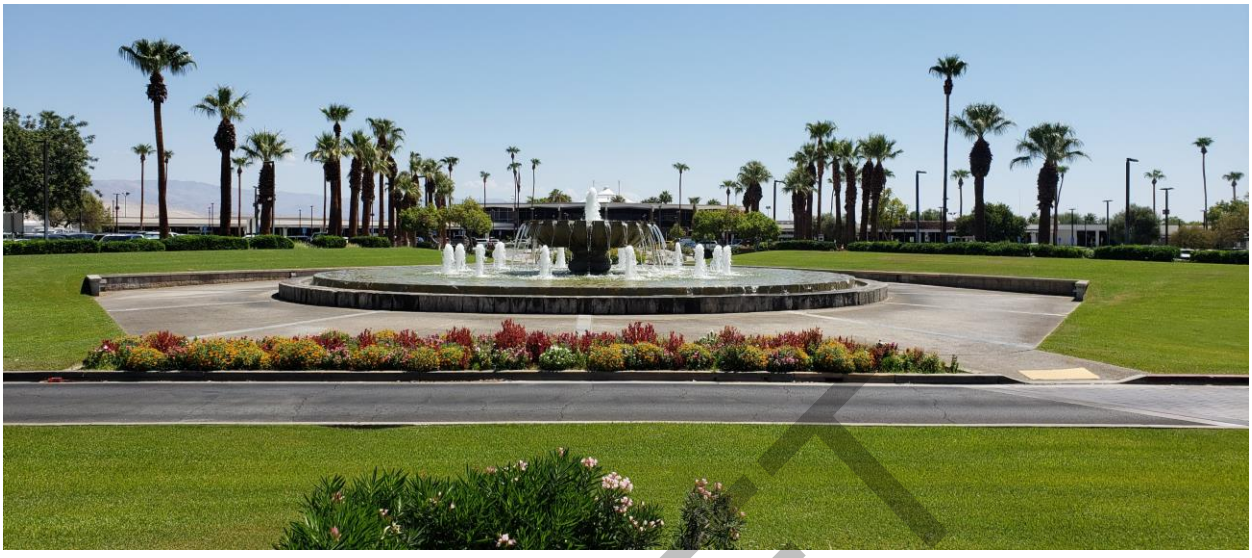
Chapter 4 – Initial Terminal Area Alternatives



INTRODUCTION

The alternative planning process for the Palm Springs Airport (PSP or the Airport) Airport Master Plan was designed to evaluate the information gathered to date including inventory, forecasts, and facility requirements for use in developing initial high-level alternatives. This chapter introduces those high-level alternative concepts developed with the intent to meet future terminal area facility needs detailed in the previous chapter, **Chapter 3 – Terminal Area Facility Requirements**. The high-level development concepts explored in this chapter will be narrowed and refined into more detailed alternatives in the next phase of the process.

The following section outlines the planning assumptions associated with the alternative concepts and the goals that these alternatives are designed to achieve. The Assumptions and Goals section is followed by a description of terminal area opportunities and constraints used as a foundation for initial high-level alternative development. Next, a summary of each alternative concept with its relative advantages and disadvantages are provided. Preliminary screening criteria incorporating City of Palm Springs and Airport sustainability focus categories is then presented to compare terminal alternative concepts.

ASSUMPTIONS AND GOALS

The following assumptions and goals were established to help guide the development and analysis of a range of alternatives designed to accommodate current and future demand at the Airport:

Assumption One: Recommended improvements must comply with local, state, and federal regulations.
The Airport will be developed and operated in a manner that is consistent with local ordinances and codes, federal and state statutes, federal grant assurances, and Federal Aviation Administration (FAA) regulations.

Assumption Two: The terminal area layout must accommodate the critical aircraft for each facility.
The size and type of aircraft that use the Airport, as well as the resulting setback and safety criteria, are the basis for the layout of facilities. Currently, PSP is primarily served by a narrow-body aircraft fleet (ex. Boeing 737 and Airbus A-320 series aircraft), and this is anticipated to continue throughout the planning horizon. As a result, the terminal area is planned to meet design standards for narrow-body aircraft in Aircraft Approach Category D and Airplane Design Group (ADG) III. However, flexibility of the terminal area to accommodate larger, wide-body aircraft is also considered and incorporated into the alternatives. This is considered specifically for areas anticipated to accommodate international flights, including a potential Federal Inspection Station (FIS) facility.

Assumption Three: Limited developable space necessitates efficient and targeted development.
Since the Airport, and the airport terminal area, is constrained, efficient use of developable space is critical.

Assumption Four: For planning purposes, the terminal development envelope for buildings and parked aircraft is located a minimum of 800 feet from the Runway 13R/31L centerline to provide adequate airspace and wingtip clearance.
The 800-foot distance delineates a boundary where objects approximately 43 feet in height can be located without penetrating Federal Aviation Regulations (FAR) Part 77 “Imaginary Surfaces” applicable to runways with a precision approach. While PSP does not currently have a precision approach, previous Master Plan studies have planned for the implementation of this approach type.

