELOPMENT**



**LEGEND**

- AIRPORT PROPERTY LINE
- PAL 1 (7.4M ENPLANEMENTS or APPROX. 2019-2023)
- PAL 2 (8.2M ENPLANEMENTS or APPROX. 2024-2028)
- PAL 3 (9.2M ENPLANEMENTS or APPROX. 2029-2033)
- PAL 4 (10.2M ENPLANEMENTS or APPROX. 2034-2038)
- REMOVAL
- STORM WATER DETENTION
- SACRAMENTO RIVER
- OFF-AIRPORT PROPERTY

- PROPOSED PROJECTS**
- 2-A NEW CONRAC
  - 2-B TERMINAL B PEDESTRIAN WALKWAY, RELOCATED SSCP, 6-GATE EXPANSION WITH APRON
  - 2-C PHASE 1 GA IMPROVEMENTS
  - 2-D AIRPORT MAINTENANCE EQ. STORAGE
  - 2-E NEW PARKING GARAGE
  - 2-F PHASE 1 ECONOMY LOT EXPANSION
  - 2-G CY HOMER ROAD EXTENSION TO BOTH RUNWAYS
  - 2-H LANDSCAPE MAINTENANCE BUILDING
  - 2-I AIR CARGO APRON EXPANSION
  - 2-J TXY A TAXIWAY EXIT RECONFIGURATION AND HOLDING POSITIONS
  - 2-K GROUND TRANSPORATION CENTER
  - 2-L TERMINAL B BYPASS ROADWAY
  - 2-M AIRCRAFT MRO EAST
  - 2-N AIRCRAFT MRO NORTHWEST

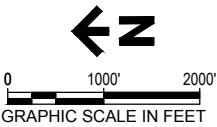
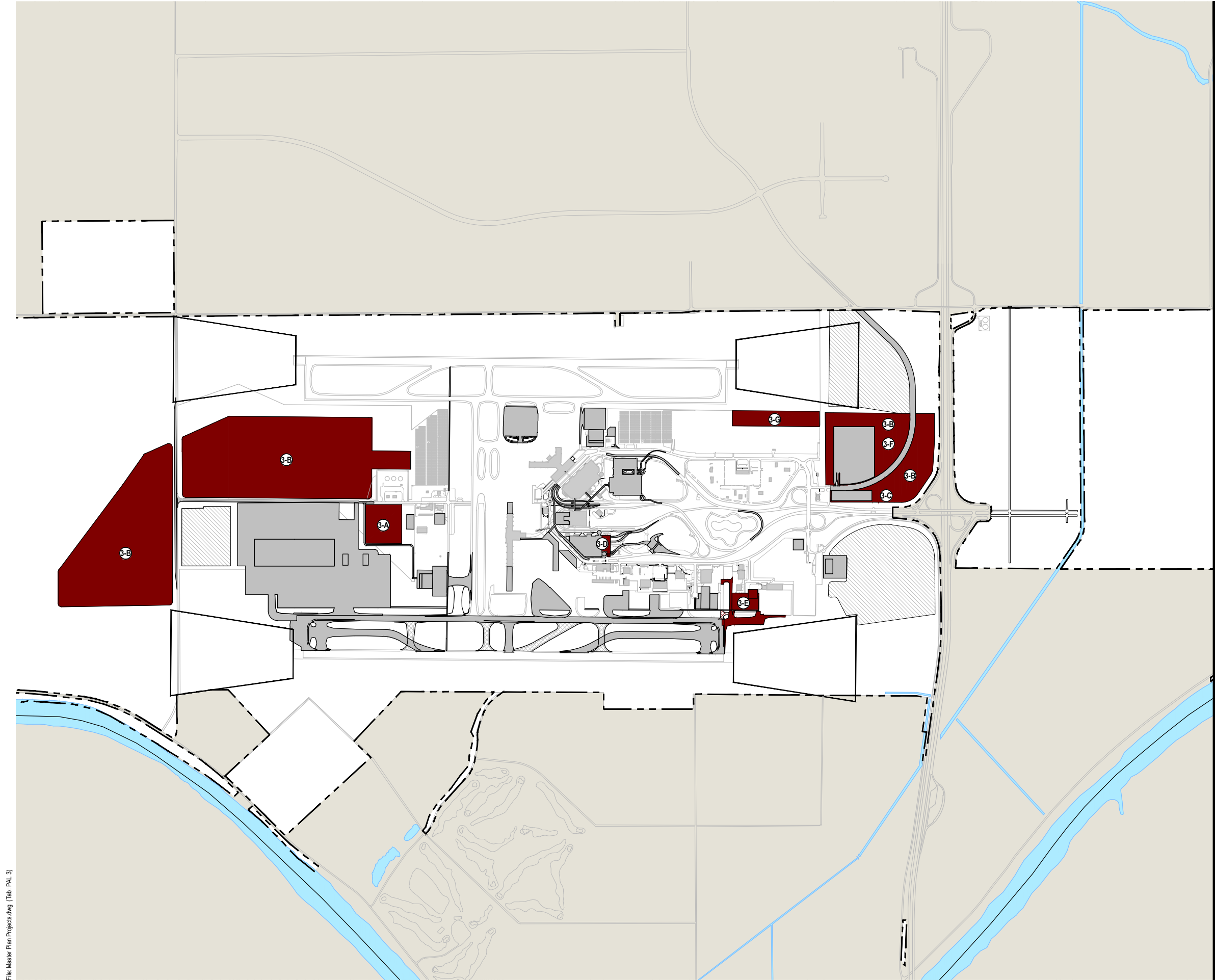