Aircraft expected to serve PSP on a regular basis have tail heights approaching 42 feet above ground. The 800-foot line provides a development envelope that avoids tail penetrations of parked aircraft to Part 77 airspace surfaces by existing and future critical aircraft. While future terminal concourse elevations are not yet defined in the planning process, the 800-foot building setback line provides a reasonable building restriction line for concourse expansion. The 800-foot setback line also preserves adequate space for PSP to accommodate an apron taxilane parallel to the full-length taxiway of Runway 13R/31L, similar to what exists east of the Sonny Bono Concourse today.

Assumption Five: Consider seasonality and peaking characteristics.

The Airport experiences varying levels of activity during different seasons of the year. Peaking characteristics are considered for evaluation of development alternatives.

Assumption Six: The original Wexler terminal building will be protected and opportunities to feature this unique and historic component of the terminal complex will be pursued to the extent practical.

The original Wexler terminal building was recently listed in the National Register of Historic Places. Terminal development alternatives will strive to enhance the historic features of this building while cost-effectively meeting facility needs.

Assumption Seven: Property in the vicinity of PSP that could support future development may be considered for concept development purposes.

There is limited developable space at PSP. This planning effort will consider expansion potential for future Airport development, including property acquisition.

Goals for Development

Accompanying these assumptions are several goals, which have been established for the purposes of directing planning efforts and establishing continuity for future airport development. These goals consider several categorical considerations related to the Airport's short-term and long-term needs.

Airport Development Goals:

- Enhance the PSP passenger experience.
  - Use of outdoor space.
  - Levels of passenger service and convenience.
  - "Front Door" Access.
  - Outdoor mountain views.
  - Retain the character of the original terminal building designed by Donald Wexler.
- Provide future facility plans that are flexible, cost-effective, financially feasible, and can be implemented in a phased approach.
- Maximize the use of developable space.
- Be responsive to stakeholder needs.
- Enhance revenue generation opportunities.
- Include plans for an FIS facility and provide gates capable of accommodating international arriving passengers.
- Consider future technological changes.
- Incorporate sustainability vision statement and focus categories.

In June of 2023, PSP selected the following Sustainability Vision Statement:

> *It is PSP's commitment to foster a sustainable and resilient future for our community through socially responsible, environmentally sustainable, and economically valuable means.*

Sustainability focus categories selected by PSP include:

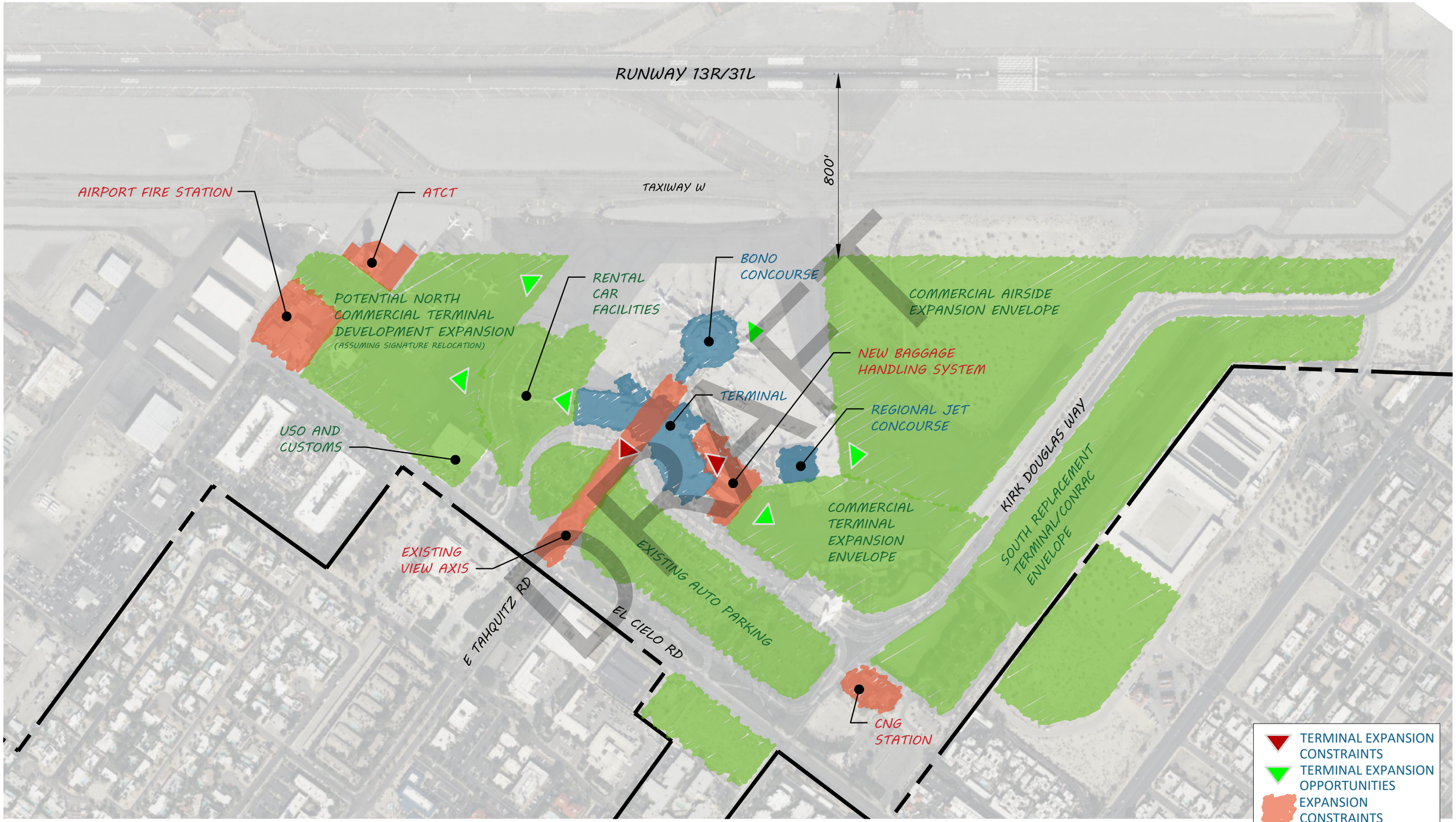
- Airport Finance.
- Land Use and Transportation.
- Resource Management.
  - Energy.
  - Water.
  - Waste.
- Stakeholder Relations.
- Resilience.

OPPORTUNITIES AND CONSTRAINTS

Understanding opportunities and constraints is critical to developing viable alternatives. The opportunities and constraints map, **Figure 4-1**, depicts potential areas that support additional facility expansion or reconfiguration in green. The red areas are constraints that will hinder or potentially prevent future facility development.

Major terminal area constraints include Runway 13R/31L and taxiway infrastructure to the east, the airport traffic control tower (ATCT) and airport fire station to the north, El Cielo Road to the west, and existing roadway and building infrastructure to the south.

Figure 4-1: Opportunities and Constraints



INITIAL TERMINAL AREA ALTERNATIVE CONCEPTS

The PSP terminal, concourse, and Consolidated Rent-A-Car (CONRAC) layout alternatives are the result of an initial effort to establish master plan concepts capable of accommodating 30-32 aircraft gates. This initial work was completed prior to the development of a functional terminal area program based on forecasted future demand. The concepts were used to solicit feedback from the key leadership group at PSP through an in-person visioning session and a follow-up virtual session, resulting in the developed alternates.

The initial high-level Master Plan terminal alternatives were categorized into three approaches:

- **Approach 1: Maximum reuse –** Maintaining operations and access at the current terminal location while maximizing reuse of the existing headhouse and expanding concourse facilities.
- **Approach 2: Partial Reuse –** Maintaining operations and access at the current terminal location, along with reuse of the existing headhouse facilities, while providing all new concourse facilities.
- **Approach 3: Southern Development –** Relocating the terminal operations and concourses to the southern end of the airport property with the headhouse fronting Kirk Douglas Way.

Approach 1: Maximum Reuse

Approach 2: Partial Reuse

Approach 3: Southern Development

For each approach, the CONRAC facility was located to best support passenger needs for ease of accessibility. For Approach 1 and 2, the CONRAC is located to the north, connecting directly to the baggage claim hall. For Approach 3, where the Headhouse is located on Kirk Douglas Way, the CONRAC is located accessing Kirk Douglass Way, either directly to the south or to the southwest.

From the initial approach high-level alternatives, the Master Plan team prioritized the following:

1. Maintain primary access from Tahquitz Way, maintaining the current “Front Door” and connection to downtown Palm Springs.
2. Emphasize the “charm” and ease of use of the current terminal.
3. Maintain the original Donald Wexler design of the terminal building headhouse.
4. Minimize walking distances.
5. Prefer a single level terminal roadway.

6. Access majority of aircraft via a boarding bridge.
7. Maintain current level of service and adjacency of CONRAC to terminal.
8. Maintain an outdoor courtyard space on the secure side of the terminal.

Terminal Area Alternative 1A

Alternative 1A, illustrated in **Figure 4-2**, applies the maximum reuse approach. The headhouse, central courtyard, and Bono concourse are maintained. The alternative includes a new double loaded concourse pier at the south, extending the Part 77 limits for an aircraft to be gated at the east end. The southern gates are served by a dual ADG-III taxilane to accommodate most of the terminal gates, while the remaining northern gates are accessed via a single ADG-III taxilane. The new northern concourse is laid out in a linear arrangement and has direct taxiway access from the gates.

Primary access remains at Tahquitz and El Cielo, with secondary access from the Coachella Valley via Ramon Road. The roadway network would be maintained as a single level roadway system, expanding the curbsides and terminal to the south and north. Along the curbside, the ticketing and baggage claim buildings are expanded to the south and north, respectively. This accommodates growth in the ticketing, security, and the baggage claim programs. Ticketing would shift south, thereby allowing for the Security Screening Check Point (SSCP) to also expand southwards.

Post security, travelers would enter an expanded courtyard providing central access to three concourses: a new south concourse, the existing Bono Concourse, and a new north concourse.

The new southern concourse would accommodate 19 narrow-body gates serving domestic or pre-cleared arriving operations. The concourse would be dual level, accommodating the expanded baggage handling system at the apron level and loading by jet bridge at the second level. A dual level concourse could also accommodate ramp loaded aircraft operations.

The existing Bono Concourse remains and would not require modifications in building geometry for this concept. It was noted in early visioning that the indoor/outdoor boundary between the holdroom and upper-level courtyard at this concourse leads to overcrowding at peak operations and may require renovations to increase customer level of service.

The new north concourse can accommodate up to eight narrow-body gates. Four gates are Multiple Aircraft Ramp System (MARs) gates for the FIS, and they could be swapped out for wide-body aircraft at a 2:1 ratio. Given the north concourse's proximity to baggage claim and the arrivals curb, this concourse would also have a sterile corridor and FIS allowing for arriving international flights operations.