FIGURE 4-16

**PAL 2 DEVELOPMENT**



**LEGEND**

- AIRPORT PROPERTY LINE
- PAL 1 (7.4M ENPLANEMENTS or APPROX. 2019-2023)
- PAL 2 (8.2M ENPLANEMENTS or APPROX. 2024-2028)
- PAL 3 (9.2M ENPLANEMENTS or APPROX. 2029-2033)
- PAL 4 (10.2M ENPLANEMENTS or APPROX. 2034-2038)
- REMOVAL
- STORM WATER DETENTION
- SACRAMENTO RIVER
- OFF-AIRPORT PROPERTY

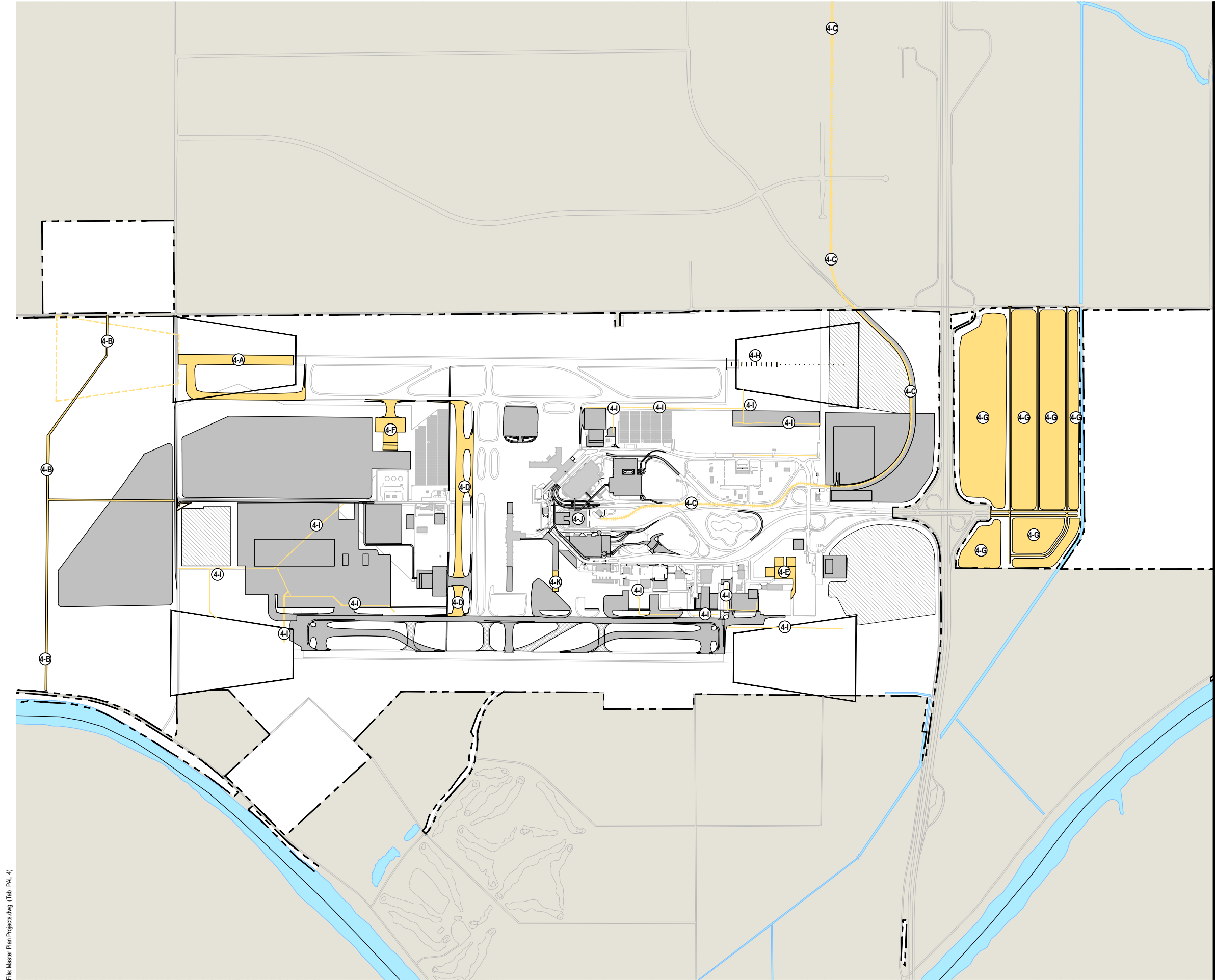
**PROPOSED PROJECTS**

- 3-A NEW AIR TRAFFIC CONTROL TOWER
- 3-B COMMERCIAL DEVELOPMENT/AIRSIDE DEVELOPMENT (≈324 ACRES)
- 3-C AIRPORT HOTEL (NOT SHOWN)
- 3-D PARKING GARAGE EXPANSION
- 3-E PHASE 2 GA IMPROVEMENTS
- 3-F PHASE 2 ECONOMY LOT EXPANSION (SOUTH)
- 3-G PHASE 3 ECONOMY LOT EXPANSION (EAST)

GRAPHIC SCALE IN FEET

FIGURE 4-17

**PAL 3 DEVELOPMENT**



**LEGEND**

- AIRPORT PROPERTY LINE