Potential advantages of Alternative 1A:

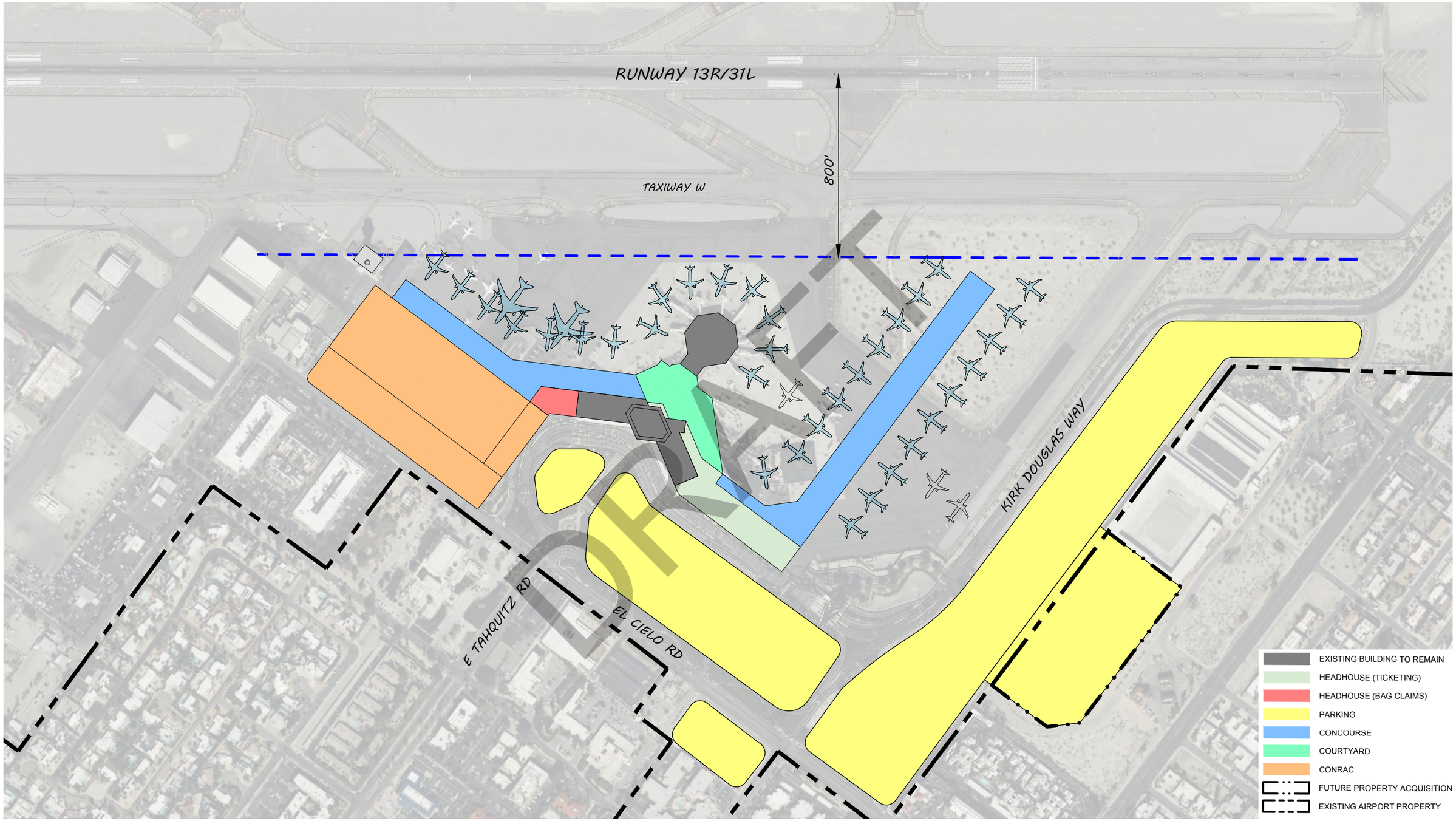
- Reduces cost by maintaining major components.
- Maintains existing character of Palm Springs Airport by preserving major elements.
- Maintains and expands outdoor space post security.

- Locates CONRAC near the baggage claim.
- Locates FIS near the baggage claim.
- Eases construction phasing with multiple and entirely separate concourses.

Potential disadvantages of Alternative 1A:

- Causes disruption from phasing and renovations.
- Introduces a long walking distance from the south concourse to the baggage claim.
- Requires renovation of existing spaces and facilities.

Figure 4-2: Alternative 1A



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Terminal Area Alternative 1B

Alternative 1B, illustrated in **Figure 4-3** maximizes the reuse of existing facilities from Alternative 1A with a new, linear double loaded concourse pier extending from the southeast corner of the Bono concourse. The eastern gates have direct taxiway access, while the gates on the west are served by a dual ADG-III taxilane. At the west there are two concourses that extend north and south of the courtyard.

Primary access to the terminal remains at Tahquitz and El Cielo with secondary access from Ramon. Like Alternative 1A, Alternative 1B maintains the single level roadway system, expanding the curbsides and terminal to the south and north. The ticketing and baggage claim buildings are also expanded to the south and north like Alternative 1A.

Alternative 1B similarly has three concourses: a new south concourse, the existing Bono Concourse, and a new north concourse. The primary function of the new southern concourse remains largely unchanged from Alternative 1A, a dual level concourse accommodating eight narrow-body gates that serve domestic or pre-cleared arriving operations.

The existing Bono concourse and concourse expansion would be accessed from the current location of escalators and elevators. Additional escalators and elevators would need to be added to accommodate the increased foot traffic from the concourse expansion. From the southeast corner of the Bono concourse, a new linear concourse is extended southwest parallel to the runway, adding an additional 14 narrow-body gates. This would require heavy renovation of the Bono concourse in planning and the façade to accommodate the new concourse.

The new north concourse can accommodate up to seven narrow-body gates, of which four are Multiple Aircraft Ramp System (MARs) gates and can be swapped out for wide-body aircraft at a 2:1 ratio for FIS purposes. Given the proximity to baggage claim and the arrivals curb, this concourse would also have a sterile corridor and FIS allowing for arriving international flights operations.

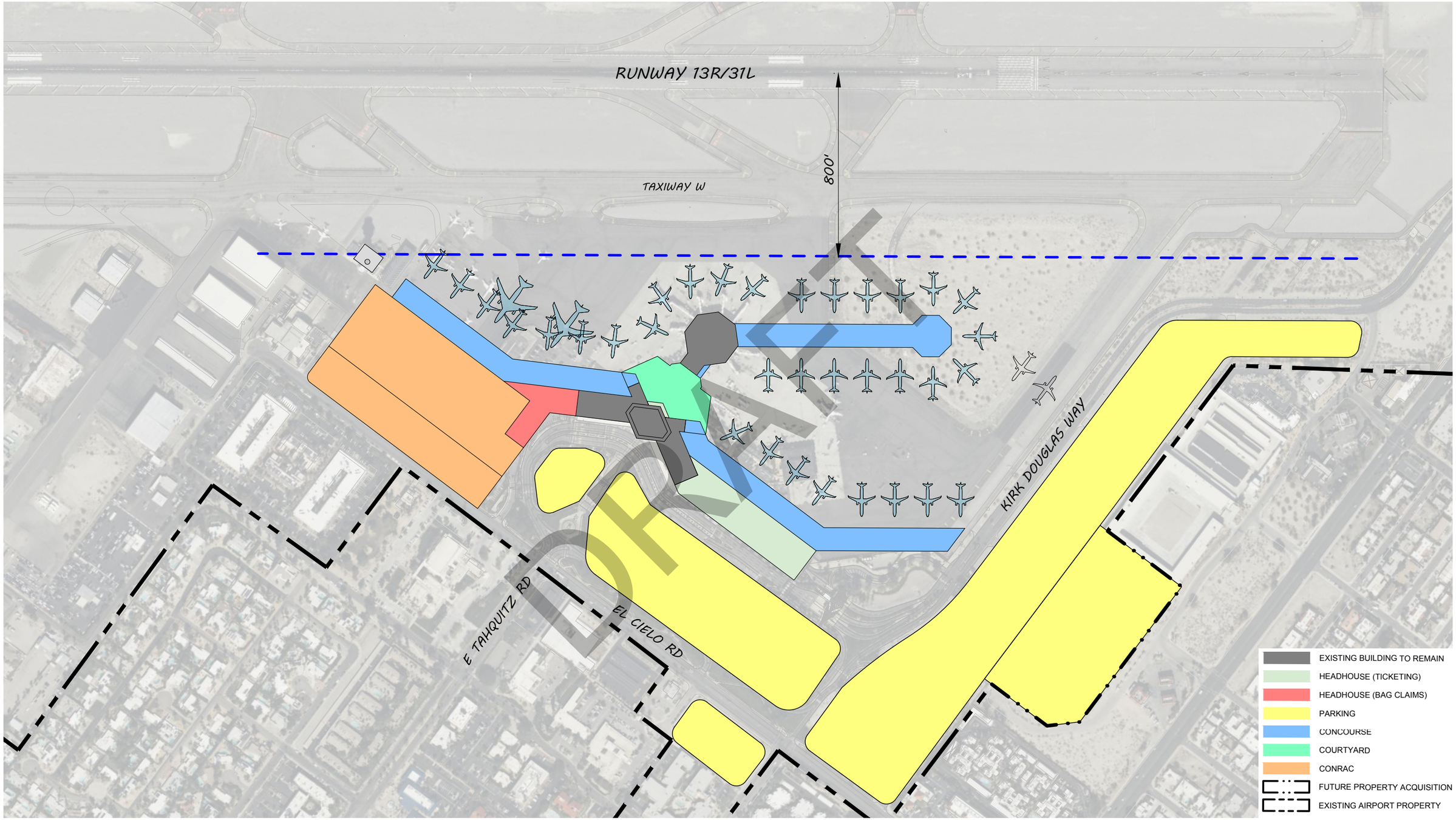
Potential advantages of Alternative 1B:

- Maintains existing character of Palm Springs Airport by preserving major elements.
- Headhouse is centrally located, distributing walking distances among gates.
- Maintains existing outdoor space post security.
- Locates CONRAC near the baggage claim.
- Locates FIS near the baggage claim.
- Allows for ease of construction phasing with multiple and entirely separate concourses.