- PAL 1 (7.4M ENPLANEMENTS or APPROX. 2019-2023)
- PAL 2 (8.2M ENPLANEMENTS or APPROX. 2024-2028)
- PAL 3 (9.2M ENPLANEMENTS or APPROX. 2029-2033)
- PAL 4 (10.2M ENPLANEMENTS or APPROX. 2034-2038)
- REMOVAL
- STORM WATER DETENTION
- SACRAMENTO RIVER
- OFF-AIRPORT PROPERTY

**PROPOSED PROJECTS**

- 4-A RUNWAY EXTENSION 16L/34R TO 11,000FT
- 4-B ELVERTA ROAD RELOCATION
- 4-C LIGHT RAIL SERVICE TO SMF
- 4-D NEW CROSSFIELD TXY V
- 4-E PHASE 3 GA IMPROVEMENTS
- 4-F AIRCRAFT MRO NORTHEAST
- 4-G COMMERCIAL DEVELOPMENT (≈231 ACRES)
- 4-H NEW ILS FOR RUNWAY 34R
- 4-I CULVERT DITCHES
- 4-J ADD BAGGAGE/TICKETING TO TERMINAL B WITHIN STRUCTURE
- 4-K TERMINAL B 6-GATE EXPANSION

0 1000' 2000'
   
 GRAPHIC SCALE IN FEET

FIGURE 4-18

**PAL 4 DEVELOPMENT**