Potential disadvantages of Alternative 1B:

- Complex renovations of existing facilities that may impact cost and negatively impact passenger experience.
- Does not expand outdoor space post security.

Figure 4-3: Alternative 1B



Terminal Area Alternative 2

Alternative 2, illustrated in **Figure 4-4**, applies the minimum reuse approach; only the headhouse and portions of the central courtyard remain. Overall, the layout is a linear arrangement with most gates served by a new concourse parallel with the runway. This concourse location is along the eastern edge, with parked aircraft tails abutting the Part 77 limit line. Gates on the eastern side have direct taxiway access. The gates on the west can be accessed by a dual ADG-III taxilane that also serves the western concourse pier extension.

Primary access into the terminal remains at Tahquitz and El Cielo with secondary access from Ramon. The single level roadway system is also preserved, expanding the curbsides and terminal to the south and north. Along the curbside, the ticketing and baggage claim buildings are expanded to the south and north, respectively, accommodating the growth in ticketing, security, and baggage claim program. Ticketing would shift south, allowing for the Security Screening Check Point (SSCP) to expand toward the south from its current location.

Post security, travelers would enter an expanded courtyard providing central access to a new eastern and southern concourse.

The new eastern concourse is organized in a linear arrangement parallel to the runways and would gate up to 27 narrow-body aircraft. Four gates could be swapped out for up to two wide-body aircraft at a 2:1 ratio. The concourse is envisioned as dual level, accommodating the expanded baggage handling system at the apron level, and loading by jet bridge at the second level. There is an opportunity for this concourse to also accommodate ramp loaded aircraft operations, which would inform where the final vertical circulation core would be located. At the northern end of the concourse, given the proximity to baggage claim and the arrivals curb, there would be a sterile corridor and FIS allowing for arriving international flight operations.

The southern concourse is designed to accommodate up to five narrow-body aircraft and would need to be dual level for some or all portions to accommodate the baggage handling system and connection. This concourse would service domestic or pre-cleared arriving international operations.

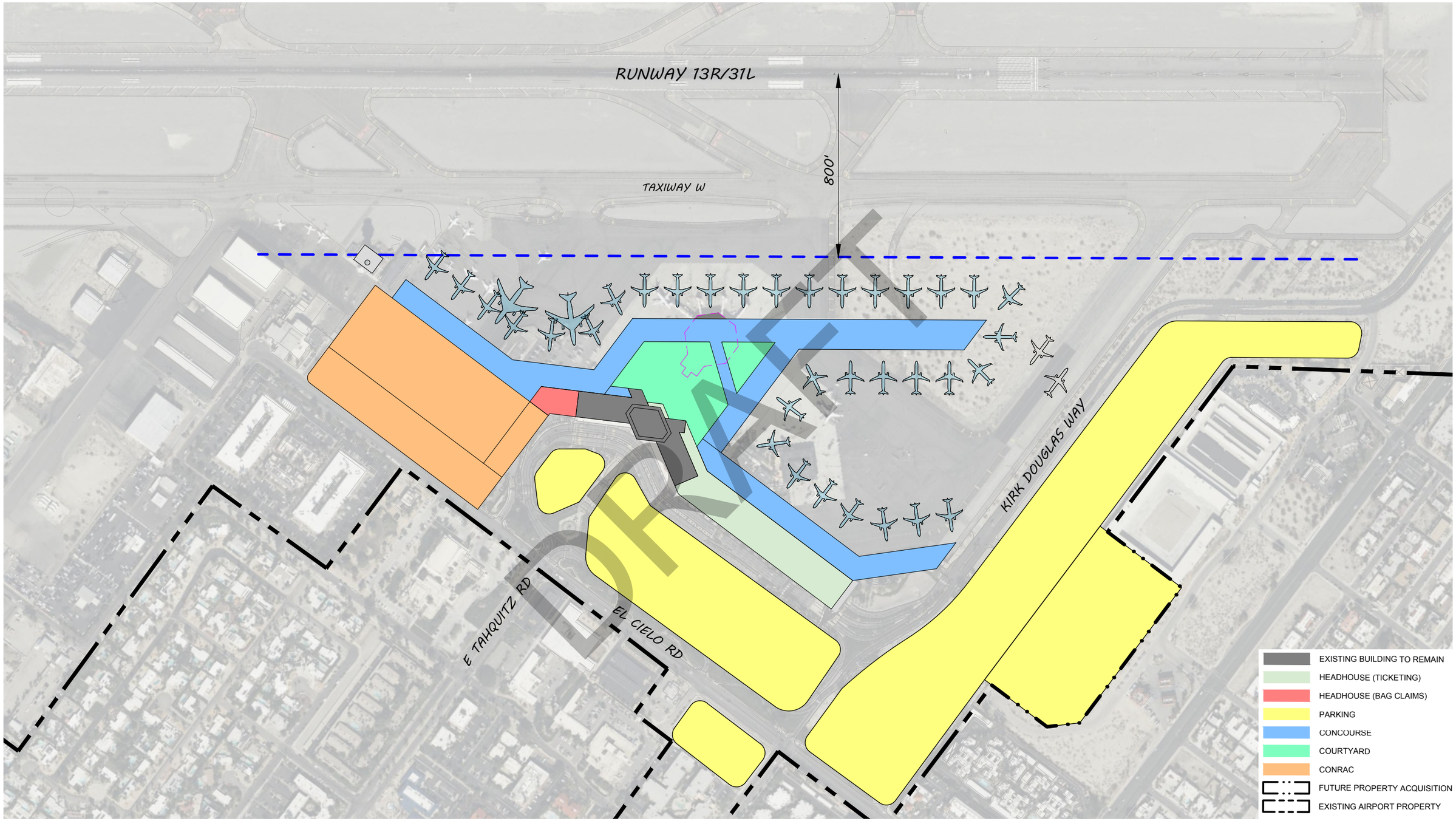
Potential advantages of Alternative 2:

- Maximizes aircraft efficiency with minimal taxi distances to taxiway/runways.
- Expands central courtyard.
- Provides flexibility to accommodate larger number of international arriving gates.
- Centrally locates headhouse, distributing walking distances among gates.
- Maintains and expands outdoor space post security.
- Locates CONRAC near the baggage claim.

Potential disadvantages of Alternative 2:

- Introduces multiple large phases with higher cost impacts that may cause disruptions to passenger experience and operations.
- Complicates construction phasing compared to the two previous alternatives.

Figure 4-4: Alternative 2



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Terminal Area Alternative 3

Alternative 3, illustrated in **Figure 4-5**, relocates all airport terminal and concourse operations to the southern site along Kirk Douglas Drive. Given the historic nature of the Wexler terminal building it would be the only structure to remain, and its function would be determined in the future. The new terminal would span east and west, with three concourse piers extending in a north and south alignment. The western concourse pier extension would be limited in length by the location of the Wexler terminal building, and the central and west concourse piers extend to the limits of the FAR Part 77 limit line. Between the western and central concourse piers is a dual ADG-III taxilane or single ADG-V since, both capable of serving most gates and the two MARs positions. With the layout and site envelope, a single ADG-III taxilane serves the central and east concourse piers.

Primary access to the terminal will remain from Tahquitz and El Cielo; however, both which will require major reworks of the landside roadway system, pedestrian access, and surface parking. On this alternative, the CONRAC is located on the south site, with a few options in placement that will be driven by both landside access and the forecasted area demand.

The new terminal would have the departures curb and ticketing at the east end, and the arrivals curb and baggage claim at the west end. The SSCP is located at the center of the terminal, between ticketing and baggage. There is an opportunity at this point for passengers to ascend to a second level, allowing for space at the apron level for the baggage handling system. This would be developed in the next stage of concept refinement.

Post security passengers can remain in the terminal building or enter a central open-air courtyard. This layout also shows covered portions of the terminal that could be opened to the courtyard while providing coverage from sun or rain, or it could be fully enclosed and conditioned.

All concourse piers are currently envisioned to be two levels, with the flexibility to have some portions be at ramp level to allow for ramp boarding operations. The two-level concourses would allow for passenger enplaning via a boarding bridge on the second level, with a baggage handling system and offices at the apron level. Given the proximity to baggage and arrivals curb, the FIS and sterile corridor would be located adjacent to western concourse pier.

Potential advantages of Alternative 3:

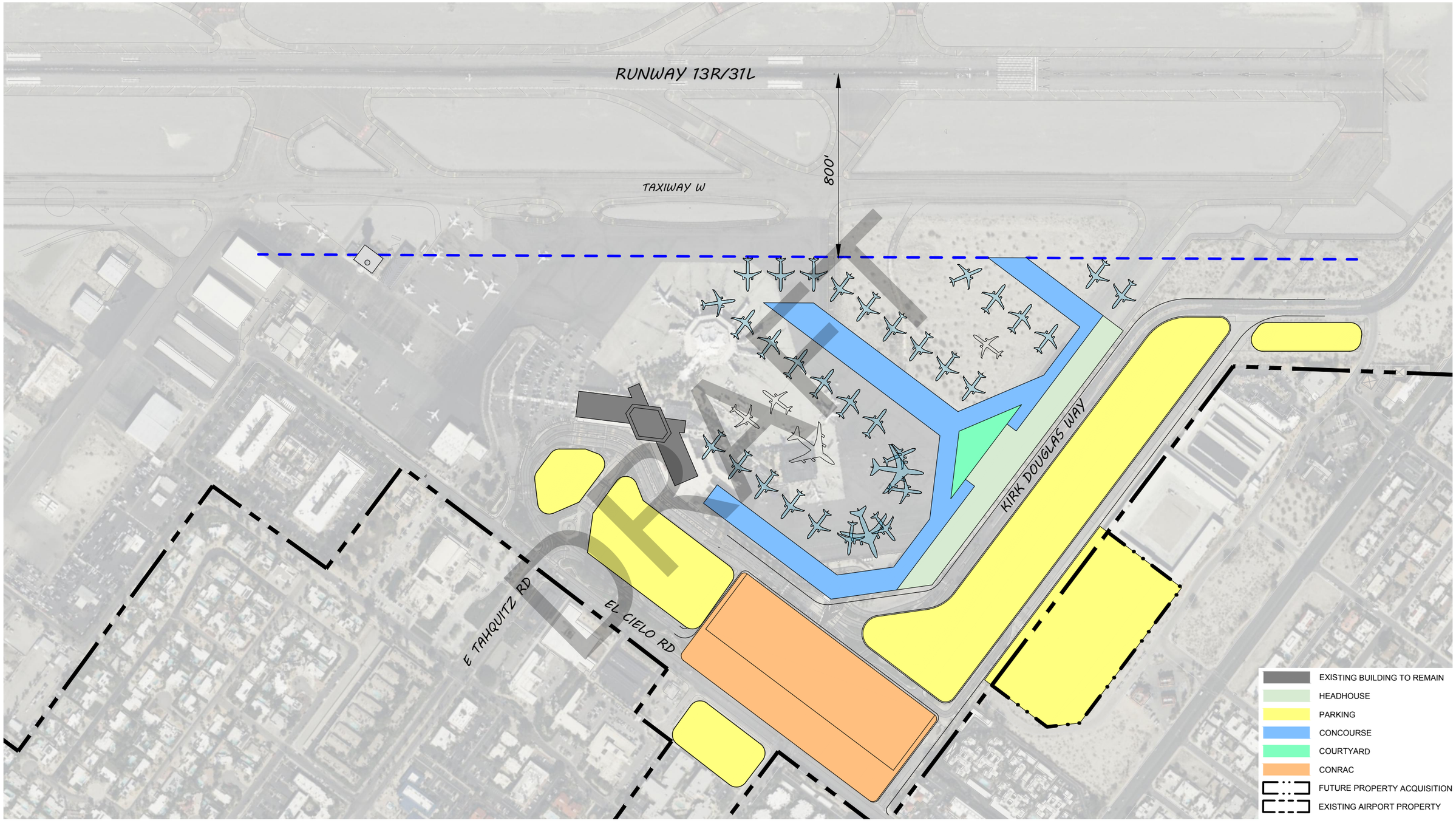
- Creates brand new terminal and parking facilities.
- Minimizes terminal phasing disruptions during construction.
- Provides a larger landside area for the CONRAC.
- Maintains historic Wexler terminal for potential repurposing.

Potential disadvantages of Alternative 3:

- Represents the highest construction cost of the four alternatives, with minimal reuse opportunities.

- Creates major landside phasing disruptions.
- Locates terminal further away from primary roadway access point.
- Disrupts the connection of the terminal to downtown Palm Springs via Tahquitz Canyon Way.

Figure 4-5: Alternative 3



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PRELIMINARY ALTERNATIVE SCREENING CRITERIA AND SUMMARY

To evaluate these alternative concepts individually and against all concepts, a set of preliminary evaluation criteria was established based on six broad screening elements:

- **Passenger Experience.**
- **Stakeholder Relations.**
- **Sustainability and Environmental Factors.**
- **Financial Factors.**
- **Implementation.**
- **Operational Performance.**

A preliminary screening criteria matrix is provided in **Figure 4-6**. The matrix lists criteria for the six categories along with potential strengths and weaknesses of initial alternatives. Screening criteria and scoring of alternatives will be refined based on additional PSP staff input, Working Group input, and further definition of sustainability goals. As alternative concepts are narrowed and refined in the next phase, rough order of magnitude cost estimates will also be developed.

Figure 4-6: Preliminary Terminal Area Concepts Screening Matrix

Initial Terminal Alternative Screening Criteria	Alt. 1A	Alt. 1B	Alt. 2	Alt. 3
Passenger Experience	**+**	**o**	**+**	**o**
Maintains "PSP Experience" (outdoor space, "front door" access etc.)	+	+	+	o
Enhance the "charm" and ease of use of the current terminal	+	o	o	o
Maximizes outdoor space	+	o	+	-
Minimizes walking distances	-	-	+	o
Stakeholder Relations	**o**	**o**	**o**	**o**
Minimizes community, tenant, and user impacts	o	o	-	o
Enhances community, tenant, and user facilities	+	+	+	+
Socially and politically feasible	o	o	o	o
Sustainability and Environmental Factors	**+**	**+**	**+**	**+**
Maximizes reuse of existing facilities	+	+	o	-
Supports PSP resiliency (extreme heat / climate change, earthquakes, etc.)	+	o	+	+
Supports efficient land use / maximizes use of developable space	+	+	+	+
Avoids impacts to and enhances the use of the original Wexler terminal building	+	+	+	+
Accommodates/enhances connections with other modes of transit (bus, rail, etc.)	o	o	o	o
Allows for closure or repurposing of areas during non-peak seasons	+	+	+	+
Supports efficient use and management of resources (energy, waste, and water)	+	o	o	+
Financial Factors	**+**	**+**	**o**	**o**
Promotes long-term financial viability of the Airport	+	+	+	+
Limits order of magnitude costs	+	o	-	-
Enhances revenue potential (concessions, parking, etc.)	+	+	+	+
Minimizes facility footprint and ongoing operations and maintenance costs	+	o	-	o
Implementation	**+**	**o**	**-**	**+**
Ability to phase	+	o	-	o
Flexibility	+	o	o	+
Minimizes impact to stakeholders and operations during construction	o	o	-	+
Operational Performance	**+**	**+**	**+**	**+**
Accommodates terminal airside program requirements (gates, apron etc.)	+	+	+	+
Accommodates terminal landside program requirements	+	+	+	+
Ability to accommodate growth beyond the planning horizon	+	o	+	o
Ability to incorporate future technological changes	+	+	+	+

Strength of the Alternative	**+**
Neither a Strength nor a Weakness of the Alternative	**o**
Weakness of the Alternative	**-**